Updated general technical guidelines for the environmentally sound management (ESM) of wastes consisting of, containing or contaminated with persistent organic pollutants (POPs)

Technical Guidelines on Environmental Sound Management (ESM) of POPs Wastes

- Developed by the Basel Convention and adopted by its COP-7 (2004) and COP-8 (2006)
- Issues under the Stockholm Convention to be addressed cooperatively with the Basel Convention:
  - Low POP content
  - Levels of destruction and irreversible transformation
  - Methods that constitute environmentally sound disposal

5 separate guidelines on POPs wastes

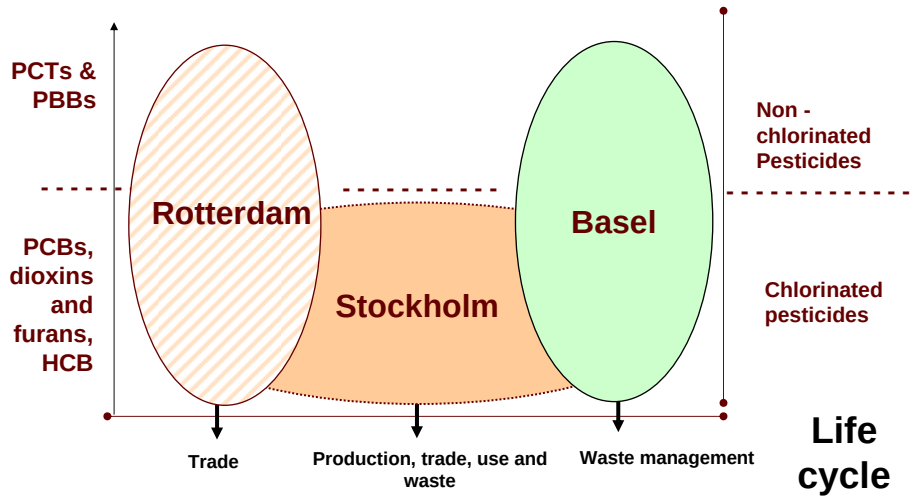
- **Guideline I: general guidelines**
  - Stockholm/Basel mandates on POPs waste
  - ESM of POPs wastes
  - ES disposal of POPs wastes
  - Remediation of contaminated sites, health/safety, emergency response, public participation
- **Guideline II –** Technical guidelines on PCBs
- **Guideline III –** Technical guidelines on DDT
- **Guideline IV –** Technical guidelines on unintentionally produced PCDDs, PCDFs, HCB and PCBs
- **Guideline V –** Technical guidelines on POPs pesticides

Definitions

The Basel Convention has the following definitions:

- **Waste**: "substances or objects which are disposed of or are intended to be disposed of or are required to be disposed of by the provisions of national law"
- **Disposal:** "any operation specified in Annex IVA and IVB of the Convention"
- **Environmentally Sound Management of waste:** "taking all practicable steps to ensure that hazardous wastes or other wastes are managed in a manner which will protect human health and the environment against the adverse effects which may result from such wastes"

Interacting responsibilities of the three chemical Conventions



What is *Low POP Content*?

- Any substance that contains a POP with a concentration above the 'Low POP Content' level has to be destroyed or irreversibly transformed.
- If the concentration of the substance containing a POP is lower than the low POP content, then this Obligation does not apply.
- When destruction is not the environmentally preferable option, disposal through environmentally sound management can be undertaken.

Concentrations for 'Low POP Content'?

The provisional concentrations for low POP content of POP chemicals are:

PCBs	50 mg/kg
PCDDs and PCDFs	15 μg TEQ/kg
Aldrin, chlordane, DDT, dieldrin, endrin, heptachlor, HCB, mirex and toxaphene	50 mg/kg

General considerations for ESM

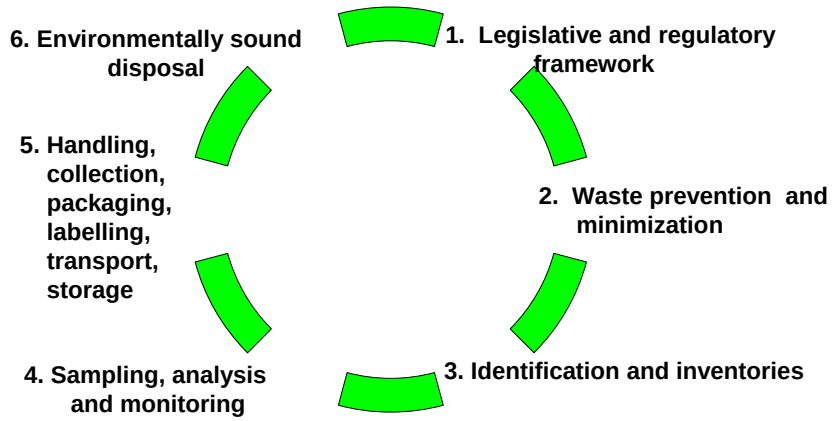
o Broad policy concept with no universal definition:

But the Basel and Stockholm Convention together with the OECD do provide direction on ESM:

The Basel Convention defines ESM as *"taking all practicable steps to ensure that hazardous wastes or other wastes are managed in a manner which will protect human health and the environment against adverse effects which may result from such wastes".*

Detailed definitions on ESM for specific POPs are given in the various technical guidelines.

The concept of ESM contains the following key elements



Legislative and regulatory framework of ESM

- Parties have to make sure that national legislation on hazardous wastes is in conformity with the obligations under the Conventions.
- For ESM of POPs wastes, national legislation has to:
  - Phase-out dates for production and use of POPs as well as their disposal
  - Requirements for transboundary movement
  - Specifications for containers, equipment, bulk containers and storage sites
  - Health and safety provisions for the safe handling of POPs waste

Prevention and minimization of POPs wastes

Prevention and minimization of POPs wastes can include the following activities:

- Identification of the production of UPOPs and determine whether the Stockholm Guidelines on BAT and BEP can be applied
- Definition of the processes that use POPs and generate POPs wastes and whether alternatives or ways to reduce POPs production exist
- Identification of POPs products and articles, as well as alternatives
- Minimization of the volume of POPs waste generated by preventing contamination of other wastes, regular maintenance of equipment, etc.

Identification and inventories

Identification

- According to Article 6 of the Stockholm Convention:
  - Identify stockpiles of intentionally produced chemicals,
  - Develop strategies on how to identify POPs products, articles in use and wastes

✓ POPs wastes can be liquid, solid or released as gases,

✓ POPs wastes are generated through human activities such as manufacturing or industrial processes,

✓ but POPs wastes are also the result of contamination and from the extended storage of banned or unwanted products containing POPs.

In order to identify POPs wastes, knowledge on POPs articles and products (e.g. manufacturers, trade names, production, uses, etc.) is required.

Sampling, analysis and monitoring

- Sampling, analysis and monitoring are the main activities used to assess the quality and concentration of the POPs waste available.

Objectives of the sampling include:

- Site characterization
- Concentration of the POPs
- Compliance with regulatory standards
- Suitability for proposed treatment or disposal

The objectives of a monitoring programme are to:

1. Assess whether a hazardous waste management operation is functioning in accordance to its design
2. Demonstrate changes in the quality of the environment
3. Identify problems of the waste management approach so that corrective measures can be taken

Handling, collection, packaging, labelling, transportation and storage

- During these processes, the risk of a spill, a leak or a fire can be high depending on the POP and its storage.

Handling

In order to avoid accidental releases and exposure of humans, POPs waste should be handled carefully. POPs should not be mixed with other types of waste.

Collection

Small quantities of POPs waste from scattered sources can be collected at transfer stations or temporary depots and transferred later to a central location. Specific care has to be taken.

Packaging and labelling

- Correct packaging is very important in order to reduce the risks of leaks and spills of POPs waste during transportation and storage.
- Regulations on packaging are country-specific, but international reference material exists as well.
- Labels must clearly identify the container (e.g. ID number) and indicate the packaged POP and its risks. International standards for labelling of waste have been developed by the United Nations Economic Commission for Europe (UNECE) and the OECD.

These are examples of the UN classification of hazards required on labels. Selection of such labels will depend on the relevant hazard posed by each POP.

Source: FAO Trainer of Trainers course

Transportation

It is important to avoid accidental spills during transportation and to track POPs waste until it reaches its ultimate destination. Most countries have their own regulations on transportation of dangerous goods.

The 'United Nations Recommendations on the Transport of Dangerous Goods: Model Regulations' (Orange Book) give guidance on the safe transportation of dangerous goods.

Transportation

The International Maritime Dangerous Goods Code (IMDG), published by the International Maritime Organization (IMO) regulates sea transport. IMO also provides several training programmes for the IMDG.

For more information, please see:
http://www.imo.org/Safety/mainframe.asp?topic_id=158

Storage

- POPs waste should be stored safely in dedicated areas away from other wastes.
- Updated inventories of the stored wastes should be kept.
- Storage areas for POPs waste should be specifically designed for these wastes in order to prevent release of POPs to the environment.

Some important elements for storage areas are:

- Sufficient aeration and cooling
- Catchment for spilt liquids and an appropriate floor structure
- Fire alarm and fighting equipment

Environmentally sound disposal of POPs wastes

There are two processes to complete ESM:

1. Pre-treatment
2. Destruction or irreversible transformation methods

Pre-treatment:

Normally, waste is treated before destruction can take place. Treatment may include:

- Adsorption and absorption
- Dewatering
- Mechanical separation
- Mixing
- Oil-water separation
- pH adjustment
- Size reduction
- Solvent washing
- Thermal desorption

Destruction and irreversible transformation methods

There are many different destruction technologies, which can be grouped into two main categories - combustion and non-combustion methods.

The following operations are currently in commercial use:

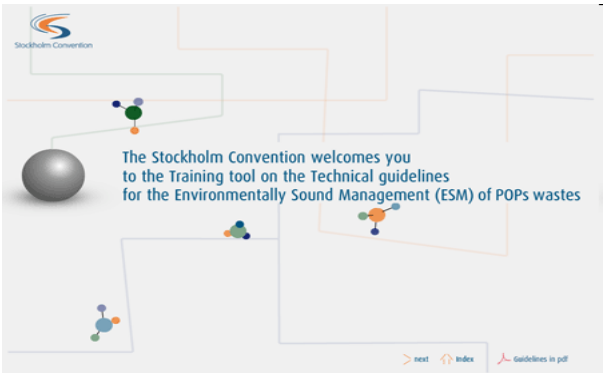
Combustion methods

- Waste incineration
- Cement kiln co-incineration

Non-combustion methods

- Alkali metal reduction
- Base-catalysed decomposition (BCD)
- Gas-phase chemical reduction (GPCR)
- Plasma arc

For further information please consult Technical guidelines on EMS of POPs waste



For further information please consult Technical guidelines on EMS of POPs waste on:
http://chm.pops.int/Programmes/WasteStockpiles/tabid/446/language/en-US/Default.aspx

And consult the interactive training tool on CD-Rom developed by the Stockholm Convention in collaboration by the Basel Convention