

## **Guidelines on Best Available Techniques and Provisional Guidance on Best Environmental Practices for the Stockholm Convention**

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### **Abstract**

The Conference of the Parties to the Stockholm Convention on POPs adopted at its 3<sup>rd</sup> Meeting in Dakar, Senegal, in May 2007 the Revised Draft Guidelines on Best Available Techniques and Provisional Guidance on Best Environmental Practices. The Guidelines represent a major achievement and will assist all Parties in their implementation of the Convention with regard to the unintentionally produced POPs. The Guidelines cover all sources mentioned in Annex C of the Convention and provides, where feasible, information on performance levels associated with BAT. The Guidelines will be field tested in the period leading up to the next Conference of the Parties in May 2009. It is hoped that the Guidelines will now be put to immediate use so that experience can be gained from their application and updating and review undertaken where necessary.

### **Introduction**

The Stockholm Convention on Persistent Organic Pollutants<sup>1</sup> (POPs) was adopted in May 2001 and entered into force in May 2004. At present (10 May 2007) 145 countries and one regional economic integration organization are Parties to the Convention. The objective of the Convention is "...to protect human health and the environment from persistent organic pollutants" (Article 1).

The Convention has provisions for intentional and unintentional POPs. For the intentional POPs, e.g. pesticides and industrial chemicals the measures to be taken are generally bans or phase-outs or restrictions on production, use, import and export.

For the unintentionally produced POPs listed in Annex C of the Convention; polychlorinated dibenzo-p-dioxins and polychlorinated dibenzofurans, hexachlorobenzene and polychlorinated biphenyls; Parties shall take "...measures to reduce the total releases derived from anthropogenic sources..." "...with the goal of their continuing minimization and, where feasible, ultimate elimination." (Article 5). To achieve this goal Parties shall inter alia "Promote.....the use of best available techniques (BAT) and best environmental practices (BEP)"(ibid.). When applying BAT/BEP Parties should take into consideration "...guidelines on BAT and BEP to be adopted by Decision of the Conference of the Parties" (ibid.).

It was recognized early in the negotiation process that the unintentional POPs presented the greatest challenge for Parties, among them in particular the developing countries and countries with economies in transition. Therefore, an ad hoc expert group was set up in June 2002 to start work on preparing guidelines on BAT and guidance on BEP. The mandate of that expert group expired when the Convention entered into force in 2004 without the expert group having been able to finalize its work.

The first Conference of the Parties (COP) therefore established a new Expert Group with experts from Parties, international organizations and non-governmental organizations, co-chaired by the representatives from China and Sweden. The Expert Group met twice, in November 2005 and November 2006 and finalized its work at the second meeting. The draft guidelines<sup>2</sup> were submitted to the 3<sup>rd</sup> meeting of the COP, in Dakar, Senegal, May 2007, where they were adopted unanimously by a decision of the COP. The COP also decided that the guidelines should be field tested in the period up to COP-4, which will take place in Geneva in May 2009. Parties should also inform the Secretariat of their experiences in applying the guidelines. The guidelines will be updated, as needed, depending on technological and other development in the different source areas.

### **Results and Discussion**

The BAT guidelines and provisional BEP guidance (hereafter called "the Guidelines") represent a major achievement in the implementation of the Stockholm Convention. They are the result of almost five years

intensive work involving over a hundred experts from countries all over the world, as well as from intergovernmental organizations e.g. UNEP; and from non-governmental organizations (NGOs); both industry and public interest organizations.

The Guidelines consist of two major parts. The first part, Sections I to III, contains general information that should be taken into account when applying the guideline for a specific source. The second part of the Guidelines, Section IV to VI, contains the guidelines listed source by source in the order they appear in Annex C of the Convention.

To increase user friendliness and readability it is intended that the Guidelines will be translated into all six UN Languages and be available in two ways. First the whole document will be available on a CD. Secondly, each source category would be printed as a booklet, with the source category chapter e.g. VI C, Residential combustion sources together with the general chapters in Section I to III. This will also facilitate the updating process in that individual guidelines may be updated separately as the need arises due to technological and other developments. They were also placed on the Stockholm Convention's website for download.

Section I, Introduction, describes the purpose and structure of the Guidelines, the chemicals listed in Annex C, their risks and toxicity. It also introduces the Toxic Equivalent (TEQ) and the Toxic Equivalency Factor (TEF) concepts. In addition, it provides the relevant texts from the Convention and the relation to the Basel Convention on the Control of Transboundary Movement of Hazardous Wastes and Their Disposal<sup>3</sup>.

Section II is devoted to a discussion on how to approach the issue of alternatives in the application of BAT and BEP. This was an issue that was very important for many NGOs and also some Parties. Other issues in this section are health and environmental issues and socioeconomic issues.

Section III finally gives some general guidance on the application of the Guidelines related issues e.g. political and governance issues, scientific and technical issues etc. The section also lists some internationally acknowledged general principles and approaches e.g. Polluter Pays Principle, Precautionary Approach, life-cycle analysis, community right to know and the like. The formation of PCDD/PCDF, HCB and PCB is discussed. A substantial part of the discussion in the expert group related to waste. Waste issues appear for many different sources but it was felt that an overview chapter on waste consideration was needed to pull all the issues together and to achieve consistency throughout the Guidelines.

A major part of Section deals with management of flue gas and other residues. This chapter contains very useful technical advice to users on different types of techniques and devices e.g. afterburners and scrubbing processes and their strengths and weaknesses, efficiency, efficacy etc.

The section ends with short chapters on training and testing, monitoring and reporting. Methods for sampling and analysis are suggested together with their sensitivities.

The second part of the Guidelines is the source chapters in Section IV to VI. Section IV is only a compilation of summaries of the chapters under sections V and VI.

Section V lists the source categories in Part II of Annex C of the Convention, those that "...have the potential for comparatively high formation and release of these substances (those in Annex C) to the environment." There are basically four such categories:

- (a) Waste incinerators, including co-incinerators of municipal, hazardous or medical waste or of sewage sludge;
- (b) Cement kilns firing hazardous waste;
- (c) Production of pulp using elemental chlorine or chemicals generating elemental chlorine for bleaching;
- (d) Thermal processes in the metallurgical industry.

The last category is subdivided into the following:

- (i) Secondary copper production;
- (ii) Sinter plants in the iron and steel industry;
- (iii) Secondary aluminium production;
- (iv) Secondary zinc production.

Since each source category is unique the chapters are not identical. Some common elements, however, are: a description of the relevant process or processes; alternatives, best environmental practice, best available techniques and, where feasible, performance levels associated with application of BAT (Table 1). Some chapters, e.g. on waste incineration deal with inputs, others e.g. pulp and paper give consideration to alternatives to chlorine bleaching, others e.g. metallurgical industry considers primary and secondary processes. The strength of the Guidelines is that each chapter was written by experts in that area, with input from all Parties and observers in an open and transparent process. The chapter for each source category contains references related to that source.

Table 1: Summary of performance levels for emissions of PCDD/PCDF associated with BAT.

<b>Part II Categories</b>	Performance Level (ng TEQ/Nm <sup>3</sup> )
(a) Waste incinerators for municipal solid waste, hazardous waste, medical waste, and sewage sludge:	<0.1
(b) Cement kilns co-firing hazardous waste:	<0.1
(d) Thermal processes in the metallurgical industry:	
(i) Secondary copper production:	<0.5
(ii) Sinter plants in iron and steel industry:	<0.2
(iii) Secondary aluminium production:	<0.5
(iv) Secondary zinc production:	<0.5
<b>Part III Categories</b>	
(b) Other sources in the metallurgical industry	
(i) Secondary lead smelting	<0.1
(ii) Primary aluminium production	<0.1
(iv) Secondary steel production	<0.1
(v) Primary base metals smelting	<0.1
(d) Fossil-fuel fired utility and industrial boilers	<0.1
(e) Firing installations for wood and other biomass	<0.1
(g) Crematoria	<0.1
(i) Destruction of animal carcasses	<0.1

Section VI, finally is devoted to source categories from which "...polychlorinated dibenzo-p-dioxins and dibenzofurans, hexachlorobenzene and polychlorinated biphenyls may [also] be unintentionally formed and released". These categories are as follows:

- (a) Open burning of waste, including burning of landfill sites;
- (b) Thermal processes in the metallurgical industry not mentioned in Part II;
- (c) Residential combustion sources;
- (d) Fossil fuel-fired utility and industrial boilers;
- (e) Firing installations for wood and other biomass fuels;
- (f) Specific chemical production processes releasing unintentionally formed persistent organic pollutants, especially production of chlorophenols and chloranil;
- (g) Crematoria;
- (h) Motor vehicles, particularly those burning leaded gasoline;
- (i) Destruction of animal carcasses;
- (j) Textile and leather dyeing (with chloranil) and finishing (with alkaline extraction);
- (k) Shredder plants for the treatment of end of life vehicles;
- (l) Smouldering of copper cables;
- (m) Waste oil refineries.

For some sources in these categories BAT is not available, rather BEP has to be applied. This does not mean that measures cannot or should not be taken to reduce or eliminate releases. In many cases, general principles such as good housekeeping, proper management of inputs and waste, clean working conditions etc. may go a long way to achieve the objective of the Convention. For some source categories that are of particular importance to developing countries e.g. open burning of waste, funding has been provided to initiate projects on how to improve techniques and to get a better understanding of emission factors for such source categories.

The Guidelines are now ready to use by all Parties and observers. The concern expressed by many developing countries about their limited capacity and capability to implement the guidelines is still real but the guidelines now contain some case studies to assist them in their application, and more such studies are encouraged. The period leading up to the next COP in May 2009 should allow for a broad field testing of the Guidelines in all regions so that sufficient experience can be gained for a first appreciation of their usefulness. The Guidelines are a powerful tool, it is now up to Parties to put them to work.

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### **References**

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