



**Stockholm Convention
on Persistent Organic
Pollutants**

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**Conference of the Parties to the Stockholm
Convention on Persistent Organic Pollutants
Eleventh meeting**

Geneva, 1–12 May 2023

Item 5 (b) of the provisional agenda**

**Matters related to the implementation of the
Convention: measures to reduce or eliminate
releases from unintentional production**

Guidelines and guidance on best available techniques and best environmental practices

Note by the Secretariat

I. Introduction

1. In decision SC-10/9, on guidelines and guidance on best available techniques and best environmental practices, the Conference of the Parties to the Stockholm Convention on Persistent Organic Pollutants, among other things:

(a) Welcomed the workplan for the review and updating of the guidelines and guidance on best available techniques and best environmental practices, and the conclusions and recommendations of the experts on the Toolkit for Identification and Quantification of Releases of Dioxins, Furans and other Unintentional Persistent Organic Pollutants and on best available techniques and best environmental practices;

(b) Requested the experts on the Toolkit and on best available techniques and best environmental practices to continue the work on the ongoing review and updating of the guidelines and guidance in accordance with the workplan;

(c) Requested the Secretariat to organize one meeting of the experts on the Toolkit and on best available techniques and best environmental practices, and, subject to the availability of resources, a second meeting, and to continue to support the experts in their work and to implement awareness-raising and technical assistance activities to promote the Toolkit and the guidelines and guidance on best available techniques and best environmental practices, subject to the availability of resources;

(d) Invited Parties and others with relevant expertise to nominate experts to the joint Toolkit and best available techniques and best environmental practices expert roster, and to contribute to the further review and update of the guidelines and guidance, in accordance with the workplan.

* Reissued for technical reasons on 6 March 2023.

** UNEP/POPS/COP.11/1.

II. Implementation

A. Joint Toolkit and best available techniques and best environmental practices expert roster

2. Following the tenth meeting of the Conference of the Parties, the Secretariat invited Parties and others to nominate experts to the joint expert roster as specified in paragraph 1 above. The updated joint expert roster is set out in document UNEP/POPS/COP.11/INF/17.

B. Conclusions and recommendations and workplan

3. The Secretariat organized one expert meeting on best available techniques and best environmental practices. The meeting was held in Geneva from 11 to 13 October 2022. The report of the meeting is set out in document UNEP/POPS/COP.11/INF/16.

4. The conclusions and recommendations of the experts on the Toolkit and on best available techniques and best environmental practices and the proposed workplan for the review and updating of the guidelines and guidance on best available techniques and best environmental practices developed by the experts at their meeting are set out, respectively, in annexes I and II to the present note, without formal editing.

C. Guidelines and guidance on best available techniques and best environmental practices

5. The experts on best available techniques and best environmental practices updated the existing guidelines and guidance, including by making the guidance consistent with the relevant technical guidelines of the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal, in accordance with the workplan.¹

6. The experts updated the following four sections of the guidelines on best available techniques and guidance on best environmental practices relevant to Article 5 and Annex C to the Convention:²

- (a) Section VI.C on residential combustion sources;
- (b) Section VI.L on smouldering of copper cables;
- (c) Section VI.J on textile and leather dyeing (with chloranil) and finishing (with alkaline extraction);
- (d) Section VI.K on shredder plants for the treatment of end-of-life vehicles.

7. The experts agreed that further work was needed to finalize section V.C, on the production of pulp using elemental chlorine or chemicals generating elemental chlorine, and section VI.F, on specific chemical production processes releasing chemicals listed in Annex C.

8. Furthermore, in line with the workplan and pursuant to decision SC-9/17 on effectiveness evaluation, the experts developed a report on the polychlorinated dibenzo-*p*-dioxin and polychlorinated dibenzofuran releases reported according to Article 5 and Annex C and submitted it to the effectiveness evaluation committee on 31 January 2022 (UNEP/POPS/COP.11/INF/19).

9. Finally, the experts agreed to continue the development of the draft guidance on the identification and management of sites contaminated with persistent organic pollutants,³ taking into account comments received from Parties and observers, and to update the guidance on best available techniques and best environmental practices relevant to the chemicals listed in Annex A or B to the Convention, taking into account submissions of new relevant technical information from Parties and others, as well as information on the successful application of best available techniques and best environmental practices.

D. Awareness-raising and technical assistance relating to the Toolkit and best available techniques and best environmental practices

10. Information on the awareness-raising and technical assistance activities undertaken by the Secretariat to promote the Toolkit and the guidelines and guidance on best available techniques and

¹ UNEP/POPS/COP.10/8, annex.

² <http://chm.pops.int/?tabid=187>.

³ <http://chm.pops.int/?tabid=8779>.

best environmental practices is set out in document UNEP/CHW.16/INF/27–
UNEP/FAO/RC/COP.11/INF/17–UNEP/POPS/COP.11/INF/25.

E. Effectiveness evaluation pertaining to Article 5 of the Convention

11. The main findings, conclusions and recommendations pertaining to Article 5 on measures to reduce or eliminate releases from unintentional production are set out in the executive summary of the report on the effectiveness evaluation of the Convention.⁴

III. Proposed action

12. The Conference of the Parties may wish to adopt a decision along the following lines:

The Conference of the Parties,

Noting the priority areas for action recognized in decision SC-11/[--] on effectiveness evaluation as they relate to Article 5 on measures to reduce or eliminate releases from unintentional production,

1. *Takes note* of the updated joint Toolkit for Identification and Quantification of Releases of Dioxins, Furans and other Unintentional Persistent Organic Pollutants and best available techniques and best environmental practices expert roster,⁵ the reports of the expert meetings on best available techniques and best environmental practices,⁶ and the report on the polychlorinated dibenzo-*p*-dioxins and polychlorinated dibenzofurans releases reported according to Article 5 and Annex C to the Convention;⁷

2. *Welcomes* the four updated sections of the guidance on best available techniques and best environmental practices relevant to Article 5 of and Annex C to the Stockholm Convention on Persistent Organic Pollutants,⁸ and the conclusions and recommendations of the experts on the Toolkit and on best available techniques and best environmental practices;⁹

3. *Urges* Parties to develop full and complete source inventories and release estimates of polychlorinated dibenzo-*p*-dioxins and polychlorinated dibenzofurans using the Toolkit¹⁰ and other available guidance and to update them every five years in order to evaluate the efficacy of the measures taken towards the minimization and, where feasible, ultimate elimination of releases in accordance with Article 5 of the Convention, and to report the estimated releases in national reports under Article 15 of the Convention;

4. *Also urges* Parties, as part of the national implementation plans, to develop and keep up to date their action plans to minimize and ultimately eliminate releases of unintentionally produced persistent organic pollutants and to promote the use of best available techniques and best environmental practices for the priority sources identified as required by Article 5 of the Convention.

5. *Encourages* Parties and others to use the guidelines and guidance on best available techniques and best environmental practices when applying measures to minimize and ultimately eliminate releases of the chemicals listed in Annex A or B, and/or C to the Convention, and to provide feedback on their usefulness;

6. *Also encourages* Parties and others to consider the draft guidance on the identification and management of sites contaminated by persistent organic pollutants¹¹ and invites Parties and others to submit short case studies on remediation of sites contaminated with persistent organic pollutants to be considered in further developing the guidance;

7. *Invites* Parties and others to nominate experts with relevant expertise to be added to the joint Toolkit and best available techniques and best environmental practices expert roster, and to contribute to the further review and update of the guidelines and guidance

⁴ UNEP/POPS/COP.11/19/Add.1, part III, sect. C.

⁵ UNEP/POPS/COP.11/INF/17.

⁶ UNEP/POPS/COP.11/INF/16.

⁷ UNEP/POPS/COP.11/INF/19.

⁸ <http://chm.pops.int/?tabid=187>.

⁹ UNEP/POPS/COP.11/8, annex I.

¹⁰ <http://chm.pops.int/?tabid=372>.

¹¹ UNEP/POPS/COP.10/INF/67.

by submitting information on the successful application of best available techniques and best environmental practices relevant to the chemicals listed in Annexes A, B and C to the Convention and other technical information;

8. *Requests* the experts on the Toolkit and on best available techniques and best environmental practices to continue the work on the ongoing review and update of the guidelines and guidance in accordance with the workplan;¹²

9. *Requests* the Secretariat to organize one meeting of the experts on the Toolkit and on best available techniques and best environmental practices, and, subject to the availability of resources, a second meeting;

10. *Also requests* the Secretariat, subject to the availability of resources, to continue:

(a) To support the experts in the work referred to in paragraph 8 of the present decision;

(b) To support Parties in the updating and implementation of action plans under Article 5 of the Convention;

(c) To implement awareness-raising and technical assistance activities to promote the Toolkit and the guidelines and guidance on best available techniques and best environmental practices;

11. *Invites* regional centres and others in a position to do so to continue to provide, and prioritize, capacity-building on unintentionally produced persistent organic pollutants.

¹² UNEP/POPS/COP.11/8, annex II.

Annex I

Conclusions and recommendations of the experts on the Toolkit for Identification and Quantification of Releases of Dioxins, Furans and Other Unintentional Persistent Organic Pollutants under Article 5 of the Stockholm Convention and on best available techniques and best environmental practices

A. Inventories of unintentional persistent organic pollutants pursuant to Article 5 and Annex C to the Convention

1. The workplan for the experts set out in the annex to document UNEP/POPS/COP.10/8 included the preparation of inventories of unintentional persistent organic pollutants (POPs) pursuant to Article 5 and Annex C to the Convention. In line with the workplan and pursuant to decision SC-9/17 on effectiveness evaluation, the experts developed “Report on the polychlorinated dibenzo-*p*-dioxins/polychlorinated dibenzofurans (PCDD/PCDF) releases reported according to Article 5 and Annex C” and submitted it to the effectiveness evaluation committee on 31 January 2022. National reports (second, third and fourth national reports) and national implementation plans submitted by Parties were the main sources of information. Other sources included publications such as scientific publications, project reports and governmental or other public reports.

2. One of the limitations of the report to provide a conclusive picture on PCDD/PCDF releases was the limited number of inventories of PCDD/PCDF releases available through national reports, and national implementation plans or other relevant sources. Only 98 inventories were available from 184 countries that were Parties to the Stockholm Convention as of 31 January 2022, which means that 86 inventories were missing.

Recommendation:

All Parties should be urged to develop and update a full and complete PCDD/PCDF inventory as part of their Article 5 obligations under the Stockholm Convention and to submit it through Article 15 reporting. Inventories should be updated at five-year intervals as stipulated in Article 5 to evaluate the efficacy of the measures taken towards minimization or ultimate elimination of releases of unintentional POPs. These assessments should be reflected in the updated national implementation plans under Article 7.

B. Best available techniques and best environmental practices relevant to Article 5 and Annex C to the Convention

3. Several sections of the guidelines on best available techniques and guidance on best environmental practices (BAT/BEP) relevant to Article 5 and Annex C to the Convention¹³ have been updated to include new information and further considerations relevant to the newly listed POPs. The guidelines and guidance are applicable to releases of all chemicals listed in Annex C to the Convention. The following sections have been updated and made available on the Convention website¹⁴:

- (a) Section VI.C on residential combustion sources;
- (b) Section VI.L on smouldering of copper cables;
- (c) Section VI.J on textile and leather dyeing (with chloranil) and finishing (with alkaline extraction);
- (d) Section VI.K on shredder plants for the treatment of end-of-life vehicles.

Section VI.C on residential combustion sources

4. Studies have shown that significant levels of chemicals listed in Annex C to the Convention are released from residential combustion sources. The amount of chemicals released depends primarily on the fuel used (household waste, sea-salt laden driftwood and treated wood are the significant

¹³ <http://chm.pops.int/Implementation/BATandBEP/Guidance/Overview/tabid/5121/Default.aspx>.

¹⁴ <http://www.pops.int/Implementation/BATBEP/BATBEPGuidelinesArticle5/tabid/187/Default.aspx>.

sources of PCDD/PCDF) as well as combustion efficiency. The efficiency of combustion depends upon the combustion temperature, how well the gases are mixed, residence time, sufficiency of oxygen, and the fuel properties. Given their large numbers, residential combustion appliances contribute noticeably to overall releases of chemicals listed in Annex C. The conclusions of the guidance for cooking and heating with wood were condensed into a general and understandable seven-point summary, which is available for Parties to use for awareness raising and education.

Section VI.L on smouldering of copper cables

5. Scrap copper is often recovered by open burning of plastic coatings from electrical cable and wiring. Chemicals listed in Annex C to the Stockholm Convention are probably formed from plastic containing polychlorinated biphenyls (PCB) and other POPs as additives with copper as a catalyst at smouldering temperatures between 250 °C and 500 °C. Best available techniques include either mechanical cable chopping, stripping or high-temperature treatment > 850 °C.

Section VI.J on textile and leather dyeing (with chloranil) and finishing (with alkaline extraction)

6. Contamination with PCDD and PCDF has been found in both textile and leather products. The occurrence of PCDD/PCDF in the textile and leather industries is due to use of chlorinated chemicals, especially pentachlorophenol and chloronitrofen, to protect the raw material (e.g., cotton, wool or other fibres, leather); and use of dioxin-contaminated dyestuffs (e.g., dioxazines or phthalocyanines). Also, other chemicals known to contain PCDD/PCDF as unintentional trace contaminants, such as triclosan and secondary hydrochloric acid (HCl), as well as chlorinated paraffins, are used in the production of textiles. Smaller quantities of PCDD/PCDF may be formed during finishing, and during incineration of process-generated sludges. Regarding best available techniques, the most efficient primary measure to prevent contamination of textiles and leather goods with PCDD/PCDF would be not to use dioxin-contaminated biocides and dyestuffs in the production chains. All the wastewater streams from the processes but also rinsing and washing waters of the textile industry and the leather industry should be treated in a wastewater treatment plant. Special care should be taken for the disposal of the sludge and solid waste containing halogenated compounds.

Section VI.K on shredder plants for the treatment of end-of-life vehicles

7. Shredder plants for treatment of end-of-life vehicles are listed in Annex C of the Stockholm Convention as a source that has the potential to form and release chemicals listed in Annex C. In some countries, other scrap like waste electrical and electronic equipment (WEEE), in particular white goods (e.g. washing machines, refrigerators) and other scrap, are treated in the same facilities. The data available indicate that the PCDD/PCDF and PCB released from shredder plants are from industrial, intentional production, in particular of PCB and associated PCDD/PCDF contamination, and have been introduced with oils, dielectric fluids, especially in capacitors, and other materials contained in these vehicles or consumer goods, and which are simply set free through this mechanical process. Measures to prevent accidental fires should be in place and dust suppression or collection systems would help to reduce potential emission of POPs.

Section V.C on production of pulp using elemental chlorine or chemicals generating elemental chlorine

8. Formation and occurrence of PCDD/PCDF are associated with the use of elemental chlorine in the chemical bleaching step during the production of pulp. The guidelines include several best available techniques for minimizing or eliminating the formation of 2,3,7,8-tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD) and 2,3,7,8-tetrachlorodibenzofuran (2,3,7,8-TCDF) in wood and non-wood bleaching processes during pulp production. This section has been updated but further work is needed to finalize it.

Recommendations:

Parties and others should be encouraged to use the guidelines and guidance when applying BAT/BEP relevant to Article 5 and Annex C to the Convention, provide feedback on the usefulness of the guidelines and guidance and contribute to the finalization of the remaining sections by the BAT/BEP experts.

C. Best available techniques and best environmental practices relevant to Annex A and B to the Convention

9. No further guidelines on BAT/BEP relevant to Annexes A and B to the Convention have been developed during the current intersessional period.

Recommendation:

Parties and others should be encouraged to use existing guidance when applying BAT/BEP for chemicals listed in Annex A or B to the Convention and provide feedback on their usefulness.

Parties and others should also be encouraged to contribute to the further review and update of the guidance through submission of new relevant technical information as well as information on the successful application of BAT/BEP.

D. Sites contaminated by persistent organic pollutants

10. The draft guidance on the identification and management of sites contaminated by POPs has been updated. Further work is needed to finalize the guidance.

Recommendations:

Parties and others should be encouraged to consider the draft guidance on the identification and management of sites contaminated by POPs and be invited to submit short case studies on remediation of sites contaminated by POPs to be considered in further developing the guidance.

E. Process for review and update

11. Through the process for updating the joint Toolkit and BAT/BEP expert roster, the limitation in the expertise available to the process has become evident.

12. Collaboration and exchange of information with the appropriate bodies of the Basel Convention on waste-related aspects and with the POPs Review Committee on alternatives to POPs, as well as with other processes that generate guidance and recommendations relevant to the work on the Toolkit and on BAT/BEP, is important to ensure harmonization of activities.

Recommendations:

Parties and others with the relevant expertise should nominate experts and participate actively in the review and update process.

The work of the experts on the Toolkit and on BAT/BEP and that of the other relevant technical and scientific bodies such as the POPs Review Committee and other relevant processes under the Basel and Stockholm Conventions should be conducted in close consultation.

Annex II

Workplan for the ongoing review and updating of the Toolkit for Identification and Quantification of Releases of Dioxins, Furans and Other Unintentional Persistent Organic Pollutants under Article 5 of the Stockholm Convention and of the guidelines and guidance on best available techniques and best environmental practices

A. Areas of work

1. Toolkit for Identification and Quantification of Releases of Dioxins, Furans and Other Unintentional POPs under Article 5 of the Stockholm Convention on Persistent Organic Pollutants (Toolkit)

1. The work on the Toolkit has been completed and the relevant information and guidance has been made available to Parties and others. No further work on the Toolkit is currently needed.

2. Guidelines and guidance on best available techniques and best environmental practices

(a) Guidelines and guidance on best available techniques and best environmental practices relevant to the persistent organic pollutants listed in Annex C

2. The work to update the guidelines and guidance on best available techniques and best environmental practices (BAT/BEP) relevant to Article 5 and Annex C to the Convention is ongoing. Priority areas of work include the following sections:

(a) Section V.C on production of pulp using elemental chlorine or chemicals generating elemental chlorine;

(b) Section VI.F on specific chemical production processes releasing chemicals listed in Annex C.

(b) Guidance on best available techniques and best environmental practices relevant to the persistent organic pollutants listed in Annex A or B

3. The work to update the guidance on BAT/BEP relevant to the chemicals listed in Annex A or B to the Convention is ongoing. Priority areas of work include the following:

(a) Short-chain chlorinated paraffins (SCCPs): The experts to initiate the development of the guidance on SCCPs. The Secretariat to collect information from Parties and others on the production process and use of SCCPs, including products containing SCCPs;

(b) Methoxychlor, Dechlorane Plus and UV-328: If listed under the Stockholm Convention, the experts to further consider whether to initiate the development of guidance on those chemicals;

(c) Collect information from Parties and others on the successful application of BAT/BEP to minimize and ultimately eliminate releases of the chemicals listed in Annex A or B to the Convention.

(c) Guidance on the identification and management of sites contaminated by persistent organic pollutants

4. The work to develop guidance on the identification and management of sites contaminated by persistent organic pollutants is ongoing and is expected to be completed for consideration by the twelfth meeting of the Conference of the Parties. Parties are invited to submit short case studies on remediation of sites contaminated by POPs to be considered in further developing the guidance.

B. Timelines

<i>Deadline</i>	<i>Activity</i>
May 2023	Follow-up to the eleventh meeting of the Conference of the Parties: <ul style="list-style-type: none"> • Secretariat invites Parties and others to provide the information related to the work areas specified in the workplan by 15 September 2023. • Secretariat invites Parties and observers to express their interest to lead or contribute to the areas of work included in the workplan or to suggest leads and contributors from the joint Toolkit and BAT/BEP expert roster (UNEP/POPS/COP.11/INF/17).
Continue throughout the biennium	Collection and compilation of information from Parties and others for consideration and evaluation by the Toolkit and BAT/BEP experts at their annual meeting(s).
September 2023	Secretariat compiles information submitted by Parties and others by 15 September 2023 and sends the compilation to the Toolkit and BAT/BEP experts.
September/October 2023	Meeting of the Toolkit and BAT/BEP experts to evaluate information and develop the proposals for intersessional work, including identification of working group members, to update existing guidance and/or develop additional guidance for the areas of work included in the workplan.
August 2024	Working groups prepare draft updated guidance and/or draft new guidance on the basis of the proposals developed by the Toolkit and BAT/BEP experts at their 2023 meeting: <ul style="list-style-type: none"> • Working group leads send the first drafts to the Secretariat by 31 May 2024; • Secretariat makes available the first drafts for review by the experts by 30 June 2024; • Working group leads revise the first drafts according to comments and send the revised drafts to the Secretariat by 31 July 2024; • Secretariat makes available the drafts on the Stockholm Convention website by 15 August 2024 for comments by the experts, Parties and others by 15 September 2024.
September 2024	Secretariat compiles any additional information and comments submitted by the experts, Parties and others by 15 September 2024 and sends the compilation to the Toolkit and BAT/BEP experts.
October/November 2024	Meeting of the Toolkit and BAT/BEP experts to finalize drafts, develop conclusions and recommendations and workplan for the next biennium for consideration by the Conference of the Parties at its twelfth meeting.
January 2025	Working groups finalize the draft guidance and the leads send the final and/or interim drafts to the Secretariat by 15 January 2025.
May 2025	Twelfth meeting of the Conference of the Parties.