GLOBAL MONITORING PLAN UNDER THE STOCKHOLM CONVENTION: OUTCOMES OF THE FIRST AND SECOND PHASES OF IMPLEMENTATION

Katarina Magulova
BRS Secretariat
Background and overview
MANDATE

ARTICLE 16 on Effectiveness Evaluation:

Commencing four years after the date of entry into force of this Convention, and periodically thereafter at intervals to be decided by the Conference of the Parties, the Conference shall evaluate the effectiveness of this Convention.

Evaluation of the progress of implementation of the Convention through:

• Review and analysis of national reports
• Compliance reports
• Global monitoring of core matrices

Framework (UNEP/POPS/COP.6/27/Add.1/Rev.1)

EEC (SC-7/24)
ARTICLE 16 on Effectiveness Evaluation:

In order to facilitate such evaluation, the Conference of the Parties shall, at its first meeting, initiate the establishment of arrangements to provide itself with comparable monitoring data on the presence of the chemicals listed in Annexes A, B and C as well as their regional and global environmental transport.

These arrangements:

(a) Should be implemented by the Parties on a regional basis when appropriate, in accordance with their technical and financial capabilities, using existing monitoring programmes and mechanisms to the extent possible and promoting harmonization of approaches;

(b) May be supplemented where necessary, taking into account the differences between regions and their capabilities to implement monitoring activities; and

(c) Shall include reports to the Conference of the Parties on the results of the monitoring activities on a regional and global basis at intervals to be specified by the Conference of the Parties.
IMPLEMENTATION ARRANGEMENTS

• Based on the decisions SC-1/13 and SC-2/13 the ad hoc technical group prepared:


• The first draft of the Guidance Document on the Global Monitoring Plan for POPs (UNEP/POPS/COP.3/INF/14)

Both documents are continuously updated – see further

• Decision SC-3/19 also established a coordination mechanism for GMP: Regional Organization Groups (ROGs) and the Coordination Group under the GMP (GCG)
# Reference Documents

<table>
<thead>
<tr>
<th>Document Symbol</th>
<th>Title</th>
<th>Download</th>
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<tbody>
<tr>
<td>UNEP/POPS/COP.4/33</td>
<td>Global monitoring report under the global monitoring plan for effectiveness evaluation</td>
<td><img src="" alt="Download" /></td>
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<tr>
<td>UNEP/POPS/COP.4/INF/19</td>
<td>Regional monitoring reports under the global monitoring plan for effectiveness evaluation</td>
<td><img src="" alt="Download" /></td>
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<tr>
<td>UNEP/POPS/COP.4/SC-4/31</td>
<td>Global monitoring plan for effectiveness evaluation</td>
<td><img src="" alt="Download" /></td>
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<tr>
<td>UNEP/POPS/COP.6/INF/31</td>
<td>Guidance on the global monitoring plan for persistent organic pollutants</td>
<td><img src="" alt="Download" /></td>
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<tr>
<td>UNEP/POPS/COP.6/INF/31/Add.1</td>
<td>Guidance on the global monitoring plan for persistent organic pollutants: Global monitoring plan for persistent organic pollutants as amended after the fourth meeting of the Conference of the Parties to the Stockholm Convention</td>
<td><img src="" alt="Download" /></td>
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<td>UNEP/POPS/COP.6/INF/31/Add.2</td>
<td>Guidance on the global monitoring plan for persistent organic pollutants: Implementation of the global monitoring plan for effectiveness evaluation as amended after the fourth meeting of the Conference of the Parties to the Stockholm Convention</td>
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<td>UNEP/POPS/COP.6/SC-6/32</td>
<td>Report of the meeting of the global coordination group and regional organization groups under the global monitoring plan for persistent organic pollutants</td>
<td><img src="" alt="Download" /></td>
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<tr>
<td>UNEP/POPS/COP.6/SC-6/23</td>
<td>Global monitoring plan for the effectiveness evaluation</td>
<td><img src="" alt="Download" /></td>
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</tbody>
</table>

Items: 8  Files: 16

NB: These documents are continuously updated
REGIONAL IMPLEMENTATION

- **ROG** – Regional Organization Group, 6 members per UN region, monitoring experts
- **GCG** – Global Coordination Group, 15 members in total, 3 from every UN region
- **ROGs**: Every 6 years
- **Collect information on regional basis in core media** on concentrations of POPs (first 2009 - pdf, second 2015 – electronic format: GMP DWH)
- **Prepare reports** (regional/global)
- **Submit to COP for consideration** – and input to evaluate effectiveness of the Stockholm Convention
STRATEGIC PARTNERSHIPS

- Arctic Monitoring and Assessment Programme (AMAP)
- Global Atmospheric Passive Sampling (GAPS) Network
- Cooperative Programme for Monitoring and Evaluation of the Long-range Transmission of Air Pollutants in Europe (EMEP)
- South-East Asia air monitoring programme
- Research Centre for Environmental Chemistry and Ecotoxicology (RECETOX)
- United Nations Environment Programme (UNEP Chemicals and Waste)
- World Health Organization (WHO)
The objective of monitoring activities is to generate comparable data on levels of POPs in core media:

- **ambient air,**
- **human milk and human blood,**
- **surface water for water-soluble POPs (PFOS)**

- POP substances to be monitored = Annexes of the Stockholm Convention
- Substances are in more detail in Chapter 2 – GMP Guidance Document = congeners, isomers, degradation products or parent compounds that bring most comprehensive information

- Existing monitoring programmes (air: AMAP, EMEP, GAPS, IADN, MONET… human milk / blood: UNEP WHO, AMAP, national programmes..).
CAPACITY BUILDING

In line with Article 16 2b (providing support to POPs monitoring arrangements):

• **Regional capacity building projects with GEF support**
  - phase 1 (2008-2010/12) in Africa, Latin America and the Caribbean, and the Pacific Islands
  - phase 2 (2015 onwards) in Africa, Asia, Latin America and the Caribbean, and the Pacific Islands

• **RECETOX Summer School** on Toxic Compounds in the Environment

• **Interlaboratory (intercalibration) tests** (UNEP Chemicals)

• **UNEP databank of existing POPs laboratories** (as developed through the UNEP/GEF project “Assessment of Existing Capacity and Capacity Building Needs to Analyze POPs in Developing Countries” and updated in 2014)
GMP guidance
OVERVIEW

• Guidance document = technical (practical document!)
  • Collection, analysis and reporting of information and data
  • Statistical considerations
= all that to provide comparable information in all regions
+ also describes a harmonized regime for the preparation of monitoring reports

• Updated to increase comparability and consistency, broadened core media (ambient air, human breast milk, blood + newly – surface water for PFOS)
• Information on sampling and analysis of POPs listed in 2009, 2011 & 2013 harmonized regime for monitoring reports…
• Latest version of the Guidance document (UNEP/POPS/COP.7/INF/39)
PROCESS FOR UPDATING THE GUIDANCE

Mandate
Paragraph 5(d) of the terms of reference of the global coordination group for the global monitoring plan (SC-4/31).

Periodicity
Continuous process with new substances being listed in Annexes to the Convention.

Last version
Amended version presented at COP-7

Further amendments will be agreed at the 2016 GCG meeting

First and Second Expert Meeting to update the Guidance on the Global Monitoring Plan for POPs - Geneva, Switzerland, 12 - 14 April 2010 and 4 - 6 October 2010
Amendments in the updated guidance:

- Substances to be monitored
- Sampling and analysis of new POPs in air, human milk/blood, water
- Correlation for PFOS in human milk and blood
- Other media
- Long range transport / climate effects
- Analytical methodology for new POPs
- Specimen banking
- Strategy and process for implementation
GMP reports
REGIONAL AND GLOBAL MONITORING REPORTS

Second global monitoring report under development by the global coordination group for consideration by the effectiveness evaluation committee by 31 January 2016
<table>
<thead>
<tr>
<th>Region</th>
<th>Air</th>
<th>Human matrices</th>
<th>Water</th>
<th>Other media</th>
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</thead>
<tbody>
<tr>
<td>Africa</td>
<td>Global Atmospheric Passive Sampling Network (GAPS)</td>
<td>UNEP/WHO human milk survey</td>
<td>MONET Africa pilot project</td>
<td>Limited monitoring dealing with the contamination of water, soil, sediments and food by POP pesticides</td>
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<td></td>
<td>MONET Africa</td>
<td>UNEP GEF GMP1 project</td>
<td>UNEP GEF pilot project</td>
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<td>UNEP GEF GMP1 project</td>
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<td>Asia Pacific</td>
<td>POPs Monitoring Programme in East Asian Countries</td>
<td>China monitoring programme on human milk</td>
<td>United Nations University program</td>
<td>Japan national programme on water, ground water, bottom sediments, soil, biota, food</td>
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<td></td>
<td>China national POPs monitoring programme</td>
<td>Japan POPs monitoring programme on human milk</td>
<td>“Environmental Monitoring and Governance in the Asian Coastal Hydrosphere”</td>
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<td>Japan national monitoring programme</td>
<td>Japan monitoring programme on human blood</td>
<td>National water monitoring programmes: China, Japan</td>
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<td>MONET Fiji</td>
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<td>UNEP GEF GMP1 project</td>
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<td>CEE</td>
<td>APOPSBAL</td>
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<td></td>
<td>Arctic Monitoring and Assessment Programme (AMAP)</td>
<td>UNEP/WHO human milk survey</td>
<td>Joint Danube Survey (2009)</td>
<td>National programmes on e.g. soil, sediments and biota are available in the region but rather variable, episodic</td>
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<td>GAPS</td>
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<td>MONET-Europe</td>
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<td>European Monitoring and Evaluation Programme (EMEP)</td>
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<td>NORMAN - NORMAN Association</td>
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<td>GAPS</td>
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<td>Latin Passive Air Monitoring Network (LAPAN)</td>
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<td>UNEP GEF GMP1 project</td>
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<td>Australian Pilot Monitoring Programme –air (AGAM)</td>
<td>AMAP Australia “snap shot” surveys</td>
<td>Australian Pilot Monitoring Programme</td>
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<td>EMEP</td>
<td>(under the Australian pilot monitoring programme)</td>
<td>International Council for Exploration of the Sea (ICES) database</td>
<td>Australian Pilot Monitoring Programme</td>
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<td>Integrated Atmospheric Deposition Network (IADN)/</td>
<td>CHMS and FNBI</td>
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<td>Environment Canada’s Air Monitoring in the Great Lakes Basin (GLB)</td>
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<td>Norwegian Troll Station Monitoring Network in the Alpine Region for</td>
<td>New Zealand “snap shot” surveys</td>
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<td>NCP</td>
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<td>Persistent and other Organic Pollutants (MONARPOP)</td>
<td>Sweden national programmes:</td>
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<td>MONET - Europe</td>
<td>Uppsala, Stockholm</td>
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<td>U.S. EPA’s National Dioxin Air Monitoring Network (NDAMN)</td>
<td>UNEP/WHO human milk survey</td>
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<td>UK-Norwegian Transect</td>
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<td>The UK Toxic Organic Micro Pollutants (TOMPs)</td>
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www.brsmeas.org  @brsmeas  7/19/2016  17
DATA AVAILABILITY

(a) Air monitoring: active sampling

(b) Air monitoring: passive sampling

(c) UNEP/WHO human milk survey

(d) Sampling of PFOS in water

www.brsmeas.org  @brsmeas
GMP DATA WAREHOUSE

http://www.pops-gmp.org/
Global overview of data
CHANGES OVER TIME IN AIR CONCENTRATIONS OF INDICATOR PCB
(SUM 6 PCB)

www.brsmeas.org  @brsmeas

7/19/2016
CHANGES OVER TIME IN CONCENTRATIONS OF INDICATOR PCB IN HUMAN MILK (SUM 6 PCB)

Size of symbol – Concentration:
- 2,146 ng/g fat
- 202 ng/g fat

Color – Trend type:
- Increasing
- Decreasing
- Insignificant
- Not available

Source: pops-gmp.org
CONCENTRATIONS OF INDICATOR PCB IN HUMAN MILK (SUM 6 PCB)
Acknowledgements
The worldwide implementation of the Global Monitoring Plan was made possible thanks to the generous contributions to the Stockholm Convention Voluntary Trust Fund from the Governments of Japan, Norway, Sweden, and through the European Commission’s Thematic Programme for Environment and Sustainable Management of Natural Resources, including Energy (ENRTP). Further, the contribution of the projects to support POPs monitoring activities in regions, funded through the Global Environment Facility (GEF) and the Strategic Approach to International Chemicals Management (SAICM), is greatly acknowledged. Monitoring activities, and data collection and analysis are implemented in the five UN regions in cooperation with strategic partners and through involvement of Regional Organization Groups and Global Coordination Group.
MORE INFORMATION AT:

chm.pops.int
Thank you for your attention
GLOBAL MONITORING PLAN DATA WAREHOUSE:
ONLINE TOOL TO STORE AND VISUALIZE GLOBAL POPS DATA

Ana Priceputu
BRS Secretariat
General attributes
Purpose

Online tool to store and visualize data on levels of POPs in core matrices reported through the Stockholm Convention’s GMP

- Serve as regional node for electronic data collection, storage, processing and presentation in regions with limited capacity
- Support the development of regional monitoring reports and the global report in the frame of the GMP
- Support the effectiveness evaluation of the Stockholm Convention by compiling and visualizing results of global POPs monitoring activities
- Provide user-friendly access to the POPs monitoring data to all stakeholders and the broad public - launched on 7 May 2015
- Provide information relevant for implementation of the Article 16 (effectiveness evaluation)
ATTRIBUTES

• Modern multi-modular data repository for both primary and aggregated data with a uniform visualization interface

• Fully parametric data sheets - harmonized data and information structure supporting broader comparability of available information

• Standardized data structure, handling and outputs - work with data from a wide range of heterogeneous sources without compromising incoming information

• Multilayer data validation procedure

• Presentation of data in a uniform format through visualization portal

• Public access to global data once the validation process is completed
STRUCTURE

Data layer for data import, online data collection, data standards (code lists) and archiving.
Core layer for data management, validation, recoding, transformation, and background for data services (GIS, analytical and statistical tools, data processing, workflow).
Presentation layer for visualization portal, presentation tools and web services.
Scope and functionalities
SCOPE

The following monitoring programmes contributed data on **ambient air:**
AMAP, EMEP, GAPS, GAPS-GRULAC, GMP-UNEP, China National POPs Monitoring Project, Košetice, LAPAN, MONET, TOMPS

The following monitoring programmes contributed data on **human milk:**
UNEP/WHO Human Milk Survey, China National POPs Monitoring Project

The following programmes contributed data on **water** monitoring:
Ocean cruises Alcor, ANT1, ANT2, ARK, Endeavor, GA442, GA446, Maria S.Merian, Maria S.Merian-08, North, Oden, Polarstern-07, Polarstern-08, Snow Dragon
### AVAILABLE TOOLS

GMP Data Warehouse – Data Visualization

**Map Overview**
- Data Availability
  - Available data – Parameters
  - Available data – Time
- Summary statistics
- Time Series
  - Trend Map
  - Time Series Analysis

<table>
<thead>
<tr>
<th>SPATIAL DISTRIBUTION</th>
<th>DATA AVAILABILITY</th>
<th>SUMMARY STATISTICS</th>
<th>TIME SERIES</th>
<th>DATA EXPORTS</th>
</tr>
</thead>
</table>

**Time Series Bar Charts Map**
- Data Exports
  - Sites Summary
  - Data Sources Summary
  - Analytical Methods Summary
  - Export of All Data Selected
DATA VIZUALIZATION

GMP Data Warehouse – Data Visualization

Data Selection

Matrix
- Air (35583)
- Human milk (11153)
- Water (1163)

Matrix specification

UN Regional Group

Country

Sea

Site Type

Time Range

source: www.pops.gmp.org
DATA AVAILABILITY
SUMMARY STATISTICS

Data Set Summary

Items contained in the selected data set:

- Matrix: Human milk
- Matrix specification: Pooled
- UN Regional Group: Africa, Asia and Pacific...
- Country: Antigua and Barbuda, Barbados...
- Sea: Not classified
- Site Type: Not classified
- Status: gmp-approved, gmp-validated
- Monitoring programme: GMP UNEP
- Data Provider: Africa-UNEP, Asia-UNEP...
- Compound: Hexabromocyclododecane (HBCD)
- Total number of records: 38

Download the summary

Diagram:
- Compound: Hexabromocyclododecane (HBCD)
- Parameter: Alpha-HBCD
- Range: Percentile 5/95
- Order by: Region - Country - Site - Ye
- Order direction: Ascending

Legend:
- Percentile 5/95
- Median

Description:
Summary Statistics presents interval of measured concentrations for one compound in a given matrix and site in individual year. The user selects combination of matrix, compound,
TIME SERIES ANALYSIS
Some examples of outputs
Levels of and trends in concentrations of polychlorinated biphenyls (PCB) in air and in humans

**Indicator PCB**

Changes over time in air concentrations of indicator PCB (Sum 6 PCB)

Changes over time in concentrations of indicator PCB in human milk (Sum 6 PCB)

**Dioxin-like PCB**

Changes over time in air concentrations of d-1 PCB (Sum 12 PCB) (passive sampling)

Changes over time in concentrations of d-1 PCB in human milk (Sum 12 PCB)

Median concentrations of Sum 6 PCB in human milk

Median concentrations of Sum 12 PCB in human milk
Levels of and trends in concentrations of dichlorodiphenyltrichloroethane (DDT) in air and in humans

**Ambient air**

Passive air sampling

Changes over time in air concentrations of DDT (Sum 6 DDT*)

Active air sampling

Changes over time in air concentrations of DDT (Sum 3 DDT**)

**Human milk**

Changes over time in concentrations of DDT in human milk (Sum 6 DDT)

Median concentrations of Sum 6 DDT in human milk

NB: a significant contribution of the DDE metabolite to the sum DDT suggests legacy contamination through past exposure.
MORE INFORMATION AT:

http://www.pops-gmp.org/
Thank you for your attention