

## POPRC-6/2: 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 to the Stockholm Convention on Persistent Organic Pollutants amended Annexes A, B and C to the Convention to list nine new chemicals therein,

*Recalling* decision SC-4/19, by which the Conference of the Parties established indicative elements of a work programme to provide guidance to the parties on how best to eliminate listed brominated diphenyl ethers, and to restrict or eliminate perfluorooctane sulfonic acid (PFOS) and its salts, perfluorooctane sulfonyl fluoride (PFOSF) and other chemicals listed in Annex A or B to the Convention at the fourth meeting of the Conference of the Parties,

*Mindful* of the importance of providing guidance on the elimination of listed brominated diphenyl ethers and the restriction or elimination of PFOS and its salts, PFOSF and other chemicals listed in the annexes to the Convention,

*Noting* that the following work has been undertaken in accordance with the work programme outlined in decision SC-4/19:

- (a) Parties and observers have submitted information on brominated diphenyl ethers, PFOS, its salts and PFOSF and other chemicals newly listed in Annex A or B to the Convention at the fourth meeting of the Conference of the Parties as requested in paragraphs 1 (a)–(c) of the annex to decision SC-4/19 and on the basis of a questionnaire developed by the Committee at its fifth meeting;
- (b) The Secretariat has gathered and compiled the submitted information, made it available on the website of the Convention and summarized it;<sup>1</sup>
- (c) The Committee has at its fifth meeting developed terms of reference for a technical paper with the following objectives:
  - (i) To assess the possible health and environmental impacts of recycling articles containing brominated diphenyl ethers;
  - (ii) To review the long-term environmental desirability of the recycling of articles containing brominated diphenyl ethers;
  - (iii) To identify the best available technology and best environmental practices for the recycling of articles containing brominated diphenyl ethers;
- (d) The draft technical paper has been prepared and submitted to the Committee at its sixth meeting;<sup>2</sup>

*Having reviewed* the information provided by parties and observers on the chemicals newly listed in Annexes A and/or B to the Convention and in the draft technical paper,

*Having identified* potential gaps in the information provided by parties pursuant to paragraphs 1–4 of decision SC-4/19,

*Recognizing* that the rendering of timely and appropriate technical assistance in response to requests from developing-country parties and parties with economies in transition is essential for the implementation of the recommendations set out in the annex to the present decision,

*Decides* that the recommendations on how to fill the identified information gaps and the recommendations on the elimination of brominated diphenyl ethers from the waste stream and on risk reduction for PFOS, its salts and PFOSF as contained in the annex to the present decision should be submitted to the Conference of the Parties at its fifth meeting for its consideration.

---

1 UNEP/POPS/POPRC.6/INF/5 and UNEP/POPS/POPRC.6/13, annex II.

2 UNEP/POPS/POPRC.6/2/Rev.1.

## Annex to decision POPRC-6/2

### **Recommendations on the elimination of brominated diphenyl ethers from the waste stream and on risk reduction for perfluorooctane sulfonic acid (PFOS) and its salts and perfluorooctane sulfonyl fluoride (PFOSF)**

#### **I. Recommendation on the elimination of brominated diphenyl ethers from the waste stream**

1. The Committee reviewed the information provided by parties and observers on newly listed persistent organic pollutants and in the draft technical paper. On the basis of this information, the Committee identified potential gaps in the information and developed recommendations on the elimination of brominated diphenyl ethers from the waste stream, including on how to fill the information gaps identified.

##### **A. Overall recommendation**

2. The objective is to eliminate brominated diphenyl ethers from the recycling streams as swiftly as possible. To meet this objective, the principal recommendation is to separate articles containing brominated diphenyl ethers as soon as possible before recycling. Failure to do so will inevitably result in wider human and environmental contamination and the dispersal of brominated diphenyl ethers into matrices from which recovery is not technically or economically feasible and in the loss of the long-term credibility of recycling. Initially, the main focus should be on developed countries handling primary flame-retarded<sup>3</sup> articles containing higher concentrations of brominated diphenyl ethers and attention should be paid to identification and treatment of brominated diphenyl ethers in articles for both domestic use and for export.

3. Time is short because articles containing brominated diphenyl ethers are already present in many existing waste streams as a result of the time frame of former production of these articles. Brominated diphenyl ethers should not be diluted since this would not reduce the overall quantity in the environment. In some cases, it is likely that the quantities in waste have reduced significantly from their peak concentration levels.

4. To prevent similar difficulties with other substances, parties should step up efforts to regulate chemicals with the aim of preventing the production and use of chemicals that exhibit the characteristics of persistent organic pollutants in compliance with paragraphs 3 and 4 of Article 3 of the Stockholm Convention.

##### **B. Recommendations for short-term activities**

5. The key recommendation for the short-term in countries in a position to do so, especially developed countries, is to establish and apply screening techniques and to separate materials containing brominated diphenyl ethers in order to stop these materials from being recycled. In detail, the recommendations are:

- To begin establishing national control schemes for recycling of waste potentially containing brominated diphenyl ethers and to implement effective screening and separation techniques for material containing brominated diphenyl ethers.
- Following the implementation of effective screening and separation techniques, to stop the recycling of articles containing brominated diphenyl ethers.
- To store in a safe manner materials and articles containing brominated diphenyl ethers when screening and separation techniques are not readily available.
- To stop the export of waste materials containing brominated diphenyl ethers except for the purpose of environmentally sound disposal in the importing country as set forth in paragraph 1 (d) of Article 6 of the Stockholm Convention.

---

<sup>3</sup> That is articles for which the flame retardant content was added for the purposes of flame retardancy rather than articles which contain some flame retardant as a consequence of contaminants in recycle.

- To alert, equip and train the relevant authorities (for example, Customs and border control authorities) to allow them to control, identify and, where necessary, intercept shipments of wastes containing brominated diphenyl ethers.
  - To generate and collect information on releases of brominated diphenyl ethers and unintentionally produced brominated organic compounds such as polybrominated dibenzodioxins and polybrominated dibenzofurans (PBDD/PBDF) in emissions to air and in the solid residues from thermal processes used in treating materials contaminated with brominated diphenyl ethers.
  - To identify disposal options that would comply with the Stockholm Convention guidelines to be developed for the destruction of wastes containing brominated diphenyl ethers. These may include best available technique incinerators with effective primary and secondary combustion zones that operate under best environmental practice conditions with continuous monitoring and sampling to ensure that brominated diphenyl ethers and/or PBDD/PBDF are not released.
  - To collect information relevant to the establishment of best available techniques and best environmental practices for treatment and disposal techniques for materials containing brominated diphenyl ethers.
  - To assess occupational exposures of staff working in facilities where articles and wastes potentially containing brominated diphenyl ethers are stored, sorted, treated, recycled, recovered or disposed of. Appropriate precautions should be taken to minimize any occupational exposure.<sup>4</sup>
6. Additional short-term goals could include:
- To endeavour to promote the commercialization of separation techniques, which have already been evaluated in trial plants or which have yet to be developed, for removing brominated diphenyl ethers from plastic matrices to permit continued recycling.
  - To develop a system or mechanism to prevent the entry of substances that exhibit characteristics of persistent organic pollutants into the recycling stream as soon as they are identified.
  - To promote and facilitate public awareness-raising on the potential harm of materials containing polybrominated diphenyl ethers currently in use (e.g., furniture, mattresses or carpet with recycled back-coating containing polybrominated diphenyl ethers).
7. Since the presence of brominated diphenyl ethers is less well characterized in developing countries and countries with economies in transition it is further recommended:
- To exchange information on and experiences of successful environmentally sound handling, management and disposal of articles and wastes containing brominated diphenyl ethers.
  - To encourage developed countries to promote the transfer to developing countries of screening and separation techniques.
  - To undertake a more detailed survey in representative countries in each region to determine the extent of brominated diphenyl ethers in recycling and waste streams. This should be supported by capacity-building efforts and measures to raise the awareness of all stakeholders.

### **C. Recommendations for medium-term activities**

- To promote and implement analytical techniques and technologies specific to brominated diphenyl ethers.
- To improve and extend as necessary disposal options to ensure compliance with Stockholm Convention obligations and guidelines, taking into account the relevant decisions of the Persistent Organic Pollutants Review Committee on the updating of

---

<sup>4</sup> International Labour Organization Convention concerning Safety in the use of Chemicals at Work, No. C170, 1990 and ILO Recommendation Concerning Safety in the Use of Chemicals at Work, No. R177, 1990.

the Basel Convention technical guidelines on the environmentally sound management of persistent organic pollutants.

- To evaluate surveys conducted in developing countries and countries with economies in transition and apply their conclusions, where appropriate, to other countries with similar waste streams. If the survey indicates a significant presence of materials containing brominated diphenyl ethers, screening techniques should be implemented.
- To undertake further assessment and produce best available technique and best environmental practice guidance. These tasks should be undertaken by the Stockholm Convention's expert bodies and include consideration of polybrominated diphenyl ethers and PBDD/PBDF releases from smelters and other thermal recovery technologies, including secondary metal industries, cement kilns and feedstock recycling technologies.

8. The main recommendations in respect of deposition of and deposited polybrominated diphenyl ethers in landfills are:

- To assess further the long-term chemistry of polybrominated diphenyl ethers in landfill sites and the fate and risk of polybrominated diphenyl ether release from landfills into the environment.
- To reduce releases of polybrominated diphenyl ethers from landfills by avoiding the landfilling of materials containing them. Significant reductions can be made by restricting the landfill disposal of waste streams with high concentrations of brominated diphenyl ethers. This does not, however, need to apply to the landfill sites in which proper management is applied to isolate the landfill contents from the environment.
- To assess and determine any necessary remediation measures in landfills. In some cases (such as sites vulnerable to erosion, those which are below the water table or vulnerable to flooding) this may even require the removal of materials containing polybrominated diphenyl ethers from landfills for further destruction.

#### **D. Recommendations for long-term activities**

- To prioritize for remediation activities landfills, sediments and production, manufacturing and treatment sites that present significant risks to human health and/or the environment.
- To evaluate surveys conducted in developing countries and countries with economies in transition and apply their conclusions, where appropriate, to other countries with similar waste streams. If the survey indicates a significant presence of materials containing brominated diphenyl ethers, provisions for technology transfer should be implemented.

## **II. Recommendations on risk reduction for PFOS, its salts and PFOSE**

9. The Committee reviewed the information provided by parties and observers on newly listed persistent organic pollutants. On the basis of this information, the Committee identified potential gaps in the information and developed recommendations on the risk reduction for PFOS, its salts and PFOSE, including on how to fill the information gaps identified.

10. The recommendations on risk reduction measures are given in chronological order of the life cycle of PFOS and processes and materials containing PFOS to address systematically the related risks. The recommendations are provided in a short-term, medium-term and long-term framework. A number apply to both the production and usage of PFOS in various applications. Given that PFOS precursors may contribute to the overall presence of PFOS in the environment, the recommendations below consider, as appropriate, the management of PFOS and PFOS-related chemicals.

11. Countries in a position to do so, especially developed countries, are encouraged to take up these recommendations as soon as possible and exchange their experiences and success stories with other countries. The transfer of knowledge and technology, including capacity-building to identify

PFOS in articles and applications and monitor PFOS in the environment, should be promoted to support full participation in global efforts to reduce PFOS risks.

## **A. Recommendations with regard to PFOS production and industrial use**

### **Short term**

- To use best available technique and best environmental practice destruction technologies for wastes containing PFOS in current production and industrial uses of PFOS. No landfilling of these wastes should be permitted, unless leachate containing PFOS is properly treated.
- To ensure safe storage when destruction technologies are not readily available.
- To launch urgent investigations into landfills where waste from PFOS producers or from PFOS industrial users (paper, carpet, textile, chromium plating and other industries having used PFOS) are deposited. Drinking water from reservoirs and wells in the vicinity of these landfills and also around the PFOS production and user areas should be analysed.
- To assess industries' current and historical practices in managing sludge. If contaminated sludge has been applied as a biosolid to agricultural areas or other soils, such practices should be stopped.
- To monitor rivers and lakes and, in particular, the fish in the lakes and rivers close to landfills and production and industrial use areas. Depending on the PFOS levels in fish, an advisory board for fish consumption should be established.
- To monitor occupational exposure at production and industrial use facilities and to implement appropriate occupational health and safety measures.

### **Medium term**

- If contamination has occurred, to carry out remediation activities in accordance with the polluter-pays principle to reduce risk.
- For recording remediation technologies, strategies and associated damages, to document the cost of management and remediation, including the related cost of not using drinking water wells and of restricting fishing. Such information should be included, as appropriate, in the national implementation plan and/or reports submitted under Article 15 of the Stockholm Convention.

## **B. Recommendation on risk reduction from PFOS use**

12. Taking into account the information contained in the guidance document on alternatives to PFOS and its derivatives and additional information provided thereafter:

### **Short term**

- To withdraw or cease open applications (e.g., in impregnated/surface modified paper, insecticides, chemically driven oil production, carpet, textile, leather, furniture, detergents).
- To identify and implement alternatives in open applications under acceptable purposes (fire-fighting foam and ant baits). For a range of other acceptable-purpose applications, alternatives are used in developed countries and appear available in practice.
- If using PFOS in industrial applications, to do so in closed-loop systems. Releases of PFOS from industrial processes should be retained by best available technique and best environmental practice treatment technologies. Resulting sludge, adsorbents and wastes containing PFOS should be destroyed and not deposited.
- To continue to gather information on experiences of using PFOS alternatives in the areas of acceptable purposes and specific exemptions. This information should be compiled to support the work of the Conference of the Parties in evaluating the continued need for these chemicals.
- To assess the toxicity and ecotoxicity of alternatives to PFOS.

**C. Recommendation on risk reduction for PFOS in existing stocks**

**Short term**

- To identify and cease using stocks containing PFOS (fire-fighting foams, carpets and others). Such stocks should be collected and stored.
- To raise awareness of the environmental and human health effects of PFOS, providing training for relevant professionals in how to handle collection, storage and disposal of PFOS.

**Medium term**

- To develop and implement strategies to destroy stocks containing PFOS.

**D. Recommendation on risk reduction for recycling of articles containing PFOS**

**Short term**

- To make parties aware that the use of carpets containing PFOS in applications other than those for which they were originally intended, such as in gardening, may lead to releases.
- To cease the recycling of carpets containing PFOS.

**E. Recommendation on risk reduction from PFOS in consumer products deposited in municipal landfills**

**Short term**

- To cease deposition of materials identified as containing PFOS (in particular carpets, furniture and textiles) in landfills and to store them to await proper destruction.

**Medium term and long term**

- To assess the extent to which PFOS releases occur in the recycling of paper, textiles and impregnated furniture.
- To assess whether other material recycling streams are affected by materials containing PFOS.
- To monitor releases of PFOS, among other contaminants, from municipal landfills. Monitoring should also be undertaken of the groundwater, surface water and biota that could be affected by releases from landfills.
- When releases are discovered, to apply appropriate measures, including leachate control.

**F. Recommendations on risk reduction from releases from contaminated sites**

**Short term**

- To establish and implement a strategy for identifying and monitoring sites contaminated with PFOS in accordance with Article 6 of the Convention.

**Medium and long term**

- To gather information on remediation technologies for sites contaminated with PFOS.
- To encourage the exchange of information and country experiences on sound management and remediation of contaminated sites.
- To take action to remediate sites contaminated with PFOS.