Best Available Techniques and Best Environmental Practices (BAT/BEP)

For the elimination of unintentionally produced POPs releases
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Introduction to the Stockholm Convention on Persistent Organic Pollutants (POPs)

The Stockholm Convention is a global treaty to protect human health and the environment from persistent organic pollutants (POPs). POPs are chemicals that remain intact in the environment for long periods, become widely distributed geographically, accumulate in the fatty tissue of living organisms and are toxic to humans and wildlife. POPs circulate globally and can cause damage wherever they travel. In implementing the Convention, Governments take measures to eliminate or reduce the release of POPs into the environment. Over 150 countries signed the Convention and it entered into force, on 17 May 2004, 90 days after the ratification by the fiftieth country.

The Stockholm Convention focuses on eliminating or reducing releases of 12 POPs, the so-called “Dirty Dozen”. It sets up a system for tackling additional chemicals identified as unacceptably hazardous. It recognizes that a special effort may sometimes be needed to phase out certain chemicals for certain uses and seeks to ensure that this effort is made. It also channels resources into cleaning up the existing stockpiles and dumps of POPs that litter the world's landscape. Ultimately, the Convention points the way to a future free of dangerous POPs and promises to reshape our economy’s reliance on toxic chemicals.

The Stockholm Convention is perhaps best understood as having five essential aims:

- Eliminate dangerous POPs, starting with the 12 worst
- Support the transition to safer alternatives
- Target additional POPs for action
- Cleanup old stockpiles and equipment containing POPs
- Work together for a POPs-free future
Introduction to BAT/BEP

What is BAT and BEP?

Article 5 of the Stockholm Convention on Persistent Organic Pollutants (POPs) on Measures to reduce or eliminate releases from unintentional production promotes the use of Best Available Techniques (BATS) and Best Environmental Practices (BEPs)

BAT means the most effective and advanced stage in the development of activities and their methods of operation which indicate the practical suitability of particular techniques for providing in principle the basis for release limitations designed to prevent and, where that is not practicable, generally to reduce releases of chemicals listed in Part I of Annex C and their impact to the environment as a whole.

BEP means the application of the most appropriate combination of environmental control measures and strategies.

Annex C Chemicals: Polychlorinated dibenzo-p-dioxins and dibenzofurans, Hexachlorobenzene and Polychlorinated Biphenyls

The Global Environmental Facility (GEF) is the designated interim financial mechanism for the Stockholm Convention.

The Stockholm Convention is the most significant global legally binding instrument for targeting POPs. The United Nations Environment Programme (UNEP) coordinated the organization of the Stockholm Convention, which was originally signed by 92 nations and the European Community on the 23 May 2001 in Stockholm, Sweden. The Stockholm Convention established an initial list of 12 key POPs for which signatories are required to reduce the risks to human health and the environment arising from their release. Enlisted parties are required to take measures (legal and/or administrative) to eliminate or heavily restrict the production and use of POP pesticides and PCBs, and to minimize the unintentional production and release of POPs.

At its fourth meeting held from 4 to 8 May 2009, the Conference of the Parties (COP), by decisions SC-4/10 to SC-4/18, adopted amendments to Annexes A (elimination), B (restriction) and C (unintentional production) of the Stockholm Convention to list nine additional chemicals as persistent organic pollutants.

• BAT means the most effective and advanced stage in the development of activities and their
• BEP means the application of the most appropriate combination of environmental control measures and strategies.
Introduction to the United Nations Industrial Development Organization

The United Nations Industrial Development Organization (UNIDO) focuses its resources and expertise to support developing countries and economies in transition in their efforts to achieve sustainable industrial development.

Based on the strategy and action plans outlined in the respective NIP, UNIDO assists the developing and economies in transition countries in implementing their relevant obligations under the Stockholm Convention. POPs related projects and activities are focused mainly in the following areas: (i) PCB environmental sound management and disposal, (ii) contaminated sites, (iii) pesticides, (iv) BAT/BEP projects and (v) non-combustion projects.

Best Available Techniques (BAT) and Best Environmental Practices (BEP) subsume the activities under the Stockholm Convention to reduce and ultimately eliminate the unintentionally produced POPs (Persistent Organic Pollutants). This goal will be achieved by implementing a harmonized framework, in co-operation with institutions and experts from developed as well as developing countries, under principles and requirements of the Stockholm Convention.

UNIDO’s policy in project formulation and development, strives to explore synergies and expand on the opportunities linking the multilateral environmental agreements (MEAs). In a practical example, the development of a BAT/BEP project focusing on unintentionally produced POPs in the fossil fuel-fired utilities and industrial boilers, the project explored the identification of possible options for the simultaneous reduction of dioxins and CO2 in response to the Stockholm Convention and Climate Change requirements respectively.
Global Forum Activities

**BAT/BEP Forum in East and South East Asia (ESEA)**

UNIDO formally launched its first BAT/BEP Forum in East and South East Asia (ESEA) in October 2007 during a Ministerial meeting in Bangkok, Thailand, as a means to promote and create an enabling environment for the development, diffusion, deployment and transfer of existing cost-effective and environmentally sound best available techniques and practices to mainly reduce unintentional emission of POPs from thermal sources such as industrial boilers, metallurgical sectors, and waste incineration. The ESEA BAT/BEP Forum Member Countries are Brunei, Cambodia, China, Indonesia, Lao PDR, Malaysia, Mongolia, Philippines, Singapore, South Korea, Thailand and Vietnam. This Forum has formulated a project proposal as a regionally concerted effort which culminated into the approved GEF project on the demonstration of BAT and BEP in fossil fuel-fired utilities and industrial boilers in response to the Stockholm Convention on POPs.
Excerpt from the Working Framework of the East-South East Asia Regional Forum on BAT/BEP

1 Introduction

1.1. The participating countries of the Regional Forum met voluntarily to cooperate and promote the introduction of BAT/BEP in selected industries and common practices. By building on the foundation of existing bilateral and multilateral initiatives, the Regional Forum will enhance cooperation to achieve significant reductions in unintentional POPs releases while promoting economic growth, in accordance with national circumstances.

1.2 Each participant will undertake activities contemplated by the Bangkok Declaration in accordance with the laws, policies, and regulations under which it operates and applicable international instruments to which it is a party.
2 Purposes

2.1 The purposes of the Regional Forum are to:
2.1.1 Create a voluntary, non-legally binding framework for regional cooperation to facilitate the development, diffusion, deployment, and transfer of BAT/BEP through concrete and substantial cooperation so as to achieve practical results;
2.1.2 Encourage participating countries to promote and create enabling environments (e.g. national policies, institutional and regulatory frameworks) to assist in such efforts;
2.1.3 Facilitate attainment of our respective national implementation of the Stockholm Convention’s obligations; and
2.1.4 Provide a Regional Forum for exploring the participants’ respective policy approaches relevant to addressing interlinked development and environment issues within the context of the Stockholm Convention, and for sharing experiences in developing and implementing respective national development strategies.

3 Functions

3.1 Through this Regional Forum, the participants will cooperate to:
3.1.1 Exchange information on participants’ respective BAT/BEP policy approaches relevant to addressing interlinked development and environment issues within the context of the Stockholm Convention, including any gaps and overlaps in national policy approaches, as well as other areas of mutual interest;
3.1.2 Share experiences and exchange information about implementing the Stockholm Convention and efforts to reduce or eliminate the releases of unintentional POPs;
3.1.3 Identify, assess, and address barriers to the promotion and creation of an enabling environment for development, diffusion, deployment, and transfer of BAT/BEP in accordance with the participants’ priorities;
3.1.4 Identify and implement bilateral and multilateral cooperative activities among participants for the development, deployment, diffusion, and transfer of BAT/BEP, in accordance with the participants’ priorities;
3.1.5 Facilitate collaboration among existing bilateral and multilateral initiatives and promote information-sharing on BAT/BEP;
3.1.6 Incorporate human and institutional capacity-building elements, as appropriate, into activities as a means to strengthen cooperative efforts;
3.1.7 Engage the private sector as an integral part of the cooperative activities of the Regional Forum, as well as development banks, research institutions, and other relevant governmental, intergovernmental, and non-governmental organizations, as appropriate;
3.1.8 Develop and implement BAT/BEP action plans decided by the Regional Forum; and
3.1.9 Assess regularly the progress of the Regional Forum to ensure its effectiveness.
The Regional Forum on BAT/BEP in Central and Eastern Europe, Caucasus, and Central Asia (CxEECCA) was established in Bucharest, Romania, on 5 November 2009. The Member Countries of the CxEECCA BAT/BEP Forum are Albania, Armenia, Azerbaijan, Bosnia and Herzegovina, Croatia, Czech Republic, FYR of Macedonia, Georgia, Kyrgyzstan, Republic of Moldova, Republic of Serbia, Republic of Slovakia, Romania, Turkey and Ukraine.
Excerpt from the Working Framework of the Central and Eastern Europe, Caucasus, and Central Asia Regional Forum on BAT/BEP

1 Vision
1.1. The Regional Forum has come together voluntarily to advance introducing BAT/BEP in selected industries and common practices. By building on the foundation of existing bilateral and multilateral initiatives, the Regional Forum will enhance cooperation to promote economic growth while achieving significant reductions in unintentional POPs releases, in accordance with national circumstances. The Regional Forum recognizes that national efforts will also be important in meeting this shared vision.

2 Purposes
2.1. The purposes of the Regional Forum are to:
2.1.1. Create a voluntary, non-legally binding framework for regional cooperation to facilitate the development, diffusion, deployment, and transfer of BAT/BEP through concrete and substantial cooperation so as to achieve practical results;
2.1.2. Promote and create enabling environments to assist in such efforts;
2.1.3. Facilitate attainment of our respective national implementation of the Stockholm Convention’s obligations; and
2.1.4. Provide a Forum for exploring the participants’ respective policy approaches relevant to addressing interlinked development and environment issues within the context of the Stockholm Convention, and for sharing experiences in developing and implementing respective national development strategies.

3 Functions
3.1. Through this Regional Forum, the participants are to cooperate to:
3.1.1. Exchange information on participants’ respective policy approaches relevant to addressing interlinked development and environment issues within the context of the Stockholm Convention, including any gaps and
overlaps in national policy approaches, as well as other areas of mutual interest; 3.1.2 Share experiences and exchange information about implementing the Stockholm Convention and efforts to reduce unintentional POPs releases;
3.1.3 Identify, assess, and address barriers to the promotion and creation of an enabling environment for development, diffusion, deployment, and transfer of BAT/BEP in accordance with the participants’ priorities;
3.1.4 Identify and implement bilateral and multilateral cooperative activities among participants for the development, deployment, diffusion, and transfer of BAT/BEP, in accordance with the participants’ priorities;
3.1.5 Facilitate collaboration among existing bilateral and multilateral initiatives and promote information-sharing on BAT/BEP;
3.1.6 Incorporate human and institutional capacity-building elements, as appropriate, into activities as a means to strengthen cooperative efforts;
3.1.7 Engage the private sector as an integral part of the cooperative activities of the Regional Forum, as well as development banks, research institutions, and other relevant governmental, intergovernmental, non-governmental organizations and other bodies, as appropriate;
3.1.8 Develop and implement action plans decided by the Regional Forum; and
3.1.9 Assess regularly the progress of the Regional Forum to ensure its effectiveness.
3.2 Each participant will undertake activities contemplated by this Declaration in accordance with the laws, regulations, and policies under which it operates and applicable international instruments to which it is a party.
Regional BAT/BEP Forum in Africa (COMESA, ECOWAS and SADC)

Under the framework of the GEF/UNIDO/UNEP projects on “Capacity strengthening and technical assistance for the implementation of the Stockholm Convention (SC) National Implementation Plans (NIPs) in African Least Developed Countries (LDCs) of the COMESA and SADC sub-regions”, UNIDO and the Regional Economic Commissions (RECs) together with the LDCs participating countries from COMESA and SADC sub-regions and non-LDCs countries such as Botswana, Madagascar, Mauritius, South Africa and Zambia met in Pretoria, South Africa from 27-28 September 2011 to establish the Regional BAT/BEP Forum for Africa covering East and Southern Africa. While the Forum for Western Africa was established on 8 December 2011 in Lomé, Togo.

The development objective of the Forum is to strengthen the capacities of the member countries to enable facilitation of transfer of environmentally sound technologies including cooperation between Africa and other regional BAT/BEP Forums in East and South East Asia (ESEA), Central and Eastern Europe, Caucasus and Central Asia (CEECCA) and the Gulf region (GCC) taking into account the increased use of local and traditional knowledge and techniques in the industrial sector in the region.
The Regional BAT/BEP Forum for Africa was officially launched during the 14th Session of the African Ministerial Conference on the Environment (AMCEN) held in Arusha, Tanzania on 12 September 2012 where concerned officials at Ministerial level from COMESA, ECOWAS and SADC member countries signed the declaration and approved the Terms of Reference of the Forum.

Based on the NIPs of the countries, four (4) priority sectors have been identified for introduction of BAT/BEP measures at regional levels as follows: (1) open burning of wastes and landfills; (2) waste incineration; (3) fossil fuel-fired utilities and industrial boilers; and (4) metallurgical industry. The project proposal of the first priority sector (open burning of wastes and landfills) for COMESA and SADC has been submitted to GEF for funding.

BAT/BEP Forum for Gulf Cooperation Countries (GCC)
The BAT/BEP Forum for Gulf Cooperation Countries (GCC) was launched in October 2010 in Kuwait and includes Bahrain, Kuwait, Oman, Qatar and the UAE as Member Countries.
General BAT/BEP Forum Management Structure:

- Representatives of Member Countries
- UNIDO Representatives from the Stockholm Convention Unit and other related Units
- Industrial Associations and Private sector
- Ministry of Industry
- Educational Institutions
- Donor Representatives
- NGOs/ Foundations/ Civil Society,
- Representation from other BAT/BEP Forums
Practical example of successful implementation of BAT/BEP

The KitaKyushu Eco-Town Project was created in 1997 under Japan’s Ministry of International Trade and Industry (currently the Ministry of Economy, Trade and Industry, or METI) and the former Ministry of Health and Welfare (project was later transferred to the present Ministry of Environment).

It was founded on the basic concept of “zero-emissions.” In essence, this concept is about ultimately reducing waste generation to zero, by taking the “waste” arising in citizen lifestyles and industrial activities, and utilizing it to the greatest extent possible as raw materials in other industries.

The Eco-Town project has two objectives:

1. To stimulate local economies by nurturing the growth of environmental industries that take advantage of the industrial capabilities in each region.
2. To create integrated systems that are in harmony with the environment, and to involve industry, the public sector, and consumers, with the aim of creating a resource-recycling society in a given region.
Eco-Towns have a number of key features such as (a) strong legislation, shifting the market towards a sound material-cycle society, (b) national and local governments are spearheading the drive to bring together industry clusters to be more sustainable, (c) increasing product research and development – in both public and private sectors, including universities, (d) large and rapidly expanding eco-business market, domestically and internationally, (e) strong focus on environmental technologies and ESTs, and innovative/cutting-edge solutions to solve environmental problems, and (f) focus on energy conservation, material development and integrated waste management are also features of Eco-Towns.

UNIDO signs MoU with City of Kitakyushu

On 14 June, 2010, UNIDO Director-General, Dr. Kandeh K. Yumkella and Mr. Kenji Kitahashi, Mayor of the City of Kitakyushu, Japan, signed a Memorandum of Understanding with the purpose to create a framework to guide the Parties’ cooperation in the fields of environmental technology and waste recycling services. Subject to the programmes of work approved by UNIDO and the City and the conclusion of specific agreements or project documents for specific projects, the areas of cooperation and joint actions within the scope of the Memorandum of Understanding are to jointly organize an annual international seminar on Eco-town concept and management for decision makers and technical managers responsible for environmental industry management of the industrial zones and industrial estates in developing countries. The main objective of the seminar is to focus on the model of Kitakyushu Eco-town for initiating conducive policies on establishing of Eco-towns and replicate best lessons learnt on waste recycling and waste integration management.
UNIDO BAT/BEP Projects

Ongoing Projects:

- Introduction of BAT and BEP methodology to demonstrate reduction or elimination of unintentionally produced POPs releases from the industry in Vietnam

UNIDO helps Vietnam to apply BAT/BEP measures and complete dioxin release reduction demonstrations in selected priority sectors by 2010. The sector-wide introduction of BAT/BEP is planned to be completed by 2020. The benefits for Vietnam include enhanced efficiency in reducing, avoiding and eliminating POPs releases by cleaner production activities in the industry. The review and possible improvement of national policies and regulations is furthermore strengthened to enhance national capability for adequate monitoring of POP chemicals. The project budget amounts to US$ 2.4 million over 2 years.
**Demonstration of BAT and BEP in fossil fuel-fired utility in East and Southeast Asia (Cambodia, Lao PDR, Mongolia, Philippines, Thailand)**

The regional UNIDO project aims at establishing baseline inventories for U-POPs in fossil fuel-fired utilities and industrial boilers, pilot demonstrations, public-private partnerships and implementation of policies and regulations. The project budget amounts to U$ 4 million over 4 years.

**Promotion of strategies to reduce unintentional production of POPs in the Red Sea and Gulf of Aden (PERSGA) coastal zone**

Close co-operation on a regional level has been achieved to collectively implement BAT/BEP measures through UNIDO assistance that enables the introduction of BAT/BEP strategies for coastal zone industries of the PERSGA region. The objective of the project is to reduce and/or eliminate the unintentional production of POPs in key sectors of industry (cement, incineration, metallurgy and pulp and paper). By achieving this goal, the project will permit countries to attain compliance with their obligations to Article 5 of the Stockholm Convention. The project includes measures to ensure public participation, targeted capacity building, impact on human health and monitoring of socio-economic implications. The project budget amounts to U$ 3 million over 2 years.

**Environmentally Sustainable Management (ESM) of medical wastes in China**

This project is determined to carry out BAT/BEP measures for the environmentally sound management of medical waste to reduce U-POPs releases. UNIDO is upgrading the incineration equipment and air pollution control system to the BAT level and replacing outdated incineration facilities with alternative, non-incineration techniques.

More than 20 medical institutions are supported by UNIDO to perform good procurement practices, waste segregation at source, waste reduction/minimization, reuse and recycling, intermediate storage, transportation, traceability and staff training. Dedicated disposal facilities keep the incineration and pyrolysis processes and U-POPs releases under optimal control to meet performance levels associated with BAT, while diverting a significant portion of medical waste to alternative processes such as autoclaving, microwaving, and chemical disinfections that avoid releases of U-POPs. The project budget amounts to a total of U$ 44.7 million over 5 years.

**BAT/BEP Centre for environmentally safe disposal of potentially hazardous consumer products and industrial wastes in Russia**

Inception workshop of the project
The Russian Federation faces the challenge with the ever-increasing volumes of used consumer and industrial products and needs to undertake strong efforts to apply modern methods to reduce the negative environment impact and make possible the recycling and environmentally safe disposal of these products after their decommissioning. The project will address the creation of capacity for management of electronic, electric and rubber wastes. These products being safe during their utilization could become hazardous and toxic if recycled and disposed after their utilization by environmentally unsafe methods.

The project assists in developing of the industrial strategy and building up the management capabilities at several demonstration regions for introduction of BAT/BET for efficient recycling of these wastes, thus preventing the additional creation of toxic and hazardous wastes and saving of natural resources through reusing and recycling of valuable components of electronic, electric and rubber wastes. It will be done by improving and strengthening the regulation and the regulation enforcement practices; by creating organizational and technical capacities through training and strengthening of specialized centres; by collecting information and developing information systems for assessment of possibilities of application of BAT/BEP on recycling and disposal of the wastes; and by pilot applications of the several BAT and working out selected BEP for recycling and disposal of electric and electronic wastes (EEW) and rubber technical goods (RGT). The results of the project will be introduced for application in other countries of the Euro-Asian Economic Community (EurAsEC).

Conclusion

UNIDO shall continuously develop projects and embark on industry-related chemicals management addressing the need through initiatives aimed at the transfer of innovative treatment processes and safe disposal technologies. In particular, UNIDO will continue to strengthen regional cooperation on POPs related issues through the establishment and promotion of BAT/BEP Fora and will stay at the forefront of executing BAT/BEP projects.