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Persistent Organic Pollutants Review Committee
Fifth meeting
Geneva, 12–16 October 2009**Report of the Persistent Organic Pollutants Review Committee
on the work of its fifth meeting****I. Opening of the meeting**

1. The fifth meeting of the Persistent Organic Pollutants Review Committee was held at the Varembe Conference Centre in Geneva from 12 to 16 October 2009. Mr. Reiner Arndt (Germany), Chair of the Committee, declared the meeting open at 10 a.m. on Monday, 12 October 2009.
2. Mr. Donald Cooper, Executive Secretary of the Stockholm Convention on Persistent Organic Pollutants, welcomed the Committee members and observers. Commending the Committee on its work over its previous meetings, which had led to historic decisions by the Conference of the Parties to list nine additional chemicals, he said that the Committee's work confirmed that scientific evaluation could form the basis for decision-making under environmental treaties.
3. The agenda for the current meeting, he said, was very challenging: decisions reached by the Conference of the Parties at its fourth meeting provided guidance to assist the Committee but would also add to its workload. At the same time, however, the Committee's core functions had not changed. The Stockholm Convention operated a two-tier system, under which the Committee made recommendations at the scientific level and the Conference of the Parties took action at the political level. He urged the Committee members to bear that distinction in mind. Like members of a family, Committee members faced difficult issues that could give rise to serious disagreements. At the end of the day, however, they remained a family that could even grow stronger provided that such disagreements were addressed in an appropriate manner against a backdrop of mutual trust and respect. He wished the Committee members success in their deliberations.

II. Organizational matters**A. Adoption of the agenda**

4. The Committee adopted the agenda set out below, on the basis of the provisional agenda which had been circulated as document UNEP/POPS/POPRC.5/1:
 1. Opening of the meeting.
 2. Organizational matters:
 - (a) Adoption of the agenda;
 - (b) Organization of work.

3. Review of outcomes of the fourth meeting of the Conference of the Parties of the Stockholm Convention relevant to the work of the Committee.
4. Operational issues:
 - (a) Rotation of the membership in May 2010;
 - (b) Operating procedures of the Committee;
 - (c) Work programmes on new persistent organic pollutants adopted by the Conference of the Parties;
 - (d) Intersessional work on substitution and alternatives;
 - (e) Intersessional work on toxic interactions;
 - (f) Report on the outcomes of activities undertaken for effective participation of Parties in the work of the Committee;
 - (g) Standard workplan for the preparation of draft risk profiles and draft risk management evaluations and for the work programmes on new persistent organic pollutants during the intersessional period between the fifth and sixth meetings of the Committee.
5. Consideration of draft risk profiles:
 - (a) Short-chained chlorinated paraffins;
 - (b) Endosulfan.
6. Consideration of chemicals proposed for inclusion in Annexes A, B or C to the Convention: hexabromocyclododecane.
7. Other matters.
8. Dates and venue of the sixth meeting of the Committee.
9. Adoption of the report.
10. Closure of the meeting.

5. The Committee agreed that under agenda item 7, “Other matters”, it would discuss Party activities under paragraphs 3 and 4 of Article 3 of the Convention and would hear a report on planned simultaneous extraordinary meetings of the conferences of the Parties to the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade and the Stockholm Convention and a report on activities under the Protocol on Persistent Organic Pollutants to the Convention on Long-range Transboundary Air Pollution of the United Nations Economic Commission for Europe.

B. Organization of work

6. The Chair drew attention to the objectives and possible outcomes of the meeting, as described in the scenario note for the meeting (UNEP/POPS/POPRC.5/INF/1), and the tentative schedule for the week (UNEP/POPS/POPRC.5/INF/2). The Committee agreed to conduct the meeting in accordance with the schedule set out in the latter document.
7. The Committee agreed to conduct its work in plenary session and to establish such contact groups and drafting groups as proved necessary. In accordance with decision SC-4/20, the Committee met in closed session on Monday, 12 October 2009, at 9 a.m. to review issues pertaining to conflicts of interest.
8. One member noted the importance of taking up all substantive matters early in the deliberations to allow their full consideration by the Committee.

C. Attendance

9. The meeting was attended by the following 29 Committee members: Ms. Anahit Aleksandryan (Armenia), Mr. Ian Rae (Australia), Ms. Camila Arruda Boechat (Brazil), Mr. Désiré Ouédraogo (Burkina Faso), Mr. Choviran Ken (Cambodia), Mr. Robert Chénier (Canada), Mr. Ricardo Orlando

Barra Ríos (Chile), Mr. Jianxin Hu (China), Mr. Ivan Holoubek (Czech Republic), Mr. Alfredo Cueva (Ecuador), Mr. Sylvain Bintein (France), Mr. Reiner Arndt (Germany), Mr. John Alexis Pwamang (Ghana), Ms. Mirtha L. Ferrary Betancourt (Honduras), Mr. Gopal Krishna Pandey (India), Mr. Masaru Kitano (Japan), Mr. Mohammed Oqlah Hussein Khashashneh (Jordan), Mr. Mohammad Aslam Yadallee (Mauritius), Mr. Mario Yarto (Mexico), Ms. Farah Bouqartacha (Morocco), Ms. Maria da Conceição Machado Alvim-Ferraz (Portugal), Ms. Kyunghye Choi (Republic of Korea), Mr. Thomas Yormah (Sierra Leone), Mr. Hindrik Bouwman (South Africa), Ms. Maria Delvin (Sweden), Ms. Bettina Hitzfeld (Switzerland), Mr. Fouad Elok (Syrian Arab Republic), Mr. Jarupong Boon-Long (Thailand), Mr. Komla Sanda (Togo).

10. The members from Bulgaria and Chad were unable to attend.

11. The meeting was also attended by the following invited experts: Mr. Salah A. Soliman (Alexandria University, Egypt), Mr. Gregg T. Tomy (Arctic Aquatic Research Division, Department of Fisheries and Oceans, Canada), Mr. Martin Scheringer (Institute for Chemical and Bioengineering Sciences, ETH Zurich, Switzerland), Mr. Allan Astrup Jensen (Secretariat for Quality Management and Metrology, FORCE Technology, Denmark), Mr. Richard Brown (World Health Organization).

12. In addition, the meeting was attended by representatives of the following countries as observers: Argentina, Australia, Austria, Brazil, Canada, China, Colombia, Costa Rica, Denmark, Egypt, Finland, France, India, Japan, Lebanon, Netherlands, New Zealand, Nigeria, Norway, Pakistan, Qatar, Slovakia, South Africa, Sweden, Switzerland, Turkey, Ukraine, United Republic of Tanzania, United States of America, Zambia. The European Community was also represented as an observer.

13. Representatives of the following United Nations bodies and specialized agencies also attended the meeting as observers: Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, Food and Agriculture Organization of the United Nations, Global Environment Facility, Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade, United Nations Development Programme, United Nations Industrial Development Organization, United Nations Institute for Training and Research.

14. Non-governmental organizations were represented as observers. The names of those organizations are included in the list of participants (UNEP/POPS/POPRC.5/INF/24).

III. Review of outcomes of the fourth meeting of the Conference of the Parties of the Stockholm Convention relevant to the work of the Committee

15. Introducing the item, the representative of the Secretariat summarized the information contained in document UNEP/POPS/POPRC.5/INF/3 on the outcomes of the fourth meeting of the Conference of the Parties relevant to the work of the Committee. The Committee took note of the information.

IV. Operational issues

A. Rotation of the membership in May 2010

16. Introducing the sub-item, the representative of the Secretariat summarized the information contained in document UNEP/POPS/POPRC.5/INF/4 on the rotation of the membership of the Committee in May 2010. The Committee took note of the information. The Chair expressed the view that the rotation of membership would provide for a beneficial mix of returning and new members but pointed out that the outgoing chairs of certain intersessional working groups would also need to be replaced to enable the continuation of intersessional work.

B. Operating procedures of the Committee

17. Introducing the sub-item, the representative of the Secretariat recalled that at its fourth meeting the Conference of the Parties had considered issues relating to the Committee's operating procedures, including its terms of reference, decision-making by voting and preventing and dealing with conflicts of interest relating to its activities. In that regard, it had taken decision SC-4/20, which was reproduced,

along with other decisions, in document UNEP/POPS/POPRC.5/INF/3. The Committee took note of the information.

18. The Chair recalled that comments by observers on technical matters were welcome but that only Committee members could speak on procedural issues – unless those issues were explicitly included on the agenda – and participate in decision-making.

19. At the Chair's request, the UNEP Senior Legal Officer clarified the decision-making procedure for the Committee. He recalled that the Conference of the Parties at its fourth meeting had discussed an argument put forth by one Party representative that the Committee had to proceed by consensus only and could not vote, while that argument was challenged by a number of Parties who supported the decision-making procedure observed by the Committee. The President had suggested that the representative, the Secretariat, the UNEP Senior Legal Officer and a nominated "friend of the President" would consult on the matter. Those consultations had yielded no consensus, however, and the Conference noted the difference of the views put forward by that Party from a number of other Parties who expressed their support to the decision-making procedure of the Committee in accordance with paragraph 6(c) of Article 19 of the Convention, and had taken no decision on the matter. As a result, paragraph 6 (c) of article 19 of the Convention continued to govern the Committee's decision-making processes, including decisions taken at various stages of the processes required for making its recommendations. That paragraph provided that the "Committee shall make every effort to adopt its recommendations by consensus. If all efforts at consensus have been exhausted, and no consensus reached, such recommendation shall as a last resort be adopted by a two-thirds majority vote of the members present and voting".

20. One member said that it was not logical for the Committee to proceed by vote on substantive matters when the Conference of the Parties itself could not do so. Given the importance of the matter, he said, a process should be established for gathering legal interpretations from authorities other than the UNEP Senior Legal Officer. The member also questioned the limits placed on the participation of observers during consideration of procedural issues. In response, it was noted that the Conference of the Parties had the ultimate authorities to provide interpretation of the provisions of the Convention, and with regard to the latter question, the legal basis for the modality of participation in the proceedings of the Committee was found in the rules of procedure.

21. In response to a question from another member, the Senior Legal Officer stated that, in line with the practice of other comparable forums, voting would normally be conducted by a show of hands but that roll-call voting could be done if requested.

22. The Committee took note of the information and clarifications provided.

C. Work programmes on new persistent organic pollutants adopted by the Conference of the Parties

23. Introducing the sub-item, the representative of the Secretariat outlined the information contained in document UNEP/POPS/POPRC.5/9 on the work programme on new persistent organic pollutants. She said that, by paragraph 1 of the annex to decision SC-4/19, Parties had been requested and observers invited to provide information on a number of issues by July 2010 on the chemicals listed in Annexes A and/or B to the Convention at the fourth meeting of the Conference of the Parties.

24. Pursuant to paragraph 3 of the annex to that decision, the Committee was requested to develop terms of reference for a technical paper to assess the possible health and environmental impacts of recycling articles containing brominated diphenyl ethers; to review the long-term environmental desirability of the recycling of articles containing those substances; and to identify best available technologies and best environmental practices for the recycling of articles containing those substances. According to paragraphs 4 and 5 of the annex to decision SC-4/19, the Secretariat would commission a paper based on terms of reference to be developed by the Committee that would be presented to the Committee for review at its sixth meeting and submitted to the Conference of the Parties thereafter for its consideration at its fifth meeting. Document UNEP/POPS/POPRC.5/INF/19 contained, in annex II, a draft document prepared by the Secretariat that might be used as a basis for developing terms of reference for development of the technical paper. The document also contained, in annex I, elements of a draft questionnaire for information collection on newly listed persistent organic pollutants, along with, in annex III, elements of work to be undertaken on other chemicals listed in Annex A or B to the Convention at the fourth meeting of the Conference of the Parties.

25. In the ensuing discussion, several members said that while the draft questionnaire developed by the Secretariat was a good basis for discussion it remained too detailed and complex for the short time available to complete it. It was also said that the deadline of July 2010 set out in the decision might leave insufficient time for the compilation and analysis of information for the sixth meeting of the Committee. It was accordingly agreed that those in a position to do so would be invited to submit the requested information by April 2010.
26. Several members pointed out that many developing countries and countries with economies in transition might have difficulty identifying articles containing the substances of concern and determining their relative quantities. Several suggestions were made with a view to clarifying the information requested and simplifying the data-gathering process. It was also suggested that information already available should be included in the technical paper and that account should also be taken of, for example, information from existing risk management evaluations and that generated in other forums. A number of suggestions were put forward as to the kind of information that should be gathered.
27. In response to the draft terms of reference contained in annex II to document UNEP/POPS/POPRC.5/INF/19, members made several recommendations to the Secretariat on ways of shortening the technical paper and of structuring it under the three major issues identified by the Conference of the Parties at its fourth meeting. Others mentioned the need to focus on recycling, rather than waste disposal, and the issue of occupational exposure suffered by recyclers.
28. The Committee took note of the work proposed on pentachlorobenzene and lindane.
29. The Committee agreed to establish a contact group chaired by Ms. Bettina Hitzfeld (Switzerland) with a mandate to develop further the terms of reference for a technical paper based on the Secretariat paper and to provide advice on the questionnaires drafted by the Secretariat (UNEP/POPS/POPRC.5/INF/19).
30. During the subsequent discussion in plenary session of the draft terms of reference, one observer expressed concern that wastes could be classified differently in receiving and exporting countries and suggested that the study should also consider that element of waste management.
31. The Chair responded that export of waste fell outside the mandate of the study. He suggested that the Committee should consider the information that it received on disposal operations and, if necessary, at its sixth meeting, draft a recommendation to the Conference of the Parties that it should refer the issue to the Conference of the Parties to the Basel Convention.
32. The chair of the contact group reported on the work of the group and presented a draft revised questionnaire. The Committee noted that the questionnaire developed by the contact group represented guidance and that the Secretariat might make changes before sending it to Parties and observers. Several members requested that the questionnaire should be translated into the six official languages of the United Nations. One member noted that some Parties would require technical support to complete the questionnaire accurately and completely. The Secretariat undertook to explore the possibility of translation but said that it would depend on the availability of sufficient resources.
33. The Committee agreed to forward to the Secretariat the draft questionnaire for collecting information on newly listed persistent organic pollutants as requested in decision SC-4/19.
34. The Committee adopted decision POPRC-5/1, on work programmes on new persistent organic pollutants. The decision is set out in annex I to the present report.

D. Intersessional work on substitution and alternatives

35. In considering the item, the Committee had before it a note by the Secretariat summarizing intersessional work on the substitution of and alternatives to persistent organic pollutants (UNEP/POPS/POPRC.5/6). The summary of a draft annotated outline for a guidance document on alternatives to perfluorooctane sulfonate (PFOS) and a draft general guidance document on substitution and alternatives developed by the intersessional working group were set out in the annexes to that document. The Committee also had before it the draft annotated outline for a guidance document on PFOS alternatives prepared by a consultant (UNEP/POPS/POPRC.5/INF/10); comments on the general guidance on considerations related to alternatives and substitutes for persistent organic pollutants (UNEP/POPS/POPRC.5/INF/13); and a summary of comments and responses relating to the annotated outline for a guidance document on PFOS alternatives (UNEP/POPS/POPRC.5/INF/14).

36. Mr. Thomas Yormah (Sierra Leone), chair of the intersessional working group on alternatives and substitution established by the Committee at its fourth meeting, said that the group, in accordance with its mandate, had revised and prepared for publication the draft guidance on flame-retardant alternatives to pentabromodiphenyl ether considered by the Committee at its fourth meeting. In addition, the group had prepared an annotated draft outline for a guidance document on PFOS alternatives. Preparation of the original outline had been entrusted to a consultant, supported by the Government of Sweden, and it had been revised in the light of comments by Parties and observers. He explained that some comments had been received too late to be reflected in the outline or were not included because they pertained to issues which would only be covered in the full guidance document.
37. The working group had also developed draft general guidance on considerations related to alternatives and substitutes for persistent organic pollutants. The relevant draft guidance document had been prepared by a consultant, supported by the Government of Japan, and revised in the light of comments by Parties and observers. With reference to that draft guidance document, he underscored the working group's view that the development of an appropriate, robust and adequately funded regime for substitution and alternatives was important to the success of the Convention, including the effective implementation of Articles 9 and 11 as they related to information-sharing and research and monitoring programmes on alternatives. Attention also needed to be paid to the affordability of substitutes relative to the chemicals and processes that they were to replace.
38. The working group had also highlighted the need to examine potential alternatives to ensure that they were not potent greenhouse gases or ozone-depleting substances and did not pose other threats to the environment or human health and to contact the secretariats of other environmental agreements to inform them of substances controlled by the Stockholm Convention or under review by the Committee to avoid the listing of those substances as recommended alternatives under other environmental regimes. A proposal had also been made to provide information on products containing PFOS to enable consumers to choose alternatives more easily, which in turn would enhance the process of substitution.
39. Following Mr. Yormah's presentation, the consultants noted above outlined the guidance documents, reporting that owing to time constraints not all comments submitted by Governments had been incorporated. Those comments would, however, be incorporated, along with others submitted during the meeting. The guidance document on PFOS alternatives would also have to be significantly shortened as the annotated outline already exceeded the targeted length of the full document.
40. In the ensuing discussion, the Chair noted that Mr. Yormah's term would expire prior to the Committee's next meeting and that Mr. Samuel Banda (Zambia), who would be joining the Committee in May 2010, had volunteered to replace Mr. Yormah as chair of the working group at that time. Where the draft general guidance document was concerned, he said that, while it had been correct to include information on the cost of alternatives, the policy implications of that cost lay within the purview of the Conference of the Parties. When developing the draft guidance on PFOS alternatives, it would be important for Parties to provide relevant information on the costs of various alternatives for consideration by the financial mechanism. The availability of information to enhance the guidance would be improved as Parties submitted specific exemptions and acceptable purposes and reported precisely which articles contained PFOS and other persistent organic pollutants.
41. One member, noting that one of the alternatives mentioned in the draft had been banned in his country, said that every effort should be made to ensure that the guidance included existing information on the known harmful impacts on human health and the environment of potential substitutes. Another emphasized that the guidance should contain references to the cost of alternatives and that substitute chemicals and processes should not entail heavier costs for developing countries.
42. The chair of the drafting group presented the group's recommendations regarding general guidance on considerations related to alternatives and substitutes, a summary of the annotated outline for a guidance document on alternatives to PFOS and its derivatives, and a related draft decision. During discussion the Committee agreed to a number of amendments, including on the application of the general guidance to persistent organic pollutants listed in Annexes A, B and C and to candidate persistent organic pollutants.
43. The Committee adopted decision POPRC-5/2, on substitutes and alternatives. The decision is set out in annex I to the present report. The revised summary of the annotated outline for a guidance document on alternatives to PFOS is set out in annex V to the present report. The adopted general guidance document on substitution and alternatives may be found in addendum 1 to the present report (UNEP/POPS/POPRC.5/10/Add.1).

E. Intersessional work on toxic interactions

44. In considering the item, the Committee had before it a note by the Secretariat on a proposal by the co-chairs of the intersessional working group on toxicological interactions for further work to be undertaken by the Committee (UNEP/POPS/POPRC.5/7) and an information document describing a draft framework for assessing the combined risk from exposure to multiple chemicals that had been developed under the World Health Organization International Programme on Chemical Safety (WHO/IPCS) (UNEP/POPS/POPRC.5/INF/20).

45. Following the introduction of the sub-item Mr. Richard Brown, WHO/IPCS, made a presentation on the framework, which he said had been developed under the auspices of the WHO/IPCS Harmonization Project, the aim of which was to facilitate risk assessment globally through the promotion of common principles and approaches. To date two case studies (set out in the annexes to document UNEP/POPS/POPRC.5/INF/20) had been undertaken using the framework, and further case studies were expected following a review of the draft framework in 2010. He invited the Committee to submit a proposal for the conduct of a case study on the application of the framework in an area relevant to the Committee's work.

46. In the ensuing discussion several members commended the draft framework and emphasized the importance of risk assessment as a developing science that the Committee should follow. One member expressed concern that the framework might not adequately take account of individual variations in susceptibility to exposure among humans caused by such things as genetic factors, age and metabolic rates. The Chair pointed out the validity of using modelling data, since precise information on the human health effects of persistent organic pollutants could only be obtained by conducting experiments on humans, which would clearly be unacceptable. That view was endorsed by one member. Another member asked whether the interaction and resulting modification of chemicals in the atmosphere before exposure were taken into account in the assessment framework. Mr. Brown, responding to the Committee's questions, explained that under the framework, assessments were conducted at several levels of increasing complexity and that variations in human susceptibility and chemical interaction in the atmosphere were accounted for in the upper-level assessments.

47. One member pointed out that the two case studies concerned multiple exposures to chemicals of the same class and suggested that further case studies should feature chemicals from different compound classes. He also suggested that members should submit proposals for two additional case studies and invite the Secretariat to identify an expert and facilitate the development of the studies, which could be reviewed by the Committee at its next meeting and then submitted to WHO/IPCS.

48. Welcoming the suggestion, the Committee agreed that its members should submit ideas for case studies to the co-chairs of the intersessional working group, Mr. Hindrik Bouwman (South Africa) and Mr. Ivan Holoubek (Czech Republic). It was agreed that in developing case studies particular emphasis should be laid on matters of relevance to the Convention such as exposure, hazard and risk, and that the chemicals selected for study should be chemicals for which there were relatively abundant data.

49. The Committee agreed that, when conducting its work, the intersessional working group should take into account the views expressed by members during discussion of the item at the current meeting, including the importance of choosing topics for the case studies on which sufficient data existed; examining the interaction of chemicals that acted through different mechanisms; examining chemicals that worked through similar mechanisms but whose impacts could be additive; examining chemicals that were candidate or potential persistent organic pollutants, rather than chemicals currently covered under the Convention or that did not possess persistent organic pollutant characteristics, in order to assist the Committee in its future work; and using work undertaken by WHO and other groups to avoid duplication of effort.

50. During the discussion the Chair noted that Mr. Bouwman's term would expire prior to the Committee's next meeting and that Ms. Francisca Katagira (United Republic of Tanzania), who would be joining the Committee in May 2010, had volunteered to replace Mr. Bouwman as co-chair of the working group at that time.

51. The Committee adopted decision POPRC-5/3, on intersessional work on toxic interactions. The decision is set out in annex I to the present report.

F. Report on the outcomes of activities undertaken for effective participation of Parties in the work of the Committee

52. The Committee had before it notes by the Secretariat on a summary of activities undertaken for effective participation in the Committee's work (UNEP/POPS/POPRC.5/5), on workshops to promote effective participation of Parties in the Committee's work (UNEP/POPS/POPRC.5/INF/6), on the pocket guide for effective participation (UNEP/POPS/POPRC.5/INF/7), on additional explanatory notes for the Annex E and Annex F information submission forms (UNEP/POPS/POPRC.5/INF/8) and on comments and responses relating to the pocket guide (UNEP/POPS/POPRC.5/INF/12).

53. Mr. Mario Yarto (Mexico), chair of the intersessional working group on activities to facilitate effective participation, reported on the activities undertaken to that end, including workshops held since the Committee's previous meeting, and development of the handbook, which had been formally endorsed by the Conference of the Parties at its fourth meeting, of the pocket guide and of draft explanatory notes to facilitate the submission of the information requested under Annexes E and F.

54. In the ensuing discussion members noted the value of the workshops and the usefulness of the pocket guide, endorsing its publication and translation into the six official languages of the United Nations. One member supported holding additional workshops in Africa and other regions not served by the first round of workshops on improving access to technical and scientific information. Another suggested that the Committee should continue to examine opportunities to increase the effective participation of Parties in the work of the Committee. The Committee noted that the incoming member from Argentina, Ms. Norma Ethel Sbarbati-Nudelman, would replace Mr. Yarto as chair of the intersessional working group.

55. Many members praised the handbook. A few expressed concern that it was only available in three of the six official languages and requested that it should be translated into the other three, thereby facilitating the use of its information in their countries. The Chair pointed out that, while desirable, such a procedure would have significant cost implications, in particular as the handbook would probably be updated frequently to reflect the Committee's experience. A few members offered suggestions on ways of further improving the handbook, including the inclusion of more specific information regarding alternatives and substitutes. One suggested that the handbook should provide more specific guidance on how to deal with the precursors, isomers and metabolites of particular substances.

56. A few members advocated the inclusion of more detailed and indicative examples in the explanatory notes to facilitate the submission of information relevant to the criteria specified under Annexes E and F. In addition, it was suggested that industrialized-country Parties should be encouraged to submit information concerning potential alternatives and substitutes, including information on their existence, cost, suitability, applicability and environmental and human health impacts, and on current or potential national regulations relevant to potential alternatives and substitutes. Such information would make it easier for many Parties, especially those that were developing countries, to evaluate candidate persistent organic pollutants, and should be conducive to their accepting the addition of a particular substance to Annexes A, B or C. Steps should also be taken to ensure that chemicals under consideration as alternatives were not greenhouse gases or ozone-depleting substances and did not possess other characteristics that harmed human health or the environment or might otherwise subject them to international controls in the future. One member requested that the explanatory notes should include requests for information regarding the impact that regulating the candidate pollutant would have on employment and related social and economic issues.

57. In the ensuing discussion, a question was raised on the procedure after a Party had submitted a formal proposal for listing a new chemical in Annexes A, B or C. In response, the representative of the Secretariat confirmed that, as set out in paragraph 2 of article 8 of the Convention, the Secretariat reviewed the proposal to verify that it contained the information specified in Annex D, but did not evaluate the information itself. If the proposal contained the specified information, the Secretariat would forward it to the Committee. If it did not, the Secretariat would send it back and inform the nominating Party accordingly.

58. Another question was raised about the Global Environment Facility (GEF) funding for new chemicals. In response, the representative of GEF said that current discussions on its fifth replenishment included the need to support activities related to the nine persistent organic pollutants added to the Convention by the Conference of the Parties at its fourth meeting. GEF would welcome contributions from the Committee to its discussions on the fifth replenishment and on its subsequent activities relevant to persistent organic pollutants. One member said that, from his observation of the replenishment discussions, it appeared that elements of the current discussions could be conducive to

GEF funding in the future for projects on candidate persistent organic pollutants. For further information on the issue, the Secretariat referred members to a document prepared by the GEF chemicals technical advisory group to inform the replenishment discussions.

59. The Committee established a contact group, chaired by Mr. Yarto, to consider suggestions from members on such matters as the handbook and the explanatory notes for submission of information under Annex E and Annex F and to prepare a draft decision for consideration by the Committee.

60. The Committee adopted decision POPRC-5/4, on support for effective participation in the work of the Committee. The decision is set out in annex I to the present report. The revised additional explanatory notes for the Annex E and Annex F information submission forms are set out in annexes VI and VII to the present report, respectively.

G. Standard workplan for the preparation of draft risk profiles and draft risk management evaluations and for the work programmes on new persistent organic pollutants during the intersessional period between the fifth and sixth meetings of the Committee

1. Workplan

61. Introducing the sub-item, the representative of the Secretariat drew attention to document UNEP/POPS/POPRC.5/8 on the draft workplans for the intersessional period between the Committee's fifth and sixth meetings. The draft workplans proposed timelines for the preparation of draft risk profiles and draft risk management evaluations and for the work related to newly listed persistent organic pollutants.

62. The Committee agreed that the chair of the intersessional working group and the drafter should prepare a table setting out comments not only on the final draft document but also on initial drafts, and on the manner in which they had been handled, and circulate it to Parties and observers during the intersessional period for their comments.

63. The chair of the contact group introduced the revised draft workplans. Following discussion by the Committee and further amendment, the Committee adopted the workplans, which are set out in annex II to the present report.

2. Intersessional work

64. In adopting its decisions at the meeting, and in accordance with paragraph 6 of article 8 of the Convention and paragraph 29 of the annex to decision SC-1/7 of the Conference of the Parties, the Committee established a number of intersessional ad hoc working groups to carry forward the work of the Committee on various issues. The composition of those groups is set out in annex III to the present report.

V. Consideration of draft risk profiles

A. Short-chained chlorinated paraffins

65. In considering the item, the Committee had before it the draft risk profile (UNEP/POPS/POPRC.5/2) and background document (UNEP/POPS/POPRC.5/INF/18) on short-chained chlorinated paraffins prepared by the intersessional working group established by the Committee at its third meeting. The Committee also had before it a document provided by the member from Japan on a study of the bioconcentration characteristics of a chlorinated paraffin with a 13-atom carbon chain (UNEP/POPS/POPRC.5/INF/23).

66. Mr. Mohammad Aslam Yadallee (Mauritius), chair of the intersessional working group, summarized the information set out in the draft risk profile, noting that, although nothing had changed since the Committee's previous meeting, when the draft risk profile had been revised, his presentation would be helpful for new Committee members. Following his presentation, Mr. Salah Soliman, an invited expert, gave a presentation on the toxicity and ecotoxicity of short-chained chlorinated paraffins. He said that the chemicals appeared to have low acute toxicity except at very high doses and that there were broad gaps in the data relating to their effects on human health. Some data were clear, however,

such as those relating to the chemicals' effect on relative liver weight, and many toxicologists were concerned about their potential effects on human and animal health. The member from Japan then spoke about the study on the bioconcentration characteristics of a chlorinated paraffin with a 13-atom carbon chain. The study, he said, showed that the substance had a low bioconcentration factor, on the basis of which he proposed that the draft risk profile should be amended to cover only n-alkanes with carbon chain lengths of 10–12 carbon atoms rather than 10–13 carbon atoms.

67. Following the presentations the Chair recalled that, as reflected in the draft risk profile, there was agreement that short-chained chlorinated paraffins were subject to long-range environmental transport. What remained to be decided, therefore, was whether as a result of such transport they were likely to cause significant adverse effects on human health or the environment that warranted global action. The discussion that followed revealed that those who had opposed the finalization of the risk profile on short-chained chlorinated paraffins at the Committee's fourth meeting had not changed their positions. One member thus said that concentrations of short-chained chlorinated paraffins in environmental compartments were too low to be significant and, the Chair's view notwithstanding, questioned whether they were the subject of long-range environmental transport. Another member, while noting that his country was intensively studying short-chained chlorinated paraffins in the interests of precaution, said that concentrations of the substances appeared to be decreasing rather than increasing and that there was scant evidence of adverse environmental or health effects at current exposure levels.

68. In the light of the apparent lack of consensus and the desire of all Committee members whenever possible to avoid deciding on recommendations by vote, the Chair asked whether the members might not consider a third approach. He proposed that the Committee should suspend its consideration of short-chained chlorinated paraffins until its sixth meeting; in the meantime the Secretariat and interested members and observers would compile information on risk reduction and other risk management measures. Such information, it was hoped, could further inform the Committee's consideration of the draft risk profile and help it to achieve consensus on whether to adopt the profile or set it aside.

69. Several Committee members expressed support for the Chair's proposal, applauding in it the spirit of cooperation and the precautionary approach. One member said that the collection of information on risk reduction would provide countries with various options for reducing the risk of a particular chemical and protecting the environment, including through pollution control, cleaner technology during production, public awareness-raising and safety measures to be employed during transport and storage.

70. Several other members, however, while voicing support for the spirit of the proposal, expressed doubt about whether it was within the terms of the Convention and the rules of procedure; one, voicing concern that the proposed approach might set an unwelcome precedent, said that he could not support it until a clearer justification for it under the terms of the Convention and the rules of procedure was provided. Others also indicated that they would need time to consider it. In response to such concerns one member said that, as it was simply a means of facilitating the Committee's examination of Annex E information, the Chair's proposal was in keeping with the requirements of the Convention.

71. One member asked whether the proposed procedure would result in short-chained chlorinated paraffins being ineligible for listing in the annexes to the Convention and another whether it would entail the sort of activities that were expected for the Annex E phase of the Committee's work. One member, saying that risk reduction measures were manifold, requested clarification on the period of time within which countries would submit their risk reduction measures, expressing concern that the proposed procedure might considerably delay the Committee's consideration of the chemical. The Chair, with whom the UNEP Senior Legal Officer indicated agreement, said that as he envisaged the proposal the Committee would be continuing its consideration of the draft risk profile for short-chained chlorinated paraffins and would thus remain in the Annex E phase of the Committee process until such time as the Committee decided either to adopt the risk profile or to set it aside. He also cautioned that risk profiles left pending at the current meeting would not be completed in time for the chemical in question to be considered for listing in the annexes to the Convention by the Conference of the Parties at its fifth meeting.

72. Pending further clarification on the justification for the proposed third option, the Committee agreed to establish a group of friends of the Chair to consider the type of information that might be collected.

73. Following its discussions the group of friends of the Chair produced a conference room paper setting forth a proposal to seek from Parties and observers information that would assist the Committee

in its further consideration of short-chained chlorinated paraffins, including a rationale and a list of the types of information to be sought. While there was general agreement that information helpful to the Committee would be welcome, a number of members indicated that the nature of some of the information set forth in the proposal, in particular information pertaining to risk reduction and risk management, left them concerned that the Committee might be improperly straying from matters that were appropriate during the Annex E phase of its work. In the light of those concerns the Committee considered a number of suggestions to amend the text of the proposal and adopted it as amended. The Committee thus agreed that it would continue its consideration of the draft risk profile for short-chained chlorinated paraffins at its sixth meeting and that in the meantime it would seek additional information in accordance with the proposal by the friends of the Chair, as amended. That proposal, as adopted, is set out in annex IV to the present report.

74. During its discussion of short-chained chlorinated paraffins, the Committee also considered the paper on the bioconcentration characteristics of a chlorinated paraffin with a 13-atom carbon chain presented by the member from Japan. The Committee agreed to establish a drafting group, chaired by Mr. Yadallee, to consider possible revisions to the draft risk profile to reflect the information set forth in the paper. The drafting group presented a conference room paper setting forth a number of revisions to the draft risk profile. The revised draft risk profile may be found in document UNEP/POPS/POPRC.5/2/Rev.1.

B. Endosulfan

75. Before the Committee turned to the substance of the risk profile one member raised a procedural point, arguing that the Committee did not have the authority to consider the listing of endosulfan.

76. Reiterating the position that he had espoused during discussion of the Committee's operating procedures (see section B of chapter IV, above), he recalled that he had argued at the Committee's fourth meeting that under rule 45 of the rules of procedure the Committee had to proceed by consensus. Notwithstanding his objection, the Committee had voted twice at its fourth meeting, the first time to decide whether it could continue its consideration of the proposal to list endosulfan in the annexes to the Convention and the second to determine whether the proposal satisfied the screening criteria of Annex D to the Convention. The member again expressed the argument that the Committee could only operate by consensus and had asserted that the votes that it had taken at its fourth meeting were invalid. Alluding to paragraphs 106 and 107 of the report of the fourth meeting of the Conference of the Parties, where it was noted that the President had suggested that the representative of the member's country should be consulted when the Secretariat drew up a draft decision on various aspects of the Committee's operations, the member argued that as the Conference had not explicitly agreed to uphold the votes they were of necessity invalid; since the votes were the basis for the Committee's consideration of endosulfan at its fourth and current meetings, he concluded, it could not continue its consideration of the chemical.

77. At the request of the Chair, the UNEP Senior Legal Officer, acting as Legal Advisor to the Conference of the Parties, explained his view of the matter. He recounted how the discussion had unfolded at the fourth meeting of the Conference of the Parties, including the divergence of opinions between the member's country and a number of Parties who argued that paragraph 6 (c) of Article 19 provided the basis for decision-making by the Committee and supported the action taken by it. He said that he had consulted the representative of the member's country, together with Ms. Anne Daniel (Canada), chair of the contact group on non-compliance at that meeting, who was acting as a friend of the President, and had also consulted the representatives of other Parties in an ultimately fruitless effort to achieve consensus. He said that, as a legal matter, since the Conference had not provided a specific interpretation on this matter but had instead taken its decisions on the basis of the Committee's work, the Committee was left in the same position that it had been in prior to the meeting of the Conference of the Parties; thus, in accordance with paragraph 6 (c) of Article 19 of the Convention it could vote on matters related to its recommendations in the event that it failed to achieve consensus. Furthermore, the validity of the votes taken by the Committee at its fourth meeting was unaffected.

78. The Chair expressed the same view, saying that the Committee had been advised by the UNEP Senior Legal Officer that under the Convention it could proceed by vote and that, as the Conference of the Parties had not indicated otherwise, it should still follow the Senior Legal Officer's advice. The Chair then asked whether any other member felt that the Committee's votes at its fourth meeting had been in any way improper or that there was any impediment to the Committee's continued consideration of endosulfan. No one requested the floor in response. The Chair then ruled that the Committee would proceed with its consideration of endosulfan and said that the member's objections would be reflected in

the present report. The objecting member said that he would participate in the consideration of endosulfan under protest, reserving his country's right to raise at the fifth meeting of the Conference of the Parties the question of the validity of the votes taken by the Committee at its fourth meeting and the Committee's continued consideration of endosulfan.

79. The Committee then turned to its consideration of the draft risk profile. In doing so it had before it notes by the Secretariat on the draft risk profile (UNEP/POP/POPRC.5/3) and on comments and responses relating to the draft risk profile (UNEP/POPS/POPRC.5/INF/11), along with a background document providing further explanation of the information reflected in the draft risk profile (UNEP/POPS/POPRC.5/INF/9). Mr. Ricardo Barra (Chile), chair of the intersessional working group on endosulfan, presented the draft risk profile, following which an invited expert, Mr. Martin Scheringer, Swiss Federal Institute of Technology, presented the results of a model-based study on the environmental persistence and long-range transport potential of endosulfan.

80. In the ensuing discussion several members commended the model-based study, saying that the model was a useful tool for predicting the environmental persistence and long-range transport potential of endosulfan. Others suggested that the model should be run again with more recent input data to provide a more up-to-date set of results. Several members sounded a note of caution about the limitations of model-based studies in general; in that context others asserted that, while the model-based study provided useful insight, the risk profile itself contained all the information that was needed for the Committee to make an informed decision about whether to adopt the risk profile for endosulfan.

81. Some members offered suggestions for strengthening the draft risk profile, such as ensuring that all data were supported by citation to reliable reference sources and giving more input on certain metadata such as soil conditions. Explanations of certain terms used and examples would also improve the substance and clarity of the draft. One member said that additional data from a number of papers not reflected in the draft risk profile should be added to reflect, among other things, variability in the data. A member of the intersessional working group that had prepared the profile noted that it already incorporated more than 4,000 pages of documentary evidence; the group's task, he said, was not to consider every possible scenario but to glean the key issues from the available data and to make a decision based on the weight of the evidence.

82. The Committee agreed to establish a contact group, chaired by Mr. Barra, to revise the draft risk profile on endosulfan.

83. During the Committee's resumed consideration of the issue, the Chair said that his priority in facilitating its discussions was to ensure a clear process with scientifically sound results that would lead to consensus among all Committee members: consensus decisions taken in the Committee would facilitate consensus at the Conference of the Parties. The risk profile for endosulfan had been prepared through an intersessional process where interested members and observers had been able to participate and submit information and comments at various stages. The risk profile had been discussed in an informal review open to members and observers before the current meeting. The Committee had been expected to finalize the risk profile using any relevant additional information that had become available since the previous round of comments, which had closed in June 2009. The chemical had been discussed in plenary, contact and drafting group meetings during the current meeting. The drafting group on endosulfan had reached consensus that the criteria for persistence, bioaccumulation and long-range transport had been met. There had, however, been disagreement between some members of the drafting group regarding the validity of the data included in the risk profile. Statements of disagreement, which should usually be reflected in the report of the Committee's work, rather than in a scientific document, had been included in the draft risk profile. While such practice was not generally accepted, he would, exceptionally, accept it in the present case, in the hope that it would facilitate the Committee's adoption of the document by consensus.

84. Following that statement, the member from India wished to have placed on record his opinion of how discussions on endosulfan had proceeded. He said that India had provided the drafting group with a number of scientific documents, with references, which had not been taken on board. In keeping with the spirit of the Convention and its participatory nature, he advocated consensus on the Committee's decisions. Stating that the draft risk profile should be updated, he reiterated that there was a clear data gap in the scientific information for many of the Annex E criteria to confirm significant adverse impacts and that further data on those criteria should be collected for re-examination of the draft risk profile by the Committee at its sixth meeting. A few members, supporting the notion of additional data collection, added that the Committee had succeeded in the listing of nine new persistent organic pollutants in the annexes to the Convention and that there was currently sufficient work for countries to undertake on those substances.

85. The chair of the contact group said that, during its discussions, all information provided had been examined and included where appropriate according to accepted practice by the drafting group. He recalled that the Committee was no longer examining whether endosulfan was a persistent organic pollutant, but finalizing a draft risk profile.

86. Several members said that it was very difficult to achieve full scientific certainty and that the Convention specifically stated, in paragraph 7 (a) of Article 8, that “lack of full scientific data shall not prevent the proposal from proceeding”. The Convention also advocated a precautionary approach and, as endosulfan had been in existence for a long time, copious data were already available and the chemical should move forward to the next stage. Other members cautioned against haste, saying that it was difficult to judge whether endosulfan was a persistent organic pollutant given that some data in the draft risk profile were borderline in nature. A few members said that the draft risk profile was already greatly improved compared to its previous version but more scientific rigour was needed, especially regarding the referencing of data. Others said that postponing a decision for another year would not make any difference to the data available on endosulfan.

87. One member suggested that the Committee should decide to proceed with the chemical and that meanwhile, as the Committee had done previously, additional information should be collected to consolidate the draft risk profile. Another member, recalling that listing a chemical in the Convention triggered financial assistance, said that his country could benefit from that assistance to deal with problems arising from the use of endosulfan.

88. One member recalled that there was no mention in the Convention that information at the Annex E stage could be included at the Annex F stage, an omission which precluded the chemicals from moving forward while additional information was collected. The UNEP Senior Legal Officer said that the Convention did not prohibit the inclusion of additional information even after Annex F work had begun.

89. One member, considering that all efforts to reach consensus had been exhausted, and according to paragraph 6 (c) of Article 19 of the Convention, proposed that the Committee should move to a vote to decide whether endosulfan should proceed to the next phase, in accordance with paragraph 7 of Article 8 of the Convention. According to paragraph 2 of rule 45 of the rules of procedure, the Committee was required to vote on the holding of a vote to decide on a substantive matter. By a simple majority of 20 votes in favour, 4 against and 2 abstentions the Committee agreed to move forward on a vote that, while there was a lack of full scientific certainty in the draft risk profile on endosulfan, the chemical would move forward to the Annex F phase and additional information would continue to be collected to improve the draft risk profile.

90. Accordingly, the Committee moved to a vote. By 22 votes in favour, 1 against and 3 abstentions, the Committee decided to accept the process envisaged in paragraph 7 (a) of article 7, thereby moving endosulfan to the Annex F phase of the Convention.

91. The Committee adopted decision POPRC-5/5, by which it adopted the risk profile for endosulfan. The risk profile may be found in addendum 2 to the present report (UNEP/POPS/POPRC.5/10/Add.2). The Committee also agreed to continue to collect additional information to update the risk profile.

92. The member from India wished it placed on record that he was against voting, preferring consensus, and said that, in his view, all efforts to reach consensus had not been exhausted.

VI. Consideration of chemicals proposed for inclusion in Annexes A, B or C to the Convention: hexabromocyclododecane

93. The Committee had before it a note by the Secretariat containing a proposal submitted by Norway for listing hexabromocyclododecane in Annex A to the Convention (UNEP/POPS/POPRC.5/4), background information on that proposal (UNEP/POPS/POPRC.5/INF/16 and INF/17) and a verification by the Secretariat of whether the proposal contained the information specified in Annex D to the Convention (UNEP/POPS/POPRC.5/INF/15). The representative of Norway introduced the proposal. Following that introduction, an invited expert, Mr. Gregg Tomy, Arctic Aquatic Research Division, Department of Fisheries and Oceans, Canada, made a presentation on the persistence and environmental fate and the predicted environmental concentrations of hexabromocyclododecane.

94. The Chair recalled that informal discussions on hexabromocyclododecane, chaired by Ms. Kyunghie Choi (Republic of Korea), had been held during the Committee’s fourth meeting. The

results of those discussions were appended as annex V to the report of that meeting (UNEP/POPS/POPRC.4/15).

95. In the ensuing discussion the members requested the experts to provide clarification on their presentations, including the appropriateness of using Arrhenius equations for scaling biodegradation in biological systems, the reliability of modelling data and the need for additional field data.

96. Following that initial round of discussions, the Committee agreed to establish a contact group, co-chaired by Mr. Ian Rae (Australia) and Mr. Masaru Kitano (Japan), to consider the information provided and to determine whether it fulfilled the requirements of Annex D.

97. The drafting group concluded that hexabromocyclododecane met the screening criteria listed in Annex D to the Convention and submitted a draft decision for consideration by the Committee.

98. The Committee adopted decision POPRC-5/6 on hexabromocyclododecane. The decision is set out in annex I to the present report.

VII. Other matters

A. List of experts nominated by Parties for the roster of experts and other experts invited by the Committee to participate in the Committee's work

99. In considering the item the Committee had before it the note by the Secretariat on the list of experts (UNEP/POPS/POPRC.5/INF/5). The representative of the Secretariat recalled that the Committee's terms of reference provided for the establishment of a roster of experts who were not members but could be invited to support the Committee's work. Parties could designate experts for inclusion in the roster, noting their areas of expertise or specific substance knowledge. She pointed out that more experts were required and that in a number of cases the contact details of experts on the roster were out of date, which had resulted in the Secretariat being unable to contact the experts whom it wished to invite to participate in the Committee's work. She therefore asked that Parties should continue to nominate experts for the roster and endeavour to provide updated contact information when necessary.

B. Information on national regulatory and assessment schemes for new and existing pesticides or industrial chemicals

100. The Chair recalled paragraphs 3 and 4 of article 3 of the Stockholm Convention on national regulatory and assessment schemes for new and existing pesticides or industrial chemicals. He proposed that the Secretariat should seek information from countries on the functioning of those schemes. Parties could be asked whether those schemes had a system for identifying persistent organic pollutants in accordance with the criteria of paragraph 1 of Annex D to the Convention and requested to submit information on the criteria for identifying persistent organic pollutants, the names of the chemicals identified under the scheme and what measures had been taken to address the production and use of those chemicals. A questionnaire could be drafted to facilitate the collection of that information.

101. The Committee agreed that such information should be sought from Parties and observers and requested the Secretariat to do so. During the ensuing discussion several members outlined the regulatory and assessment measures that were being taken in their countries, including classifying chemicals, identifying new and existing chemicals with persistent organic pollutant characteristics, setting the circumstances for authorizing their entry on to the market and conducting regular reviews of chemicals already on the market.

C. Simultaneous extraordinary meetings of the conferences of the Parties to the Basel, Rotterdam and Stockholm conventions

102. The representative of the Secretariat reported that simultaneous extraordinary meetings of the conferences of the Parties to the Basel, Rotterdam and Stockholm conventions would take place in Bali, Indonesia, from 22 to 24 February 2010, in coordination with the eleventh special session of the UNEP Governing Council/Global Ministerial Environment Forum. He outlined the arrangements for and genesis of the meetings, at which the Parties to the three conventions would discuss ways to enhance cooperation and coordination among the conventions, and drew attention to the website on which all

related information was available (<http://excops.unep.ch>). Committee members posed a number of questions and the Committee took note of the information.

D. Submission of the information specified in paragraph 2 of Annex D to the Convention

103. In connection with the Committee's consideration of the proposal to list hexabromocyclododecane in the annexes to the Convention, the Chair reported having had a conversation with a Committee member in which the member expressed concern that Parties submitting proposals to list chemicals in the annexes to the Convention did not always provide very much information of the kind specified in paragraph 2 of Annex D of the Convention. That paragraph calls for the proposing Party to submit, in relation to a chemical being proposed for listing:

A statement of the reasons for concern including, where possible, a comparison of toxicity or ecotoxicity data with detected or predicted levels of a chemical resulting or anticipated from its long-range environmental transport, and a short statement indicating the need for global control.

104. The Chair observed that while the information required by paragraph 1 of Annex D was essential, that sought by paragraph 2 was of considerable importance. He therefore proposed, and the Committee agreed, that Parties should be encouraged to do their utmost to provide the information requested in paragraph 2 of Annex D.

E. Comparison between the Persistent Organic Pollutants Review Committee and the Task Force on Persistent Organic Pollutants

105. In considering the item, the Committee had before it document UNEP/POPS/POPRC.5/INF/21, setting out a comparison between the Committee and the Task Force on Persistent Organic Pollutants under the Protocol on Persistent Organic Pollutants to the Convention on Long-Range Transboundary Air Pollution of the United Nations Economic Commission for Europe.

106. The representative of the Secretariat introduced the document and its first annex, setting out a detailed factual comparison between the functions of the two bodies. Ms. Tea Aulavuo, representative of the United Nations Economic Commission for Europe Convention on Long-Range Transboundary Air Pollution, introduced the second annex, which contained an informal report on the identification and prioritization of possible elements where cooperation or synergy could be achieved between the Stockholm Convention and the Persistent Organic Pollutants Protocol, without compromising either body's integrity. She explained that the report had been compiled with a view to obviating any duplication of effort.

107. The Committee agreed that the document would be presented for consideration by the Conference of the Parties.

F. Additional information submitted to the Committee

108. The member from Sierra Leone tabled a paper that, he said, was a purely academic, scientific discourse, designed to put into perspective some of the findings and the unanswered questions in the deliberations of the Committee relating to persistence.

VIII. Dates and venue of the sixth meeting of the Committee

109. The Committee agreed to hold its sixth meeting in Geneva from 18 to 22 October 2010. A meeting of the intersessional working groups would be held on Sunday, 17 October 2010, in English only.¹

¹ Subsequent to the adoption of the present report, it was agreed that for logistical reasons the sixth meeting of the Committee would be held from 11 to 15 October 2010 and that the intersessional working groups would meet on 10 October 2010.

IX. Adoption of the report

110. The Committee adopted the present report on the basis of the draft report circulated during the meeting, as orally amended and on the understanding that the Vice-Chair, serving as rapporteur, would be entrusted with its finalization, working in consultation with the Secretariat.

X. Closure of the meeting

111. Following the customary exchange of courtesies, the Chair declared the meeting closed at 4.45 p.m. on Friday, 16 October 2009.

Annex I

Decisions

POPRC-5/1: Work programmes on new persistent organic pollutants

The Persistent Organic Pollutants Review Committee,

Taking note of decisions SC-4/10–SC-4/18, by which the Conference of the Parties amended Annexes A, B and C to the Stockholm Convention on Persistent Organic Pollutants to list nine new chemicals therein,

Mindful of the importance of facilitating the elimination of listed brominated diphenyl ethers and the restriction or elimination of perfluorooctane sulfonate and its salts, perfluorooctane sulfonyl fluoride and other chemicals listed in the annexes to the Convention,

Taking into account that some Parties at the fourth meeting of the Conference of the Parties expressed a need for guidance on how to identify unintentionally released pentachlorobenzene,

1. *Invites* the Secretariat to collect from Parties and observers the information outlined in decision SC-4/19 using a revised version of the questionnaire for submitting information on new persistent organic pollutants, as discussed during the fifth meeting of the Persistent Organic Pollutants Review Committee;

2. *Requests* the Secretariat to prepare a summary of the information collected in accordance with the preceding paragraph for consideration by the Committee at its sixth meeting;

3. *Adopts* the revised outline for developing a technical paper on brominated diphenyl ethers contained in the annex to the present decision;

4. *Requests* the Secretariat to commission the technical paper on brominated diphenyl ethers based upon the revised outline in paragraph 3 above for consideration by the Committee at its sixth meeting;

5. *Recommends* to the Toolkit expert group that it consider reviewing at its next meeting possible implications of listing pentachlorobenzene in Annex C to the Convention with regard to an inventory of sources and an estimation of releases of unintentionally produced persistent organic pollutants;

6. *Takes note* of the activities on lindane proposed as an element of work to be undertaken for other chemicals listed in Annex A or B to the Convention as requested at the fourth meeting of the Conference of the Parties.¹

Annex to decision POPRC-5/1

Terms of reference for the technical paper on commercial pentabromodiphenyl ether and octabromodiphenyl ether, newly listed in the Stockholm Convention

A. Background

1. The Conference of the Parties at its fourth meeting listed in Annex A of the Stockholm Convention² certain congeners contained in commercial pentabromodiphenyl ether³ and octabromodiphenyl ether.⁴ Among other consequences, this listing requires each Party to take

1 UNEP/POPS/POPRC.5/INF/19, annex III.

2 Decisions SC-4/14 on the listing of hexabromodiphenyl ether and heptabromodiphenyl ether and SC-4/18 on the listing of tetrabromodiphenyl ether and pentabromodiphenyl ether.

3 The listing includes tetrabromodiphenyl ether and pentabromodiphenyl ether, meaning 2,2',4,4'-tetrabromodiphenyl ether (BDE-47, CAS No: 40088-47-9) and 2,2',4,4',5-pentabromodiphenyl ether (BDE-99, CAS No: 32534-81-9) and other tetrabromodiphenyl and pentabromodiphenyl ethers present in commercial pentabromodiphenyl ether.

4 The listing includes hexabromodiphenyl ether and heptabromodiphenyl ether, meaning 2,2',4,4',5,5'-hexabromodiphenyl ether (BDE-153, CAS No: 68631-49-2), 2,2',4,4',5,6'-hexabromodiphenyl ether (BDE-154,

appropriate measures to reduce or eliminate releases of persistent organic pollutants (POPs) from stockpiles and wastes.⁵

2. Article 6 of the Stockholm Convention requires that wastes containing POPs be managed in a manner protective of human health and the environment. The decisions to list these PBDEs,⁶ however, include specific exemptions allowing for recycling and the use in articles of recycled materials containing these substances.

3. This exemption raises a concern that relates to the environmental and health risks associated with recycling these articles, and also to the long-term desirability of these exemptions.

4. The Persistent Organic Pollutants Review Committee was requested to make recommendations to the Conference of the Parties to address the above concerns. These recommendations will be based on information gathered from Parties and observers, and also on a technical report. The terms of reference for this technical report are outlined below.

B. Objectives of the technical paper

5. The objectives of the technical paper are as follows:

(a) To assess the possible health and environmental impacts of recycling articles containing brominated diphenyl ethers;

(b) To review the long-term environmental desirability of the recycling of articles containing brominated diphenyl ethers;

(c) To identify the best available techniques and best environmental practices for the recycling of articles containing brominated diphenyl ethers.

6. The study should be relevant to developed and developing countries and countries with economies in transition.

Exemptions for the recycling of articles (part IV of Annex A, adopted in decisions SC-4/14 and SC-4/18)

In paragraph 3 of decision SC-4/14, on hexabromodiphenyl ether and heptabromodiphenyl ether, and paragraph 3 of decision SC-4/18, on tetrabromodiphenyl ether and pentabromodiphenyl ether, the Parties adopted a new part IV in Annex A. Below is the text of the new part IV pertaining to tetrabromodiphenyl ether and pentabromodiphenyl ether, which is substantially identical to the text pertaining to hexabromodiphenyl ether and heptabromodiphenyl ether:

Part IV

Tetrabromodiphenyl ether and pentabromodiphenyl ether

1. A Party may allow recycling of articles that contain or may contain tetrabromodiphenyl ether and pentabromodiphenyl ether, and the use and final disposal of articles manufactured from recycled materials that contain or may contain tetrabromodiphenyl ether and pentabromodiphenyl ether, provided that:

(a) The recycling and final disposal is carried out in an environmentally sound manner and does not lead to recovery of tetrabromodiphenyl ether and pentabromodiphenyl ether for the purpose of their reuse;

(b) The Party does not allow this exemption to lead to the export of articles containing levels/concentrations of tetrabromodiphenyl ether and pentabromodiphenyl ether that exceed those permitted to be sold within the territory of the Party; and

(c) The Party has notified the Secretariat of its intention to make use of this exemption.

CAS No: 207122-15-4), 2,2',3,3',4,5',6-heptabromodiphenyl ether (BDE-175, CAS No: 446255-22-7), 2,2',3,4,4',5',6-heptabromodiphenyl ether (BDE-183, CAS No: 207122-16-5) and other hexabromodiphenyl and heptabromodiphenyl ethers present in commercial octabromodiphenyl ether.

5 Article 6 of the Stockholm Convention.

6 For the purpose of the technical report, "PBDE" refers to certain congeners contained in commercial octabromodiphenyl and pentabromodiphenyl ethers as listed in decisions SC-4/14 and SC-4/18.

2. At its sixth ordinary meeting and at every second ordinary meeting thereafter the Conference of the Parties shall evaluate the progress that Parties made towards achieving their ultimate objective of elimination of tetrabromodiphenyl ether and pentabromodiphenyl ether contained in articles and review the continued need for this specific exemption. This specific exemption shall in any case expire at the latest in 2030.

C. Information to be collected from Parties and observers

7. The information that the Conference of the Parties requested the Secretariat to collect from Parties and observers⁷ on brominated diphenyl ethers found in articles is as follows:

- (a) Types and quantities of articles containing brominated diphenyl ethers, including concentrations of those substances in the articles, including recycled articles;
- (b) Types of articles recycled, the extent of recycling, the types of articles produced from recycling, the options for the environmental management of recycling operations and releases or potential releases resulting from recycling operations;
- (c) Cost-effectiveness of different management options;
- (d) Options for environmentally sound disposal;
- (e) Methods for identifying the presence and levels of brominated diphenyl ethers in articles;
- (f) Identification of remediation methods for contaminated sites as listed in subparagraph 1 (e) of Article 6 of the Convention;
- (g) Any other related information.

D. Outline of the technical paper

8. The paper shall have a maximum length of 20 pages and comprise the following sections:

1. Executive summary

Two or three pages presenting the salient points of the report, including the most important findings and conclusions. This shall be written in clear language so that it is intelligible to readers who are not experts in the field (including policymakers).

2. Background and purpose

The purpose of this section is:

- (a) To summarize the decisions by the Conference of the Parties and the Persistent Organic Pollutants Review Committee and the rationale for the report;
- (b) To describe the issues that are being considered in the report and the overall objective; this should include descriptions of the terms “article”, “recovery”, “recycling”, “reclamation”, “direct reuse” and “other disposal operations”, with illustrative examples;
- (c) To indicate the structure of the report and the content of the various chapters;
- (d) To provide details concerning the methodology used to obtain data and to describe how this is presented in the report.

3. Assessment of the possible health and environmental impacts of recycling articles containing brominated diphenyl ethers

This section summarizes and assesses the information collected from Parties and observers and from scientific and grey literature with the goal of describing the health and environmental impacts of recycling activities, including transport and storage, and of using recycled articles containing brominated diphenyl ethers. The study shall include

⁷ Pursuant to paragraphs 1–4 of the annex to decision SC-4/19.

an assessment of possible impacts on the environment and health impacts on workers, local populations, vulnerable populations and consumers.

This section shall:

- (a) Describe the more common and important operations to recycle various materials and products (e.g., shredding and remoulding of plastics, fabrication of re-bonded carpet underlay from scrap polyurethane foam, etc.);
- (b) For the operations outlined above, review and summarize information on:
 - (i) Possible emissions that may occur through existing processing and recycling operations. This review should cover both high- and low-technology operations;
 - (ii) Information on relevant monitoring and exposure data such as occupational exposure and levels of pollutants in local environments and biota;
 - (iii) The extent of unintentionally produced organic pollutants (e.g., brominated dioxins and furans);
- (c) Examine release and emission data on PBDEs and other unintentionally produced organic pollutants (e.g., brominated dioxins and furans) from various disposal operations, such as incineration, landfilling and open burning. The examination shall cover both high- and low-technology operations;
- (d) Review and summarize information on the presence of PBDEs in articles produced from recycled materials and health risks from use of such articles;
- (e) Rank various exposure scenarios from recycling and disposal operations and from the use of recycled articles containing PBDEs according to estimated risks to health and the environment;
- (f) Identify and compile knowledge gaps.

4. Identification of the best available techniques and best environmental practices for the recycling of articles containing brominated diphenyl ethers

Based on the analysis in section 3, this section shall identify and discuss best available techniques and best environmental practices associated with recycling articles containing PBDEs.

This section will:

- (a) Include information on current methods to identify articles or recycled articles containing PBDEs;
- (b) Describe how to separate them from other components of the waste stream and how to remove PBDEs from articles containing them;
- (c) Cover potential releases and unintentional by-products from recycling operations;
- (d) Identify whether or not these technologies are technically applicable for articles and materials that contain PBDEs;
- (e) Compare available technologies and determine which of these are the best based on technical, economic, geographical and environmental concerns;
- (f) Identify and compile knowledge gaps;
- (g) Identify the capacity of developing countries and countries with economies in transition to implement best available techniques and best environmental practices;
- (h) Reflect on regulatory approaches and strategies used to support the implementation of best available techniques and best environmental practices.

5. Review of the long-term environmental desirability of the recycling of articles containing brominated diphenyl ethers

This section of the paper shall discuss the environmental desirability of recycling articles containing PBDEs in the context of sustainable development and the environmental and health impacts identified in the previous sections. It shall take into account the life cycle and the durability of new articles made from recycled material containing PBDEs. This section shall include:

- (a) A prediction of the volumes and types of articles containing PBDEs and an anticipation of levels of PBDEs in articles in the waste stream and in new articles produced from recycled materials, with a view to considering the fate of PBDEs in waste materials and new products;
- (b) Information on the potential trade volume of recycled articles containing PBDEs, including from developed to developing countries;
- (c) An analysis of the respective costs and benefits of removing and maintaining the exemption on recycling articles containing PBDEs;
- (d) Consideration of the particular needs of developing countries and countries with economies in transition (both in the event that the exemption on recycling articles containing PBDEs is removed and in the event that it is maintained);
- (e) Recommendations on the long-term environmental desirability of the recycling of articles containing PBDEs;
- (f) Recommendations for the elimination of PBDEs from the waste stream.

E. Requirements for the consultant and information sources

1. Requirements

9. The consultant shall develop the technical paper under the guidance of the Secretariat. In writing the technical paper, the consultant shall review and assess information from scientific and grey literature. The consultant shall also use the information collected from the Parties and observers on brominated diphenyl ethers in accordance with decision SC-4/19.

10. The consultant shall be required to produce the draft in accordance with the workplan set out in annex II to the report of the Persistent Organic Pollutants Review Committee on the work of its fifth meeting (UNEP/POPS/POPRC.5/10). The technical paper will be reviewed by the Committee at its sixth meeting. The consultant shall revise the draft based on the Committee's review and finalize it for the Conference of the Parties at its fifth meeting.

2. Qualifications and special skills or knowledge

11. The consultant shall have extensive experience and expertise in chemicals assessment and management and in recycling and waste management practices at the national and international levels, and shall also be familiar with the waste management of brominated diphenyl ethers and their sound management. The consultant should have some background knowledge on relevant multilateral environmental agreements.

POPRC-5/2: Substitution and alternatives

The Persistent Organic Pollutants Review Committee,

1. *Requests* the intersessional working group to continue to develop guidance on perfluorooctane sulfonate alternatives based on the revised annotated outline set out in annex V to the report of the Persistent Organic Pollutants Review Committee on the work of its fifth meeting;¹
2. *Endorses* the revised general guidance on considerations related to alternatives and substitutes for persistent organic pollutants and candidate persistent organic pollutants set out in

1 UNEP/POPS/POPRC.5/10.

addendum 1 to the report of the Persistent Organic Pollutants Review Committee on the work of its fifth meeting² and invites Parties and observers to make use of that guidance document;

3. *Endorses* the guidance on feasible flame-retardant alternatives to commercial pentabromodiphenyl ether³ and invites Parties and observers to make use of that guidance document;

4. *Agrees* to the following workplan for the intersessional working group for the preparation of guidance on perfluorooctane sulfonate alternatives:

Preparation of a first draft of the perfluorooctane sulfonate guidance document	Consultant	October 2009–February 2010
Distribution of the first draft to the intersessional working group for comments	Chair	February 2010
Review of the first draft	Intersessional working group	February–March 2010
Preparation of a second draft based on comments submitted by the intersessional working group	Consultant	March–April 2010
Distribution of the second draft to Parties and observers for comments	Secretariat	April 2010
Review of the second draft	Parties and observers	April–May 2010
Preparation of the final draft based on comments submitted by Parties and observers	Consultant	May–June 2010
Submission of the final draft to Conference Services	Secretariat	July 2010

POPRC-5/3: Toxic interactions

The Persistent Organic Pollutants Review Committee,

Noting that, in its evaluation of whether a chemical is likely, as a result of its long-range environmental transport, to lead to significant adverse human health and/or environmental effects such that global action is warranted, the Persistent Organic Pollutants Review Committee may include in an Annex E risk profile a hazard assessment for the endpoint or endpoints of concern, including a consideration of toxicological interactions involving multiple chemicals,

Recognizing the advantage of the synergy offered by collaboration between the Persistent Organic Pollutants Review Committee and the World Health Organization International Programme on Chemical Safety on assessing the risk posed by exposure to multiple chemicals via all relevant routes and pathways,

Wishing to stay abreast of scientific developments in the field of toxicological interactions,

2 UNEP/POPS/POPRC.5/10/Add.1.

3 UNEP/POPS/COP.4/INF/24.

1. *Invites* Committee members and observers to provide comments on the draft framework for risk assessment of combined exposures to multiple chemicals¹ to the Secretariat by 31 October 2009;
2. *Requests* the Secretariat to transmit the comments received pursuant to the previous paragraph to the World Health Organization International Programme on Chemical Safety;
3. *Invites* the Secretariat to investigate the strengthening of the linkage between the Committee and the World Health Organization International Programme on Chemical Safety and to report to the Committee at its sixth meeting on its efforts in this area;
4. *Requests* the intersessional working group on toxicological interactions, with support from the Secretariat, to undertake the work described in the annex to the present decision;
5. *Requests* the co-chairs of the intersessional working group and the Secretariat to identify and invite experts to develop the two case studies;
6. *Requests* the Secretariat to identify resources needed to undertake the activities contemplated by the present decision.

Annex to decision POPRC-5/3

Proposal for further work on toxicological interactions

1. The intersessional working group on toxicological interactions will develop two case studies according to the World Health Organization International Programme on Chemical Safety (WHO/IPCS) framework for assessing combined exposures to multiple chemicals.
2. The intersessional working group will monitor and assess progress in the development of the case studies.
3. A report on progress in the conduct of the case studies will be presented at the sixth meeting of the Persistent Organic Pollutants Review Committee.
4. The following topics have been suggested:
 - (a) Short-chained, medium-chained and long-chained chlorinated paraffins;
 - (b) Brominated flame retardants and DDT in human breast milk;
 - (c) Trace amounts of industrial persistent organic pollutants (POPs), for example, brominated flame retardants;
 - (d) High-volume agricultural POPs, DDT and hexachlorocyclohexane in human tissues.
5. The working group will make a final selection of the case studies bearing in mind the need for sufficient data. The Research Centre for Environmental Chemistry and Ecotoxicology (RECETOX) will prepare one ecotoxicologically oriented case study.
6. The experts developing the case studies will be encouraged to attend the planned WHO/IPCS framework workshop in 2010, resources and time permitting. The aim of the workshop is to develop case studies.
7. The case studies will be presented at a joint RECETOX and Stockholm Convention scientific workshop on advances and trends in environmental chemistry, ecotoxicology and risk assessment in respect of POPs, which will be organized by RECETOX, the Stockholm Convention and the European Chemistry Congress in late May or early June 2011 in Brno, Czech Republic.

1 Available at <http://www.who.int/ipcs>.

POPRC-5/4: Support for effective participation of the Parties in the work of the Committee

The Persistent Organic Pollutants Review Committee,

Recalling that, at its fourth meeting, the Conference of the Parties of the Stockholm Convention on Persistent Organic Pollutants requested the Secretariat to continue work to support and strengthen the capacity of Parties which are developing countries or countries with economies in transition to participate fully in the Committee's work,

Recalling also that, at its fourth meeting, the Committee took note of the request to extend the mandate of the intersessional working group, chaired by Mr. Mario Yarto (Mexico), and *noting* that the following activities have been implemented:

- (a) Two regional workshops, one in the Middle East and one in Central and Eastern Europe;
- (b) Two national workshops, one in Cambodia and one in the Philippines, organized with the technical assistance of the Chemicals Branch of the United Nations Environment Programme Division of Technology, Industry and Economics, to improve access to technical and scientific information;
- (c) Development of the draft pocket guide and explanatory notes for Annexes E and F;
- (d) Translation of the handbook into French and Spanish,

Noting that during the fifth meeting of the Committee members and observers provided positive feedback on the activities and their contribution towards enabling developing countries and countries with economies in transition to participate fully in the process of reviewing chemicals being proposed for listing in Annexes A, B and/or C to the Convention; and that members and observers requested the translation of the handbook into all six official languages of the United Nations, together with the continuation of activities on effective participation,

1. *Endorses* the pocket guide as amended and *invites* Parties and observers to consider using it;
2. *Also endorses* the explanatory notes to the forms for the submission of information specified in Annexes E and F contained respectively in annexes VI and VII to the report of the Persistent Organic Pollutants Review Committee on the work of its fifth meeting¹ and *requests* the Secretariat to use them;
3. *Invites* the Secretariat to continue its activities related to providing support for effective participation in the Committee's work, subject to the availability of resources, including:
 - (a) Translation of the pocket guide and the handbook into the six official languages of the United Nations;
 - (b) Collaboration with existing initiatives for strengthening national structures for the collection of information;
 - (c) Additional regional and national workshops to improve access to technical and scientific information;
4. *Invites* Parties and observers in a position to do so to contribute to the Committee's work and to provide financial support for the implementation of activities in support of effective participation by Parties in that work;
5. *Requests* the intersessional working group to update the handbook on effective participation on the basis of comments received according to the workplan set out below.

1 UNEP/POPS/POPRC.5/10.

Revise the draft handbook based on comments received by the Persistent Organic Pollutants Review Committee at its fifth meeting	April 2010
Distribute the revised version to the intersessional working group for final comments	May 2010
Edit final draft	June 2010
Distribute to Committee members	August 2010
Present to the Persistent Organic Pollutants Review Committee at its sixth meeting	October 2010

POPRC-5/5: Endosulfan

The Persistent Organic Pollutants Review Committee,

Having completed the risk profile for endosulfan in accordance with paragraph 6 of Article 8 of the Convention,

1. *Adopts* the risk profile for endosulfan contained in addendum 2 to the report of the Persistent Organic Pollutants Review Committee on the work of its fifth meeting;¹
2. *Invites* the ad hoc working group on endosulfan that prepared the risk profile to explore any further information on adverse human health effects and, if appropriate, to revise the risk profile for consideration by the Committee at its sixth meeting;
3. *Considers* that, although the information on adverse human health effects is not fully conclusive, there is evidence suggesting the relevance of some effects on humans;
4. *Decides*, in accordance with paragraph 7 (a) of article 8 of the Convention, and taking into account that a lack of full scientific certainty should not prevent a proposal from proceeding, that endosulfan is likely, as a result of its long-range environmental transport, to lead to significant adverse human health and environmental effects such that global action is warranted;
5. *Also decides*, in accordance with paragraph 7 (a) of article 8 of the Convention and paragraph 29 of the annex to decision SC-1/7 of the Conference of the Parties of the Stockholm Convention, to establish an ad hoc working group to prepare a risk management evaluation that includes an analysis of possible control measures for endosulfan in accordance with Annex F to the Convention;
6. *Invites*, in accordance with paragraph 7 (a) of article 8 of the Convention, Parties and observers to submit to the Secretariat the information specified in Annex F for endosulfan before 8 January 2010.

POPRC-5/6: Hexabromocyclododecane

The Persistent Organic Pollutants Review Committee,

Having examined the proposal by Norway, which is a Party to the Stockholm Convention on Persistent Organic Pollutants, to list hexabromocyclododecane (HBCD) (Commercial HBCD, CAS No.: 25637-99-4; α -HBCD, CAS No.: 25637-99-4134237-50-6; β -HBCD, CAS No.: 134237-51-7; χ -HBCD, CAS No: 134237-52-8) in Annex A to the Convention and having applied the screening criteria specified in Annex D to the Convention,

1. *Decides*, in accordance with paragraph 4 (a) of article 8 of the Convention, that it is satisfied that the screening criteria have been fulfilled for hexabromocyclododecane, as set out in the evaluation contained in the annex to the present decision;

1 UNEP/POPS/POPRC.5/10/Add.2.

2. *Also decides*, in accordance with paragraph 6 of article 8 of the Convention and paragraph 29 of the annex to decision SC-1/7 of the Conference of the Parties of the Stockholm Convention, to establish an ad hoc working group to review the proposal further and to prepare a draft risk profile in accordance with Annex E to the Convention;

3. *Invites*, in accordance with paragraph 4 (a) of article 8 of the Convention, Parties and observers to submit to the Secretariat the information specified in Annex E before 8 January 2010.

Annex to decision POPRC-5/6

Evaluation of hexabromocyclododecane (HBCD) against the criteria of Annex D

A. Background

1. The primary source of information for the preparation of the present evaluation was the proposal submitted by Norway, contained in document UNEP/POPS/POPRC.5/4.

2. Additional sources of scientific information included critical reviews prepared by recognized authorities (refs. 1 and 2) and peer-reviewed scientific papers.

B. Evaluation

3. The proposal was evaluated in the light of the requirements of Annex D, regarding the identification of the chemical (paragraph 1 (a)) and the screening criteria (paragraphs 1 (b)–(e)):

(a) **Chemical identity:**

(i) Adequate information was provided in the proposal and supporting documents;

(ii) The chemical structure was provided;

The chemical identity of HBCD is clearly established;

(b) **Persistence:**

(i) The half-life of HBCD in water is more than 60 days. No biodegradation of HBCD was observed within 28 days in test 301D of the OECD Guidelines for Testing of Chemicals (closed-bottle test). For biodegradation in sediments and soil the half-life test results do not meet the half-life screening criteria;

(ii) Concentrations measured in sediment core samples provide indications that HBCD is degraded in sediment more slowly than predicted by simulation tests. The demonstrated trophic transfer in food webs and the abundance of HBCD in abiotic samples of remote areas provide evidence of persistence;

There is sufficient evidence that HBCD meets the persistence criterion;

(c) **Bioaccumulation:**

(i) Log K_{ow} is greater than 5 (log K_{ow} estimated to 5.62). The reported bioconcentration factor for the fathead minnow is 18,100;

(ii) and (iii) A trophic magnification factor is estimated for the Lake Ontario food web at 6.3. The measured field data from various surveys provide additional evidence that HBCD is bioaccumulated in freshwater and marine environments and that the substance is biomagnified in the food chain. α -HBCD appears to be more persistent and to biomagnify more than β -HBCD and γ -HBCD;

There is sufficient evidence that HBCD meets the bioaccumulation criterion.

(d) **Potential for long-range environmental transport:**

(i) and (ii) Monitoring data show that the substance is found in samples from remote areas, e.g., in air and in fish, mammals and birds in the North Atlantic and Arctic regions. An increasing temporal trend of HBCD concentrations has recently been reported in a range of Arctic biota;

(iii) HBCD (technical mixture) has a low vapour pressure (6.3×10^{-5} Pa) and modelling data show an estimated atmospheric half-life of two to three days. Some model estimates also indicate that travel distances for HBCD in air are

comparable to those for other persistent organic pollutants. Half-distance calculations based on skipjack tuna monitoring seem to suggest a high long-range environmental transport potential;

There is sufficient evidence that HBCD meets the criterion relating to potential for long-range environmental transport;

(e) **Adverse effects:**

- (i) No data are provided on adverse effects of HBCD in humans or the environment;
- (ii) There is evidence of high toxicity in aquatic species with a 72h EC50 of 52 µg/l for *Skeletonema costatum* and a no observed effects concentration (NOEC) of 3.1 µg/l for *Daphnia magna*. In mammals, effects are observed in liver and thyroid gland and a no observed adverse effect level (NOAEL) of 22.9 mg/kg bw/day for liver weight increase in rats was found in a repeated dose study.

There is sufficient evidence that HBCD meets the criterion relating to adverse effects.

C. Conclusion

4. The Committee concluded that hexabromocyclododecane (HBCD) meets the screening criteria specified in Annex D.

References

1. *Risk Assessment Hexabromocyclododecane, CAS-No.:25637-99-4, EINECS-No.:247-148-4, Final draft October 2007.* European Commission. 2007.
2. *Hexabromocyclododecane as a possible POP, TemaNord 2008:520, 91 pp.,* Nordic Council of Ministers, Copenhagen 2008.

Annex II

Workplans for the period between the Committee's fifth and sixth meetings (2009–2010)

A. Workplan for the preparation of draft risk profiles

Scheduled date	Interval from previous activity (weeks)	Activity (for each chemical under review)
16 October 2009	-	The Committee establishes an ad hoc working group.
23 October 2009	<1	The Secretariat requests Parties and observers to provide information specified in Annex E .
8 January 2010	11	Parties and observers submit Annex E information to the Secretariat. <ul style="list-style-type: none"> The Secretariat sends a reminder to Parties and observers regarding the request for information: 12 December.
2 March 2010	7	The working group chair and the drafter complete the first draft . <ul style="list-style-type: none"> The drafter prepares the first draft and sends it to the chair: 27 February. The chair sends the first draft to the working group: 2 March.
16 March 2010	2	The working group members provide comments on the first draft to the chair and drafter.
6 April 2010	3	The working group chair and the drafter complete review of initial comments from the working group and complete the second draft and a compilation of responses to the comments . <ul style="list-style-type: none"> The drafter prepares the second draft and sends it to the chair: 4 April. The chair sends the second draft to the working group: 6 April.
9 April 2010	<1	The Secretariat distributes the second draft to Parties and observers for comment.
25 May 2010	7	Parties and observers submit their comments to the Secretariat.
8 June 2010	2	The working group chair and the drafter review the Party and observer comments and complete the revised (third) draft and a compilation of responses to the comments . <ul style="list-style-type: none"> The drafter prepares the third draft and sends it to the chair: 5 June. The chair sends the third draft to the working group: 8 June.
22 June 2010	2	The working group members provide final comments on the third draft to the chair and the drafter.

Scheduled date	Interval from previous activity (weeks)	Activity (for each chemical under review)
6 July 2010	2	<p>The working group chair and the drafter review the final comments and complete the final draft and a compilation of responses to the comments.</p> <ul style="list-style-type: none"> • The drafter prepares the final draft and sends it to the chair: 3 July. • The chair sends the final draft to the Secretariat: 6 July.
9 July 2010	<1	The Secretariat sends the final draft to the Division of Conference Services for editing and translation.
27 August 2010	7	The Division of Conference Services completes editing and translation .
30 August 2010	<1	The Secretariat distributes the final draft risk profiles in the six official languages of the United Nations.
10–15 October 2010	6	Sixth meeting of the Committee.

B. Workplan for the preparation of draft risk management evaluations

Scheduled date	Interval from previous activity (weeks)	Activity (for each chemical under review)
16 October 2009	-	The Committee establishes an ad hoc working group.
23 October 2009	<1	The Secretariat requests Parties and observers to provide information specified in Annex F and any additional information specified in Annex E.
8 January 2010	11	Parties and observers submit Annex F information to the Secretariat. <ul style="list-style-type: none"> The Secretariat sends a reminder to Parties and observers regarding the request for information: 12 December.
2 March 2010	7	The working group chair and the drafter complete the first draft . <ul style="list-style-type: none"> The drafter prepares the first draft and sends it to the chair: 27 Feb. The chair sends the first draft to the working group: 2 March.
16 March 2010	2	The working group members provide comments on the first draft to the chair and drafter.
6 April 2010	3	The working group chair and the drafter complete review of initial comments from the working group and complete the second draft and a compilation of responses to the comments . <ul style="list-style-type: none"> The drafter prepares the second draft and sends it to the chair: 4 April. The chair sends the second draft to the working group: 6 April.
9 April 2010	<1	The Secretariat distributes the second draft to Parties and observers for comment.
25 May 2010	7	Parties and observers submit their comments to the Secretariat.
8 June 2010	2	The working group chair and the drafter review the Party and observer comments and complete the revised (third) draft and a compilation of responses to the comments . <ul style="list-style-type: none"> The drafter prepares the third draft and sends it to the chair: 5 June. The chair sends the third draft to the working group: 8 June.
22 June 2010	2	The working group members provide final comments on the third draft to the chair and drafter.
6 July 2010	2	The working group chair and the drafter review the final comments and complete the final draft and a compilation of responses to the comments . <ul style="list-style-type: none"> The drafter prepares the final draft and sends it to the chair: 3 July. The chair sends the final draft to the Secretariat: 6 July.
9 July 2010	<1	The Secretariat sends the final draft to the Division of Conference Services for editing and translation.
27 August 2010	7	The Division of Conference Services completes editing and translation .
30 August 2010	1	The Secretariat distributes the final draft risk management evaluations in the six official languages of the United Nations.
10–15 October 2010	6	Sixth meeting of the Committee.

C. Workplan for the work related to newly listed persistent organic pollutants

Scheduled date	Interval from previous activity (weeks)	Activity (for each chemical under review)
16 October 2009	-	The Committee establishes an ad hoc working group.
20 November 2009	5	The Secretariat sends an invitation to Parties and observers to submit information pursuant to decision SC-4/19 and commissions a technical paper based on the terms of reference adopted by the Committee at its fifth meeting.
15 March 2010	-	The consultant develops an advance draft technical paper and the Secretariat sends it to the working group for initial review.
5 April 2010	3	The working group provides comments on the advance draft technical paper.
10 April 2010	20	Interim deadline for Parties and observers to submit requested information to the Secretariat.
5 June 2010	8	The consultant develops a draft technical paper . The Secretariat sends it to the working group for review and holds a teleconference before 25 June 2010.
25 June 2010	3	The working group provides comments on the draft technical paper.
1 July 2010	-	Final deadline for Parties and observers to submit requested information to the Secretariat.
16 July 2010	3	The consultant finalizes the draft technical paper.
23 July 2010	1	The Secretariat compiles and summarizes submissions by Parties and observers and then sends the compilation of the submissions and the final draft of the technical paper to the Division of Conference Services for editing and translation.
27 August 2010	6	The Division of Conference Services completes editing and translation.
30 August 2010	1	The Secretariat distributes the compilation of submissions in English only and the draft technical paper in the six official languages of the United Nations.
10–15 October 2010	6	The Committee at its sixth meeting, pursuant to decision SC-4/19, reviews the collected information and the technical paper, assesses information gaps and makes recommendations to the Conference of the Parties.

Annex III

Composition of intersessional working groups (2009–2010)

Working group on endosulfan

Committee members

Mr. Désiré Ouédraogo (Burkina Faso)
 Mr. Choviran Ken (Cambodia)
 Mr. Robert Chénier (Canada)
 Mr. Ricardo Orlando Barra Ríos
 (Chile) (Chair)
 Mr. Jianxin Hu (China)
 Mr. Sylvain Bintein (France) (Drafter)
 Mr. Reiner Arndt (Germany)
 Ms. Mirtha Ferrary (Honduras)

Mr. Mohammed Khashashneh (Jordan)
 Mr. Mohammad Aslam Yadallee (Mauritius)
 Mr. Mario Yarto (Mexico)
 Ms. Farah Bouqartacha (Morocco)
 Ms. Kyunghee Choi (Republic of Korea)
 Ms. Maria Delvin (Sweden)
 Mr. Fouad Elok (Syrian Arab Republic)
 Mr. Komla Sanda (Togo)

Observers

Mr. Gary Fan (Australia)
 Mr. Greg Plummer (Australia)
 Ms. Wenya Han (China)
 Ms. Floria Roa-Gutierrez (Costa Rica)
 Ms. Rikke Donchil Holmberg
 (Denmark)
 Mr. José V. Tarazona (European
 Community)
 Mr. Timo Seppälä (Finland)
 Mr. Shuji Tamura (Japan)
 Mr. Takuya Wada (Japan)
 Mr. Martien Janssen (Netherlands)
 Ms. Stella Uchenna Mojekwu (Nigeria)
 Mr. Noor-Ul-Hadi (Pakistan)
 Mr. Niklas Johansson (Sweden)
 Ms. Svitlana Sukhorebra (Ukraine)
 Ms. Francisca Katagira (United
 Republic of Tanzania)

Mr. Chris Blunck (United States of America)
 Mr. Keith Sappington (United States of
 America)
 Mr. Samuel F. Banda (Zambia)
 Ms. Pamela Miller (Alaska Community Action
 on Toxics)
 Mr. Mark Trewitt (CropLife International)
 Mr. Bert Volger (CropLife International)
 Mr. Joseph DiGangi (Environmental Health
 Fund)
 Ms. Mariann Lloyd-Smith (International POPs
 Elimination Network)
 Ms. Meriel Watts (Pesticide Action Network
 Asia and the Pacific)
 Mr. Karl Tupper (Pesticide Action Network
 North America)

Working group on hexabromocyclododecane

Committee members

Mr. Ian Rae (Australia) (Chair until
 May 2010)
 Ms. Camila Arruda Boechat (Brazil)
 Mr. Robert Chénier (Canada)
 Mr. Ricardo Orlando Barra Ríos
 (Chile)
 Mr. Jianxin Hu (China)
 Mr. Sylvain Bintein (France)

Mr. Reiner Arndt (Germany)
 Mr. Masaru Kitano (Japan)
 Mr. Mohammed Khashashneh (Jordan)
 Ms. Kyunghee Choi (Republic of Korea)
 Mr. Hindrik Bouwman (South Africa)
 Ms. Maria Delvin (Sweden) (Drafter until May
 2010)
 Ms. Bettina Hitzfeld (Switzerland)

Observers

Mr. Gary Fan (Australia)
 Mr. Greg Plummer (Australia)
 Mr. Gregg T. Tomy (Canada)
 Ms. Wenya Han (China)
 Ms. Rikke Donchil Holmberg
 (Denmark)
 Mr. José V. Tarazona (European
 Community)
 Mr. Timo Seppälä (Finland) (Drafter
 from May 2010)
 Mr. Shuji Tamura (Japan)
 Mr. Takuya Wada (Japan)
 Mr. Martien Janssen (Netherlands)
 Mr. Peter Dawson (New Zealand)
 (Chair from May 2010)
 Mr. Georg Becher (Norway)

Ms. Liselott Säll (Norway)
 Mr. Niklas Johansson (Sweden)
 Mr. Chris Blunck (United States of America)
 Ms. Tala Henry (United States of America)
 Mr. Samuel F. Banda (Zambia)
 Ms. Pamela Miller (Alaska Community Action
 on Toxics)
 Mr. Joseph DiGangi (Environmental Health
 Fund)
 Mr. Allan Astrup Jensen (FORCE Technology)
 Ms. Smadar Admon (HBCD Industry Working
 Group)
 Ms. Mariann Lloyd-Smith (International POPs
 Elimination Network)

Working group on substitutes and alternatives**Committee members**

Mr. Robert Chénier (Canada)
 Mr. Jianxin Hu (China)
 Mr. Sylvain Bintein (France)
 Mr. Reiner Arndt (Germany)
 Mr. John Alexis Pwamang (Ghana)
 Mr. Mohammed Khashashneh (Jordan)
 Mr. Mohammad Aslam Yadallee
 (Mauritius)

Ms. Farah Bouqartacha (Morocco)
 Ms. Kyunghee Choi (Republic of Korea)
 Mr. Thomas Yormah (Sierra Leone) (Chair
 until May 2010)
 Ms. Maria Delvin (Sweden)
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Annex IV

Proposal on next steps for short-chained chlorinated paraffins

1. The concluding statement of the draft risk profile for short-chained chlorinated paraffins (UNEP/POPS/POPRC.5/2) states:

Currently, concentrations of SCCPs in remote areas are lower than known concentrations of concern. Available monitoring data do not show that the environmental levels are increasing in concentrations at this time. Given demonstrated long- range transport and ability to accumulate, there is potential for increases should releases continue or increase.

2. To facilitate the assessment of future trends in environmental concentrations and the potential for adverse effects in humans and the environment and to assist the Persistent Organic Pollutants Review Committee further to evaluate short-chained chlorinated paraffins, the submission of supplemental information of the type identified in Annex E to the Convention is desirable, including:

- (a) Updated production data;
- (b) Inventories of uses;
- (c) Information on releases such as discharges, losses and emissions;
- (d) Additional information that could assist the Committee with its evaluation, including on toxicity and ecotoxicity and on national and international risk evaluations.

3. The Committee invites Parties and observers to provide the additional information described in the preceding paragraph.

4. The Committee agrees to the following workplan:

Scheduled date	Activity
1 November 2009	The Secretariat requests Parties and observers to provide additional information.
23 April 2010	Parties and observers submit information to the Secretariat. <ul style="list-style-type: none"> • The Secretariat sends a reminder to Parties and observers regarding the request for information: 27 February.
8 June 2010	The working group chair and the drafter review information submitted by Parties and observers and complete the revised draft .
9 July 2010	The Secretariat sends the final draft to the Division of Conference Services for editing and translation.
27 August 2010	The Division of Conference Services completes editing and translation .
30 August 2010	The Secretariat distributes the revised final draft risk profile in the six official languages of the United Nations.
10–15 October 2010	Sixth meeting of the Committee.

Annex V

Revised summary of the annotated outline for a guidance document on alternatives to perfluorooctane sulfonate (PFOS) and its derivatives

This document has been produced with the financial assistance of the Swedish International Development Cooperation Agency (SIDA) and its development managed by the Swedish Chemicals Agency, KemI. The views herein shall not necessarily be taken to reflect the official opinion of SIDA or KemI. The document is being reproduced as submitted, without formal editing.

Executive summary

[To be completed.]

1. Introduction, background and objectives

This chapter will describe the background and objectives of this guidance document, as well as its link with other documents developed by the POPs Review Committee. It will refer to the decisions taken by the Conference of the Parties at its fourth Meeting related to PFOS (SC-4/17 and SC-4/19) and state that the objective of the document is to support developing countries and countries with economies in transition to find alternatives to PFOS, its salts and PFOA.

2. Characteristics of PFOS and its derivatives

This chapter will clarify which substances are to be covered by this guidance document. Countries have registered different quantities of PFOS related chemicals. The OECD has made available a list on PFOS, PFAS, PFOA and related compounds and chemicals that may degrade to PFCA.¹ This chapter will refer to an Annex which will include relevant information on the characteristics of the chemicals.

3 Alternatives to the use of PFOS

This chapter will describe uses of PFOS and its derivatives in the various sectors and will specify whether alternatives are available, need to be phased in, or are not yet available. Information on the specific uses of PFOS within the sector, its suppliers, concentrations and main substitutes will be given. This chapter will identify and describe possible alternative chemicals, processes or products for various uses. If the study finds that there are no feasible alternatives for a particular use, then the original use should also be noted.

Further discussion will include: evaluation of technical feasibility and durability of the alternatives for different applications, accessibility of alternatives; socio-economic assessment of the alternatives, differences among branches, size of enterprises, countries, and regions; product necessity; economic constraints; and societal costs. Finally, environmental health and safety concerns will also be mentioned. There is often a lack of public data for the environmental properties of the alternatives compared to PFOS itself, which is also one of the reasons why rigid selection criteria are not useful. The chapter will also verify whether other jurisdictions have imposed manufacture or use restrictions on the proposed substitutes.

3.1 Textile impregnation and surface protection

In the textile industry polyfluorinated chemicals (PFCs) are used for all-weather clothing, umbrellas, bags, sails, tents, parasols, sunshades, upholstery, leather, footwear, rugs, mats and carpets etc., to repel water, oil and dirt. Before 2000, about 47% of PFOS in the EU were used in the textile industry. After the bans in many countries, PFOS has been substituted mainly with shorter-chain analogues and fluorotelomers and also with non-fluor chemicals. The chapter will also identify soil and dirt repellents trade marks for PFCs and the PFOS derivatives used in the textile industry.

¹ Workshop on Managing Perfluorinated Chemicals and Transitioning to Safer Alternatives, Geneva, 2009.

The alternatives to PFOS in the textile industry are mainly other polyfluorinated compounds such as perfluorobutane sulfonate (PFBS) based substances, fluorotelomer-based polymers, or polytetrafluoroethylene (PTFE); silicone-based products; and a mixture of silicones and stearamidomethyl pyridine chloride, eventually together with carbamide (urea) and melamine resin.

3.2 Impregnation of packaging (paper/cardboard)

Fluorinated chemicals are used in the paper industry to produce water- and grease-proof paper. PFOS derivatives have been used both in food contact applications (plates, food containers etc.) and in non-food contact applications (folding cartons, masking papers, etc.). Before year 2000, about 32% of the total use of PFOS in the EU was for paper. It is no longer permitted to use PFOS for paper in the EU and PFOS use has been replaced mainly by other fluorinated chemicals.

The possible alternatives identified are telomer-based substances and polyfluoroalkyl phosphate or phosphonate type compounds but grease-proof paper did also exist before PFOS was introduced. The Norwegian paper producer Nordic Paper is using mechanical processes to produce extra dense paper which inhibit leakage of fat through the paper.

3.3 Cleaning agents, waxes and polishes for cars and floors

Fluorinated surfactants are widely used in water-based floor polish products. PFOS derivatives have been used historically as surfactants to improve wetting and rinse-off in a variety of industrial and household cleaning products such as automobile waxes, alkaline cleaners, denture cleaners and shampoos, floor polish, dishwashing liquids and carwashes. PFOS derivatives have also been used in carpet spot cleaners.

As the fluorinated compounds have the same function in waxes as in paint, it may be possible to use the same substitutes identified for the paint and varnish industry. Possible alternatives identified for cleaning agents, waxes and floor polishes are different C4-perfluorinated compounds, telomer-based surfactants and polymers, fluorinated polyethers and a shift to softer waxes that do not require the use of PFOS-compounds.

3.4 Surface coating, paint and varnish

PFOS derivatives were historically used in coating, painting and varnishes to reduce surface tension, for example for substrate wetting, levelling, as dispersing agents, and for improving gloss and antistatic properties (before year 2000, about 18% of the total use of PFOS in the EU). They have also been used as additives in dyestuff and ink, e.g., as foam generators, and as pigment grinding aids or as agents to combat pigment flotation problems.

Fluorinated surfactants are in general much more expensive alternatives compared to other surfactants. Therefore, fluorosurfactants are only used for special purposes in paint and varnishes, where it is necessary to gain a low surface tension which no other alternatives can achieve, e.g., in a product that requires an extremely smooth surface.

3.5 Oil and mining industries

PFOS derivatives may be used as surfactants in the oil and mining industry to enhance oil or gas recovery in wells, as evaporation inhibitors for gasoline, jet fuel and hydrocarbon solvents, and to enhance the amount of recovery in copper and gold mines.

Currently there is no information about alternatives in the oil and mining industry but as oil production and mining do not require the use of PFOS in many countries, alternative processes not requiring PFOS should exist.

3.6 Photo industry

PFOS-related compounds are used in the manufacturing process of film, photo paper and plates. They repel dirt, control friction, and reduce surface tension and static electricity. Due to the increased use of digital cameras, the use of films is reduced and thus the use of PFOS is not expected to grow.

No sufficient alternatives have been identified so far for some of the exempted uses of PFOS-related compounds in the photo industry, e.g., surfactants, electrostatic charge control agents, friction control agents, dirt repellent agents and adhesion control agents for mixtures used in coatings applied to films, papers, and printing plates. Required properties for alternatives include dynamic surface tension capability, antistatic properties, solubility, photo-inactivity and stability against heat and chemicals.

3.7 Electric and electronic parts

PFOS based chemicals are used in the fabrication of many electric and electronic articles such as digital cameras, cell phones, printers, scanners and in satellite communications, and radar systems etc. The PFOS-related compounds in these uses are as process chemicals and the final products are mostly PFOS-free.

Historical uses include belts and rollers in printers and copying machines. For most of them, alternatives are not well-known or under development. Several uses for which alternatives will not be available soon have been identified by industry, e.g., for intermediate transfer belt and PFA rollers of colour copiers and printers.

3.8 Semiconductor industry

PFOS reduces the surface tension and reflection of etching solutions, which is important for precise photolithography in the semiconductor industry (photoresist and photomask) for ultra-fine patterning and anti-reflective coatings. The PFOS-related compounds are used as process chemicals and the final products are mostly PFOS-free.

Small amounts of PFOS-based compounds are required for manufacturing semiconductor chips during the following critical photolithography applications:

- photoresists as photo-acid generators (PAGs) and/or surfactants; and
- anti-reflective coatings (ARCs) as uniquely performing surfactants.

3.9 Aviation hydraulic fluids

Hydraulic oils containing potassium perfluorooctane sulfonate (about 0.1%) have been used in both civil and military airplanes since the 1970s in order to prevent evaporation, fires and corrosion.

At present it is not certain what alternatives could be used in aviation hydraulic fluids. Aviation hydraulic fluids without fluorinated chemicals exist. Fluorinated chemicals other than PFOS could be used. It's been 30 years since the search for alternatives started and about 2500 compounds have been tested. However, it is said that neither fluorotelomers nor non-fluorinated chemicals tested met the required demands and the safety standards.

3.10 Pesticides

N-Ethyl perfluorooctane sulfonamide is a surfactant and pesticide for termites, cockroaches and other insects. Fluorosurfactants may also be used as "inert" surfactants (enhancers) in pesticide products. The use in the manufacture of baits for ants and in insecticides against beetles and ants is obsolete in the EU and the US but continued in other countries (China and Brazil).

It is not clear which alternatives are used in countries that banned pesticides containing PFOS derivatives and PFOS-related compounds for control of leaf cutting ants. Possibilities may include ant baits with *S*-methoprene and pyriproxyfen and synthetic piperonyl compounds. Other compounds used as alternatives are considered more acutely toxic for health and the environment.

3.11 Medical devices

Around 70% of video endoscopes worldwide use a CCD colour filter that contains a small amount of PFOS. PFOS is also used as an effective dispersant when contrast agents are incorporated into an ethylene tetrafluoroethylene copolymer (ETFE) layer. PFOS plays an essential role in radio-opaque ETFE production, allowing the achievement of the levels of accuracy and precision required in medical devices (e.g., radio-opaque catheters, such as catheters for angiography and indwelling needle catheters).

It is technically possible to produce PFOS-free CCD filters for use in new equipment. However, the existing 200,000 endoscopes use PFOS-containing filters. Gradual phase-out of the existing endoscopes will permit use of PFOS-free equipment.

3.12 Metal plating

A distinction has to be made for PFOS use in decorative chrome plating, for which new PFOS-free technologies are available, and hard metal plating. The use of PFOS as wetting agent for hard chromium plating has been considered essential, and this use is exempted from the PFOS bans already enforced in some countries.

The industry association ZVO in Germany describes the availability of PFOS-free alternative products from 10 German supplier companies. Three products are fluorinated chemicals and seven are

fluorine-free chemicals. Information about the exact chemicals is not available. All 10 products can be used for decorative chromium plating, for which alternative chromium-(III) processes already exist.

3.13 Fire-fighting foam

Fire-fighting foams with fluorosurfactants are very effective for extinguishing a liquid fuel fire at airports or oil refineries/storages. Today, most fire-fighting foams are manufactured without PFOS but with fluorochemicals/telomers. Stocks of fire fighting foams containing PFOS exist in many countries.

Manufacturers, distributors and users of Aqueous Film-Forming Foam (AFFF) fire fighting agents and their components have formed a non-profit trade association, Fire Fighting Foam Coalition (FFFC). FFFC helps to ensure dissemination of accurate industry information on PFOS alternatives, including telomer-based products.

4. Assessment of risks related to alternatives

This chapter will describe environmental and health effects of alternative substances. It will review the following indicators:

- POPs Screening criteria
- Hazardous properties CMR (carcinogenic, mutagenic, reprotoxic)
- Verification of controls in other jurisdictions

4.1 Shorter chain perfluoroalkyl sulfonates

No serious safe effects have been reported but data is limited. It is detected in the aquatic environment.

4.2 Fluorotelomers and perfluorophosphates

Fluorotelomers are the most common alternatives to PFOS-compounds. Some data exists on adverse effects in experimental animals and laboratory tests. It is widely detected in the environment and wildlife.

4.3 Fluorinated polyethers

Fluorinated polyethers seem to have a lower surface tension. The acute toxicity is low but they may irritate skin and the respiratory system. They are highly persistent.

4.4 Shorter chain perfluoroalkyl ketones

Insufficient data on health and environmental effects

4.5 Fluorinated co-polymers

Polymers are generally of low availability/uptake and have low toxicity but data is not sufficient.

4.6 Silicone polymers

Harmful by inhalation and exposure may induce serious damage to eyes. They are also toxic to aquatic organisms and are bioaccumulative. Insufficient data

4.7 Propylated aromatics

Isopropylated naphthalene- and biphenyl compounds are irritating substances, and the biphenyl compounds may produce skin sensitization or dermatitis. Biphenyls and naphthalenes are potentially bioaccumulative.

4.8 Sulfosuccinates

Sulfosuccinates are irritants to eyes, skin and the respiratory system. Di (2-ethylhexyl) sulfosuccinate is easily biodegradable and not likely to bioaccumulate but is harmful to aquatic organisms.

4.9 Stearamidomethyl pyridine chloride

Insufficient data for health and environmental effects

4.10 Fatty alcohol polyglycol ether sulfate

It is acutely toxic by ingestion but it is not considered to cause irritation. It is readily biodegradable and does not seem to be toxic to aquatic organisms

5. Comparative (technical, socio-economic, environmental, health and safety) assessment of the PFOS and its possible alternatives

This chapter will include a selection and demonstration of possible alternatives. For example, a principle measure could be substitution of PFOS in lower quality consumer products before considering professional uses. Cost indication may be biased. According to available information, the alternatives in general are about the same price as the PFOS-related compounds or even cheaper. One company mentioned in particular that the price of the alternatives is kept intentionally at the same level as the PFOS-related compounds. According to an article on perfluorinated surfactants, the cost of fluorinated surfactants is higher than that of hydrocarbon surfactants.

If possible, it would be interesting to engage end users regarding the functions of PFOS. For example, some hospitals may already use an alternative catheter than the one that requires PFOS for manufacture. This may also be mentioned in the document as a strategy to search for alternatives.

If the study concludes that an alternative is not appropriate, it would be useful to explain why it may not be technically or scientifically viable. This should also include how the proposed use is distinct from other examples of alternatives for similar uses. If known, an assessment of what is in the research pipeline for alternatives should be provided.

6. Conclusions, recommendations and future developments

This chapter will contain the final wrap-up of conclusions and recommendations, further actions, including opportunities for international cooperation.

There is a need for incentives to develop alternative substances and processes and to identify the driving forces for developing alternatives. Some increasing effort will be needed to study the toxicological and environmental properties of alternatives. Presently, the amount of data on the alternatives is much less than that for PFOS.

Legislation and classification is an important tool to promote incentives to find alternative substances and processes, but as the development of legislation is time consuming and could impact industries in many ways, it is important that the issue of PFOS as a globally recognized POP substance is made fully known to suppliers and industries.

It is crucial that producers have better knowledge about PFOS in processes, products and articles. Information to customers and consumers can also be important in order to create an opinion about the need to change a product or process. Industries that are proactive and phase-out a very hazardous chemical such as PFOS are likely to get future market advantages.

References

[To be completed.]

Annex to the document

a) Characteristics of PFOS and its derivatives

- **PFOS derivatives and precursors mentioned explicitly in previous papers**
A list and short explanation of PFOS derivatives included in the previous POPRC documents will be given.
- **Additional and frequently used PFOS derivatives and precursors**
This sub-chapter will identify and list additional PFOS derivatives that were not covered in the POPRC documents.
- **Other related polyfluorinated alkyl sulfonates (PFAS)**
Other perfluorinated alkyl sulfonates with similar or related applications as PFOS, that may be used as substitutes, will be mentioned.
- **Chemical, physical, environmental and biological properties**

Annex VI

Additional explanatory notes for Annex E information submission form

I. General guidance on the submission of information specified in Annex E

A. Procedure

1. In accordance with Article 8 of the Convention, a Party may submit a proposal for listing a chemical in Annexes A, B and/or C. The Persistent Organic Pollutants Review Committee examines the proposal and applies the screening criteria specified in Annex D to the Convention. The Committee's evaluation of the chemical against the criteria of Annex D is set out in an annex to the report of the meeting of the Committee at which it is undertaken. The meeting report is made available on the Convention's website (www.pops.int).

2. When the Committee is satisfied that the screening criteria set out in Annex D have been fulfilled, it invites Parties and observers to submit the information specified in Annex E of the Convention. The Committee then prepares a draft risk profile based on the submitted information. The draft risk profile is set out in an addendum to the report of the meeting at which it is adopted by the Committee and is made available on the Convention's website.

B. How to submit information

3. Annex E information may be submitted to the Secretariat using a form provided by the Committee. The form may be obtained from the Convention focal points and from the Convention website. It is preferable that Annex E information be submitted in electronic format and in English; information may, however, be submitted in the other official languages of the United Nations (Arabic, Chinese, French, Russian and Spanish) and in hard copy. Please note that if you are completing the form electronically, the size of the boxes will adjust to the amount of text inserted and thus a complete form may be longer than the current number of pages. If you are completing a hard copy of the form, please include additional pages as required. The deadline for submitting information is indicated in the letter from the Secretariat inviting Parties and observers to provide information.

C. Reminders to those submitting information

4. Parties and observers providing Annex E information should do so in a concise manner with clear and precise references. If the information on a specific item is not available, please so indicate. The information does not have to be national in nature; information from international sources may be cited.

5. If it is possible and relevant, provide additional information to support the Committee's scientific considerations in preparing the risk profile, such as study methods, tissue concentrations for comparative purposes and citations including original copies of papers not readily available in the public domain. Information which has not been peer-reviewed may still be useful to the Committee.

6. The explanatory notes under each item have been developed by the Committee to guide and facilitate submissions; they have no legal status.

D. Guidance for information collection

7. A guidance document entitled "Handbook for effective participation in the work of the POPs Review Committee" outlines the methodology for the identification and compilation of information required by the Committee. The handbook is available on the Convention website, and hard copies may be obtained from the Secretariat.

8. It is suggested that each Party establish an ad hoc working group, perhaps building on the committee established to develop the Party's national implementation plan, to assist the national focal point in collecting and submitting relevant information.

9. Following are some other potential sources of information:
- (a) National expertise (e.g., universities, research centres, non-governmental organizations, trade unions);
 - (b) Industry sources (e.g., producers, importers, suppliers, downstream users);
 - (c) International literature;
 - (d) Chemicals databases.

II. Form for submission of the information specified in Annex E of the Stockholm Convention pursuant to Article 8 of the Convention

Introductory information	
Name of the submitting Party or observer	
Contact details (name, telephone number, e-mail address) of the submitting Party or observer	
Chemical name (as used by the POPs Review Committee)	
Date of submission	

(a) Sources, including as appropriate the following (provide summary information and relevant references)	
(i) Production data	
Quantity	
Location	
Other	
(ii) Uses	
(iii) Releases	
Discharges	
Losses	
Emissions	
Other	

Explanatory notes:

1. Indicate units for all data.
2. Information on imports, exports and existing stockpiles could be included under item (i) Production data: Other. Information on uses could include uses for agriculture (e.g., pesticides), for public health and for industrial purposes and uses by the informal sector.

(b) Hazard assessment for endpoints of concern, including consideration of toxicological interactions involving multiple chemicals (provide summary information and relevant references)

Explanatory note:

3. Information on endpoints of concern should cover, in particular, experimental data concerning human toxicity and ecotoxicity (i.e., toxicity for terrestrial, telluric, aquatic and benthic fauna) and any information on toxicological interactions involving multiple chemicals. Data on contamination of foodstuffs, water, soil or sediment may be entered in part (d) below.

(c) Environmental fate (provide summary information and relevant references)	
Chemical and physical properties	
Persistence	
How are chemical and physical properties and persistence linked to environmental transport, transfer within and between environmental compartments, degradation and transformation to other chemicals?	
Bioconcentration or bioaccumulation factor, based on measured values (unless monitoring data are judged to meet this need)	

Explanatory note:

4. Information on potential for long-range transport could include the results of modelling of long-range environmental transport.

(d) Monitoring data (provide summary information and relevant references)

Explanatory notes:

5. Provide monitoring data, if possible, with an indication of the quality of the data or its degree of reliability, trend data and additional data on the criteria in Annex D, particularly persistence, bioaccumulation, long-range environmental transport and exposure.

6. Environmental monitoring data and data on exposure in various compartments or media could include data from ambient air, maternal milk, human blood, biota, food products, water, soil, sediments, waste, effluents, etc.

(e) Exposure in local areas (provide summary information and relevant references)	
General	
As a result of long-range environmental transport	
Information regarding bioavailability	

Explanatory note:

7. Information on exposure in local areas could include the following:

(a) General: Data on exposure in local areas, including data on human health and wild fauna and flora, data on occupational exposure, etc;

(b) As a result of long-range environmental transport: Data concerning exposure in areas far from the sources of production or use of a chemical, experimental data or modelling results indicating possible long-range transport, etc;

(c) Information regarding bioavailability: Studies describing how the chemical is absorbed by humans and other animals, concentrations in biological samples, half-life, etc.

(f) National and international risk evaluations, assessments or profiles and labelling information and hazard classifications, as available (provide summary information and relevant references)

Explanatory note:

8. Information on national and international risk evaluations could include the following:

(a) Rationale for the regulation of toxic chemical substances such as assessment information;

(b) Information and hazard classifications;

(c) National and international risk evaluations prepared by governmental and intergovernmental organizations, regional economic integration organizations and non-governmental organizations. The government and national stakeholders such as the academic community, civil society and others in the private sector may provide the data required.

(g) Status of the chemical under international conventions

Explanatory note:

9. Information need not be provided on the most well-known instruments. A list of those instruments appears in document UNEP/POPS/POPRC.1/INF/10.

Annex VII

Additional explanatory notes for the Annex F information submission form

I. General guidance on the submission of information specified in Annex F

A. Procedure

1. In accordance with paragraph 7 (a) of Article 8 of the Convention, if the Persistent Organic Pollutants Review Committee decides on the basis of a chemical's risk profile that the chemical is likely, as a result of its long-range environmental transport, to lead to significant adverse human health and/or environmental effects such that global action is warranted, consideration of the proposal for listing the chemical in Annexes A, B and/or C proceeds to the next step.
2. The Committee at that point invites Parties and observers to submit information relating to the social and economic considerations specified in Annex F of the Convention. Based on the submitted information, the Committee prepares a draft risk management evaluation that includes an analysis of possible control measures for the chemical.

B. How to submit information

3. Annex F information may be submitted to the Secretariat using a form provided by the Committee. The form may be obtained from the Convention focal points and from the Convention website (www.pops.int). It is preferable that Annex F information be submitted in electronic format in English; information may, however, be submitted in the other official languages of the United Nations (Arabic, Chinese, French, Russian and Spanish) and in hard copy. Please note that if you are completing the form electronically, the size of the boxes will adjust to the amount of text inserted and thus a complete form may be longer than the current number of pages. If you are completing a hard copy of the form, please include additional pages as required. The deadline for submitting information is indicated in the letter from the Secretariat inviting Parties and observers to provide information.

C. Reminders to those submitting information

4. Parties and observers providing Annex F information should provide it in a concise manner with clear and precise references. If information on a specific item is not available, please so indicate. The information does not have to be national in nature; information from international sources may be cited.
5. If it is possible and relevant, provide additional information to support the Committee's scientific considerations in preparing the risk management evaluation such as study methods, tissue concentrations for comparative purposes and citations including original copies of papers not readily available in the public domain. Information which has not been peer-reviewed may still be useful to the Committee.
6. The explanatory notes under each item have been developed by the Persistent Organic Pollutants Review Committee to guide and facilitate submissions; they have no legal status.

D. Possible control measures under the Stockholm Convention

7. The possible control measures under the Stockholm Convention for a given chemical are as follows:
 - (a) **Listing of the chemical in Annex A:** This would mean elimination of the production, use, export and import of the chemical. The Conference of the Parties might decide to provide for specific exemptions or to restrict the general exemptions laid down in paragraph 5 of Article 3 and notes (i)–(iii) of part I of Annex A. It might also add provisions that would apply specifically to the chemical (as is currently done for PCBs in part II of Annex A). These additional provisions can cover a wide range of control measures such as restriction of certain uses, labelling requirements, waste

management requirements or provision of information to users along with a requirement to report on progress toward elimination at certain intervals;

(b) **Listing of the chemical in Annex B:** This would mean restriction of the production, use, export and import of the chemical. If it decides to list the chemical in Annex B, the Conference of the Parties will also specify acceptable purposes for the chemical in Annex B. It might also decide to provide for specific exemptions or to restrict the general exemptions laid down in paragraph 5 of Article 3 and notes (i)–(iii) of part I of Annex B. It might also add provisions that would apply specifically to the chemical (as is currently done for DDT in part II of Annex B). These additional provisions can include the establishment of a register, a requirement to notify the Secretariat or other intergovernmental organizations regarding intent to use the substance, and a requirement for reporting on quantities used and conditions of use. Such provisions may also require the development and implementation of an action plan that includes the implementation of suitable alternatives and covers a wide range of control measures such as labelling or the provision of information to users;

(c) **Listing of the chemical in Annex C:** This Annex applies only to unintentionally produced chemicals. Listing in Annex C would mean that the chemical would become subject to measures to prevent, reduce or eliminate the unintentional formation and release of the chemical. The Conference of the Parties might also include any further amendments of Annex C that would be necessary to address the chemical (e.g., additional source categories, additional process control methods or additional pollution prevention options);

(d) Listing of the chemical in Annexes A, B and/or C also makes the chemical subject to the control provisions of Article 6 on stockpiles and waste. These provisions include obligations to develop strategies for identifying products and articles in use that contain the chemical; to identify, to the extent practicable, stockpiles and waste; to manage such stockpiles safely; and to ensure that wastes are disposed of in such a way that the persistent organic pollutant content is destroyed or irreversibly transformed.

8. It should be noted that the same chemical can be listed in Annexes A, B and/or C.

E. Guidance for information collection

9. A guidance document entitled “Handbook for effective participation in the work of the POPs Review Committee” outlines the methodology for the identification and compilation of information required by the Committee. The handbook is available on the Convention’s website, and hard copies may be obtained from the Secretariat.

10. It is suggested that each Party establish an ad hoc working group, perhaps building on the committee established to develop the Party’s national implementation plan, to assist the national focal point in collecting and submitting relevant information.

11. Most of the information on use patterns, alternatives, production volumes, regulations and other measures taken to reduce releases can be found in official government documents or obtained from non-governmental sources such as industrial sectors. Some information may be found in the so-called grey literature – literature that is not available through publishers or conventional bibliographic sources such as databases or indexes. Examples of grey literature include technical reports, fact sheets, patents, government documents, technical documents and unpublished works.

12. To collect relevant information from various sectors, a national survey could be carried out using questionnaires. A literature review on possible control measures may also be useful.

13. Following are some other potential sources of information:

- (a) International literature;
- (b) Databases;
- (c) Government sources and legislation;
- (d) National expertise (e.g., universities, institutes and research centres, non-governmental organizations, trade unions);
- (e) Industry sources (e.g., producers, importers, suppliers, users).

II. Form for the submission of information specified in Annex F of the Stockholm Convention pursuant to Article 8 of the Convention

Chemical name (as used by the POPs Review Committee)	
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Explanatory note:

1. This chemical is undergoing a risk management evaluation. It has already satisfied the screening criteria in accordance with the provisions of paragraph 4 (a) of Article 8 of the Convention. A risk profile has been completed for this chemical in accordance with paragraph 6 of Article 8 of the Convention and with Annex E to the Convention.

Introductory information	
Name of the submitting Party or observer	
Contact details (name, telephone number, e-mail address) of the submitting Party or observer	
Date of submission	

Additional Annex E information	
(i) Production data, including quantity and location	
(ii) Uses	
(iii) Releases, such as discharges, losses and emissions	

Explanatory note:

2. This information was requested for preparation of the risk profile in accordance with Annex E of the Convention. Please provide any additional or updated information.

(a) Efficacy and efficiency of possible control measures in meeting risk reduction goals (provide summary information and relevant references)	
(i) Description of possible control measures	
(ii) Technical feasibility	
(iii) Costs, including environmental and health costs	

Explanatory notes:

3. "Risk reduction goals" refers to targets or goals to reduce or eliminate releases from intentional production and use, unintentional production, stockpiles and wastes and to reduce or avoid risks associated with long-range environmental transport.

4. Possible control measures could include the following:

- (a) Prohibition or restriction of production, use, import and export;
- (b) Control of discharges or emissions;
- (c) Replacement of the chemical by alternatives;
- (d) Termination of processes which could lead to unintentional release of the chemical;
- (e) Clean-up of contaminated sites;
- (f) Environmentally sound management of obsolete stockpiles;
- (g) Prohibition of reuse and recycling of wastes or stockpiles;
- (h) Establishment of exposure limits in the workplace;
- (i) Establishment of maximum residue limits in water, soil, sediment or food.

5. The following factors may influence the efficacy and efficiency of possible control measures:
 - (a) Legal, administrative, and enforcement measures in place, including adequately trained personnel;
 - (b) Monitoring measures in place, including suitable laboratory and monitoring capability;
 - (c) Risk communication system and public participation;
 - (d) Accessibility of alternative chemicals or processes;
 - (e) Accessibility of safe installations and technology to eliminate stockpiles.
6. Technical feasibility refers to whether a control measure already exists or is expected to be developed in the foreseeable future and possible challenges to its implementation. The following factors may be considered:
 - (a) What measures would be needed in order to effectively prohibit or restrict production and use;
 - (b) Chemical or non-chemical alternatives which are already in use or could be phased in;
 - (c) National standards for best available techniques and best environmental practices (BAT/BEP) and inventory of installations meeting the BAT/BEP standards;
 - (d) Projects in progress involving elimination of stockpiles and clean-up of contaminated sites.
7. If relevant, provide information on uses for which there may be no suitable alternative or for which the analysis of social and economic factors justifies the inclusion of an exemption to any control measure adopted by the Conference of the Parties. Identify critical uses by detailing the negative impact on society that will result if no exemption is permitted. Explain why the exemption is technically or scientifically necessary and why potential alternatives are not technically or scientifically viable. In addition, provide a list of sources taken into account in arriving at the conclusion that no alternatives exist for a particular use.
8. Where this is relevant and possible, costs should be expressed in United States dollars per year.

(b) Alternatives (products and processes) (provide summary information and relevant references)	
(i) Description of alternatives	
(ii) Technical feasibility	
(iii) Costs, including environmental and health costs	
(iv) Efficacy	
(v) Risk	
(vi) Availability	
(vii) Accessibility	

Explanatory notes:

9. Alternatives could include chemical and non-chemical alternatives such as a substitute chemical, material, product, system, production process or strategy for a specified end use of the chemical under consideration. Provide a brief description of any alternative product or process and, if appropriate, the sectors, uses or users for which it would be relevant. If several alternatives can be envisaged for the chemical under consideration, including non-chemical alternatives, provide information under this section for each alternative.
10. Technical feasibility refers to whether an alternative technology exists and is applicable or is expected to be developed in the foreseeable future. Specify for each proposed alternative whether it has actually been implemented, has only reached the trial stage or is just a proposal. If an alternative has not been tried or tested, information on projected impacts may be useful.
11. Evaluation of costs should include environmental and health costs.
12. Evaluation of efficacy should include any information on performance, benefits, costs and limitations of potential alternatives.
13. Evaluation of risk should include any information on whether a proposed alternative has been thoroughly tested or evaluated in order to avoid inadvertently increasing risks to human health and the environment. It should also include any information on potential risks associated with untested

alternatives and any increased risk over the life cycle of alternatives, including manufacture, distribution, use, maintenance and disposal.

14. Availability refers to whether an alternative is on the market and ready for immediate use.

15. Accessibility refers to the extent to which geographic, legal or other limiting factors affect whether an alternative can be used. Information or comments on improving the availability and accessibility of alternatives may also be useful.

16. Specify if the information provided is connected to the specific needs and circumstances of developing countries.

(c) Positive and/or negative impacts on society of implementing possible control measures (provide summary information and relevant references)	
(i) Health, including public, environmental and occupational health	
(ii) Agriculture, including aquaculture and forestry	
(iii) Biota (biodiversity)	
(iv) Economic aspects	
(v) Movement towards sustainable development	
(vi) Social costs	

Explanatory notes:

17. Social and economic considerations could include:

(a) Information on the impact on and cost and benefits to the local, national and regional economy, including the manufacturing sector and industrial and other users (e.g., capital costs and benefits associated with the transition to the alternatives), and impacts on agriculture and forestry;

(b) Information on the impact on the wider society associated with the transition to alternatives, including the negative and positive impacts on public, environmental and occupational health. Consideration should also be given to the positive and negative impacts on the natural environment and biodiversity;

(c) Information on the costs and benefits associated with environmentally sound management of waste and stockpiles of the chemical under consideration and the clean-up of contaminated sites.

18. Information should be provided on how control measures fit within national sustainable development strategies and plans. Developing countries, countries with economies in transition and small island developing States should describe their need for technical assistance to implement particular control measures.

(d) Waste and disposal implications (in particular, obsolete stocks of pesticides and clean-up of contaminated sites) (provide summary information and relevant references)	
(i) Technical feasibility	
(ii) Costs	

Explanatory note:

19. The information provided on technical feasibility and costs should take the local context into account. This is particularly important for developing countries, countries with economies in transition, and small island developing States that require technical and financial assistance.

(e) Access to information and public education (provide summary information and relevant references)**Explanatory note:**

20. Please provide details on access to information and public education with respect to both control measures and alternatives.

(f) Status of control and monitoring capacity (provide summary information and relevant references)**Explanatory notes:**

21. With regard to control capacity, the information required is on legislative and institutional frameworks for the chemical under consideration and their enforcement.

22. With regard to monitoring capacity, the information required is on the technical and institutional infrastructure for the environmental monitoring and biomonitoring of the chemical under consideration. Please provide information on monitoring work relating to the Convention's priority matrices (ambient air, maternal milk, human blood) and other health or environmental matrices (water, soil, sediment, food, aquatic and telluric fauna, migratory birds, etc.).

(g) Any national or regional control actions already taken, including information on alternatives, and other relevant risk management information**Explanatory notes:**

23. Actions or measures taken could include prohibitions, phase-outs, restrictions, clean-up of contaminated sites, waste disposal, economic incentives and other initiatives that are not legally binding.

24. Information could include details on whether these control actions have been cost-effective in providing the desired benefits, have had a measurable impact on reducing levels of the chemical in the environment and have contributed to risk reduction.

(h) Other relevant information for the risk management evaluation**Explanatory note:**

25. Please provide any other relevant information for the risk management evaluation.

(i) Other information requested by the Committee**Explanatory note:**

26. The Committee may identify specific information required for the process of preparing a risk management evaluation in addition to Annex F information. Please provide any such information that you may have as indicated in the letter from the Secretariat inviting Parties and observers to provide information.