

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



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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)

MANDATE

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:

Implementation Plan for the Global Monitoring Plan for Persistent Organic Pollutants adopted by decision SC-3/19, UNEP/POPS/COP.3/23/Rev.1

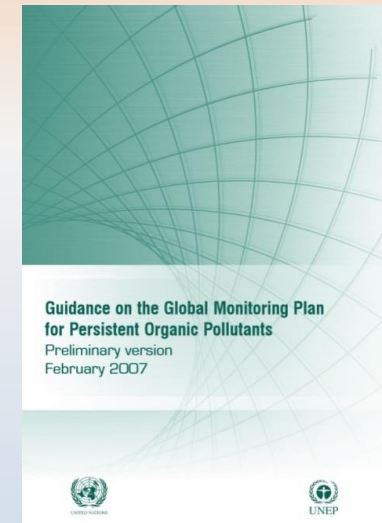
- The first draft of the Guidance Document on the Global Monitoring Plan for POPs

(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

Reference Documents

Arabic Chinese English French Russian Spanish

Document Symbol	Title	Download
UNEP/POPS/COP.4/33	Global monitoring report under the global monitoring plan for effectiveness evaluation	 
UNEP/POPS/COP.4/INF/19	Regional monitoring reports under the global monitoring plan for effectiveness evaluation	 
UNEP/POPS/COP.4/SC-4/31	Global monitoring plan for effectiveness evaluation	 
UNEP/POPS/COP.6/INF/31	Guidance on the global monitoring plan for persistent organic pollutants	 
UNEP/POPS/COP.6/INF/31/Add.1	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	 
UNEP/POPS/COP.6/INF/31/Add.2	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	 
UNEP/POPS/COP.6/INF/32	Report of the meeting of the global coordination group and regional organization groups under the global monitoring plan for persistent organic pollutants	 
UNEP/POPS/COP.6/SC-6/23	Global monitoring plan for the effectiveness evaluation	 
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)

MONITORING ACTIVITIES

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)
<http://chm.pops.int/TheConvention/ConferenceoftheParties/Meetings/COP7/tabid/4251/mctl/ViewDetails/EventModID/870/EventID/543/xmid/13075/Default.aspx>

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

ELEMENTS










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

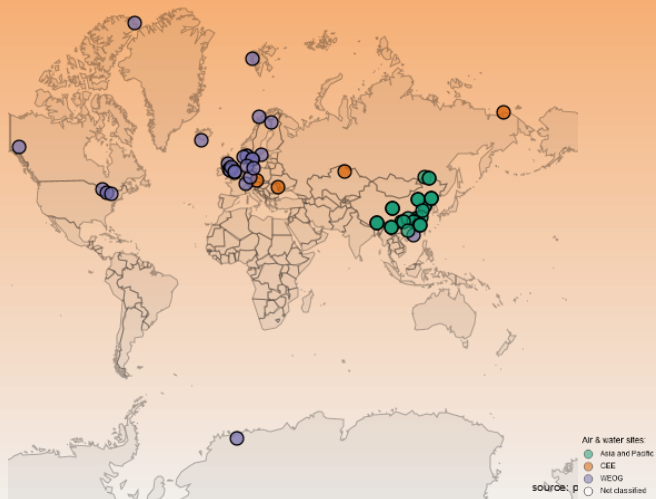
REGIONAL AND GLOBAL MONITORING REPORTS

	First Monitoring Reports	Second Monitoring Reports
Global Monitoring Report		
Regional Monitoring Report for Africa		
Regional Monitoring Report for Asia and the Pacific		
Regional Monitoring Report for Central and Eastern Europe		
Regional Monitoring Report for Latin America and the Caribbean (GRULAC)		

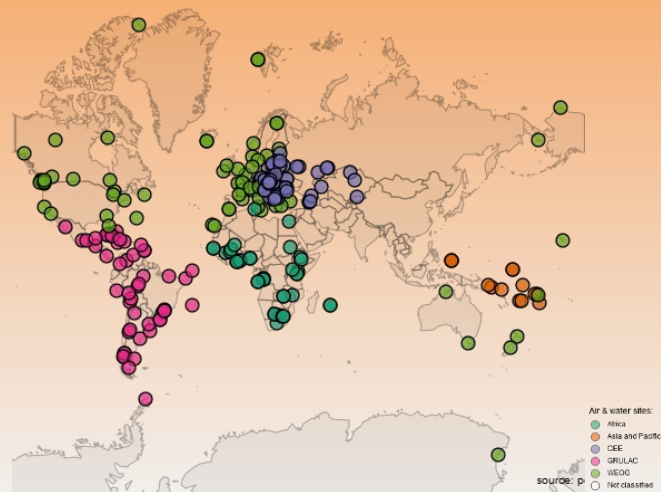
→ Second global monitoring report under development by the global coordination group for consideration by the effectiveness evaluation committee by 31 January 2016

Region	Air	Human matrices	Water	Other media
Africa	Global Atmospheric Passive Sampling Network (GAPS) MONET Africa UNEP GEF GMP1 project	UNEP/WHO human milk survey UNEP GEF GMP1 project	MONET Africa pilot project UNEP GEF pilot project	Limited monitoring dealing with the contamination of water, soil, sediments and food by POP pesticides
Asia Pacific	POPs Monitoring Programme in East Asian Countries China national POPs monitoring programme Japan national monitoring programme MONET Fiji UNEP GEF GMP1 project	China monitoring programme on human milk Japan POPs monitoring programme on human milk Japan monitoring programme on human blood UNEP/WHO human milk survey	United Nations University program “Environmental Monitoring and Governance in the Asian Coastal Hydrosphere” National water monitoring programmes: China, Japan	Japan national programme on water, ground water, bottom sediments, soil, biota, food
CEE	APOPSBAL Arctic Monitoring and Assessment Programme (AMAP) GAPS European Monitoring and Evaluation Programme (EMEP) MONET - Europe MONET - CEE MONET - CZ	UNEP/WHO human milk survey	Joint Danube Survey (2009) MONET-Europe NORMAN - NORMAN Association	National programmes on e.g. soil, sediments and biota are available in the region but rather variable, episodic
GRULAC	GAPS Latin Passive Air Monitoring Network (LAPAN) UNEP GEF GMP1 project	UNEP/WHO human milk survey UNEP GEF GMP1 project		
WEOG	AMAP Australian Pilot Monitoring Programme –air (AGAM) EMEP GAPS Integrated Atmospheric Deposition Network (IADN)/ Environment Canada’s Air Monitoring in the Great Lakes Basin (GLB) Northern Contaminants Programme (NCP) Norwegian Troll Station Monitoring Network in the Alpine Region for Persistent and other Organic Pollutants (MONARPOP) MONET - Europe U.S. EPA’s National Dioxin Air Monitoring Network (NDAMN)	AMAP Australia “snap shot” surveys (under the Australian pilot monitoring programme) CDC/CCEHIP/-NCEH CHMS and FNBI ESB Germany GerES New Zealand “snap shot” surveys Sweden national programmes: Uppsala, Stockholm UNEP/WHO human milk survey	Australian Pilot Monitoring Programme International Council for Exploration of the Sea (ICES) database	AMAP Australian Pilot Monitoring Programme Great Lakes HELCOM OSPAR MEDPOL NCP
	UK-Norwegian Transect The UK Toxic Organic Micro Pollutants (TOMPs)		www.brsmeas.org  @brsmeas	7/11/2016 17

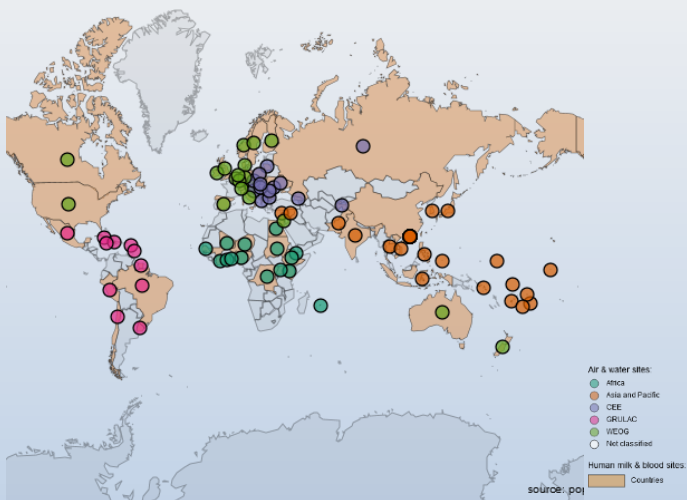
DATA AVAILABILITY



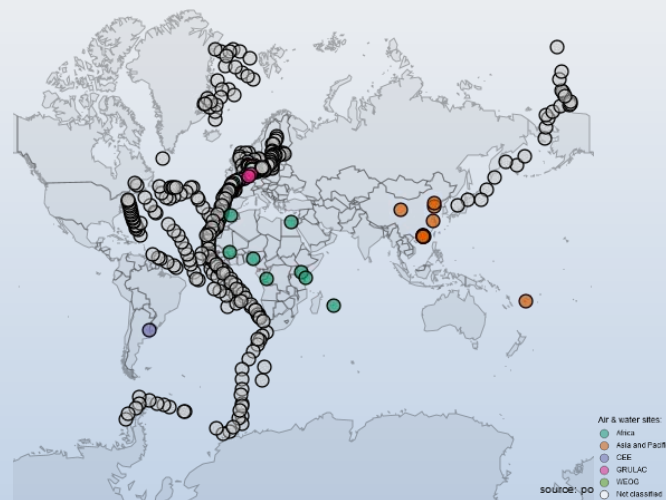
(a) Air monitoring: active sampling



(b) Air monitoring: passive sampling



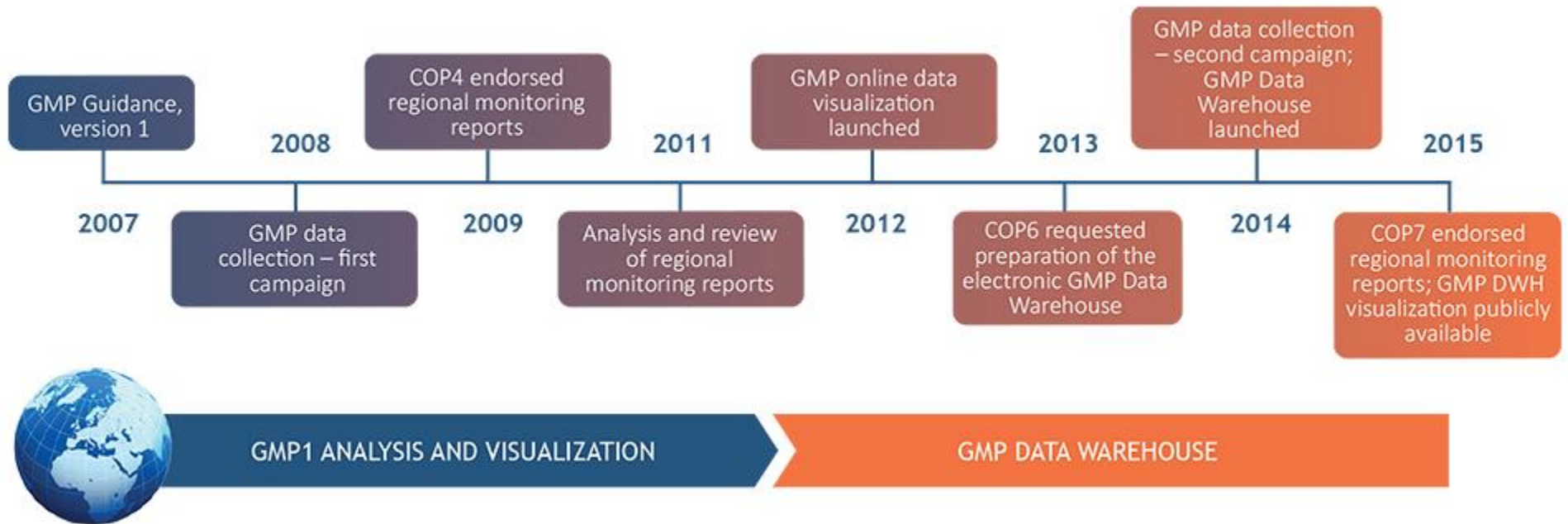
(c) UNEP/WHO human milk survey



(d) Sampling of PFOS in water

GMP DATA WAREHOUSE

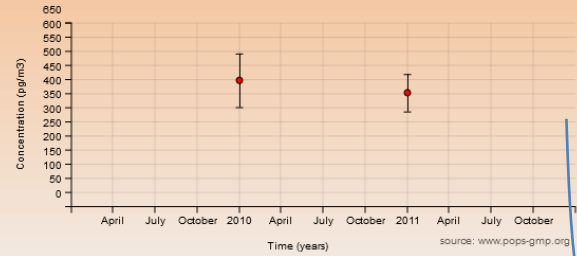
<http://www.pops-gmp.org/>



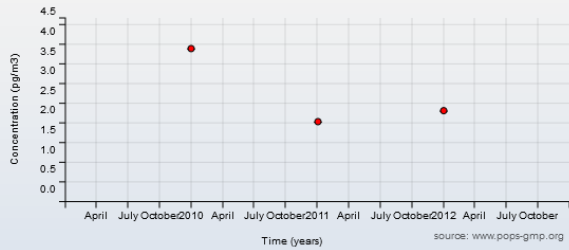


Global overview of data

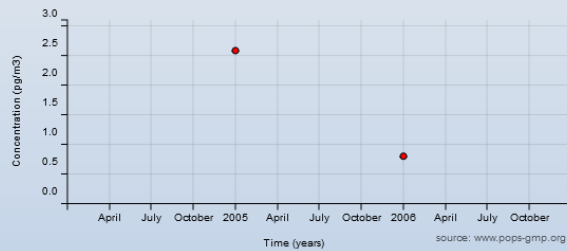
CHANGES OVER TIME IN AIR CONCENTRATIONS OF INDICATOR PCB (SUM 6 PCB)



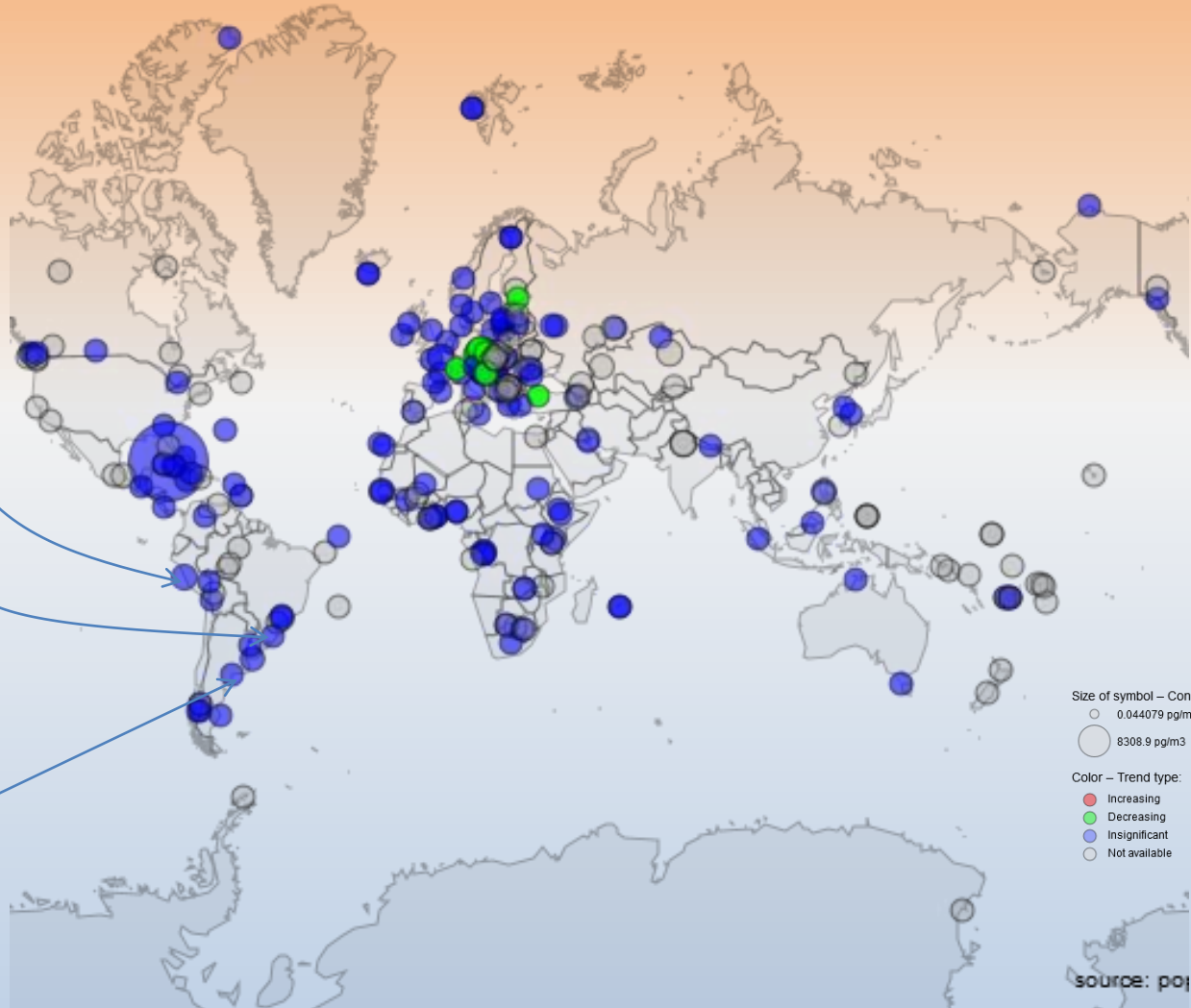
Lima, Peru



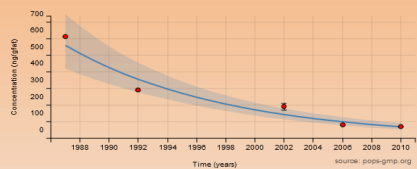
Sao Jose, Brazil



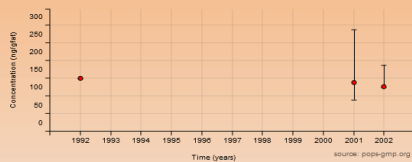
Bahia Blanca, Argentina



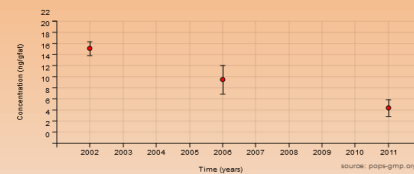
CHANGES OVER TIME IN CONCENTRATIONS OF INDICATOR PCB IN HUMAN MILK (SUM 6 PCB)



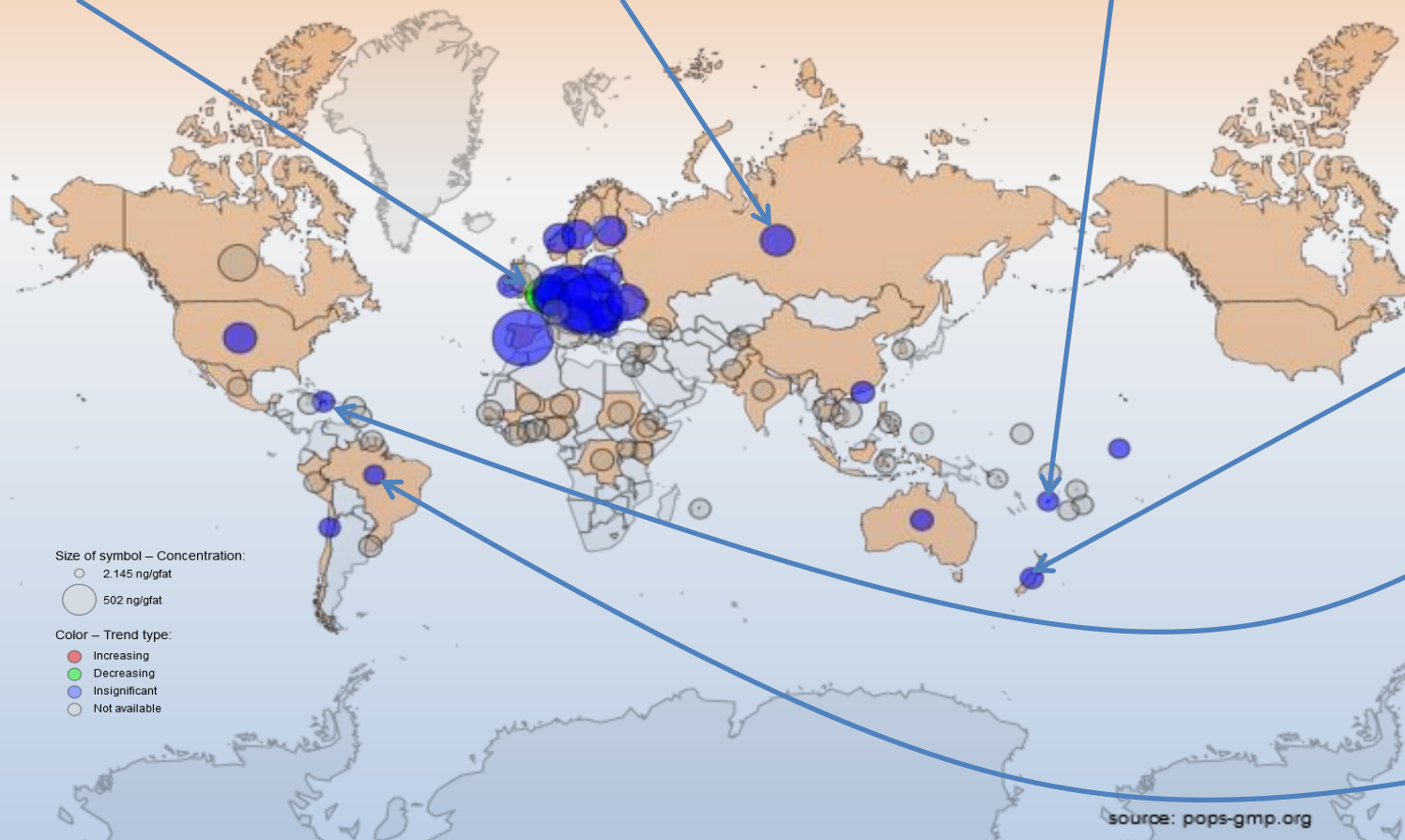
Belgium



Russian Fed.

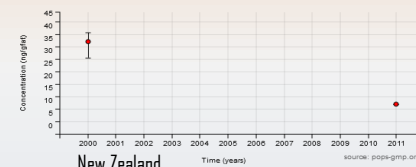


Fiji

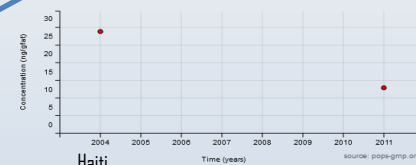


Size of symbol – Concentration:
 ○ 2.145 ng/gfat
 ○ 502 ng/gfat

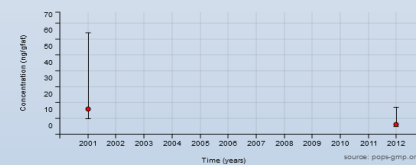
Color – Trend type:
 ● Increasing
 ● Decreasing
 ● Insignificant
 ○ Not available



New Zealand



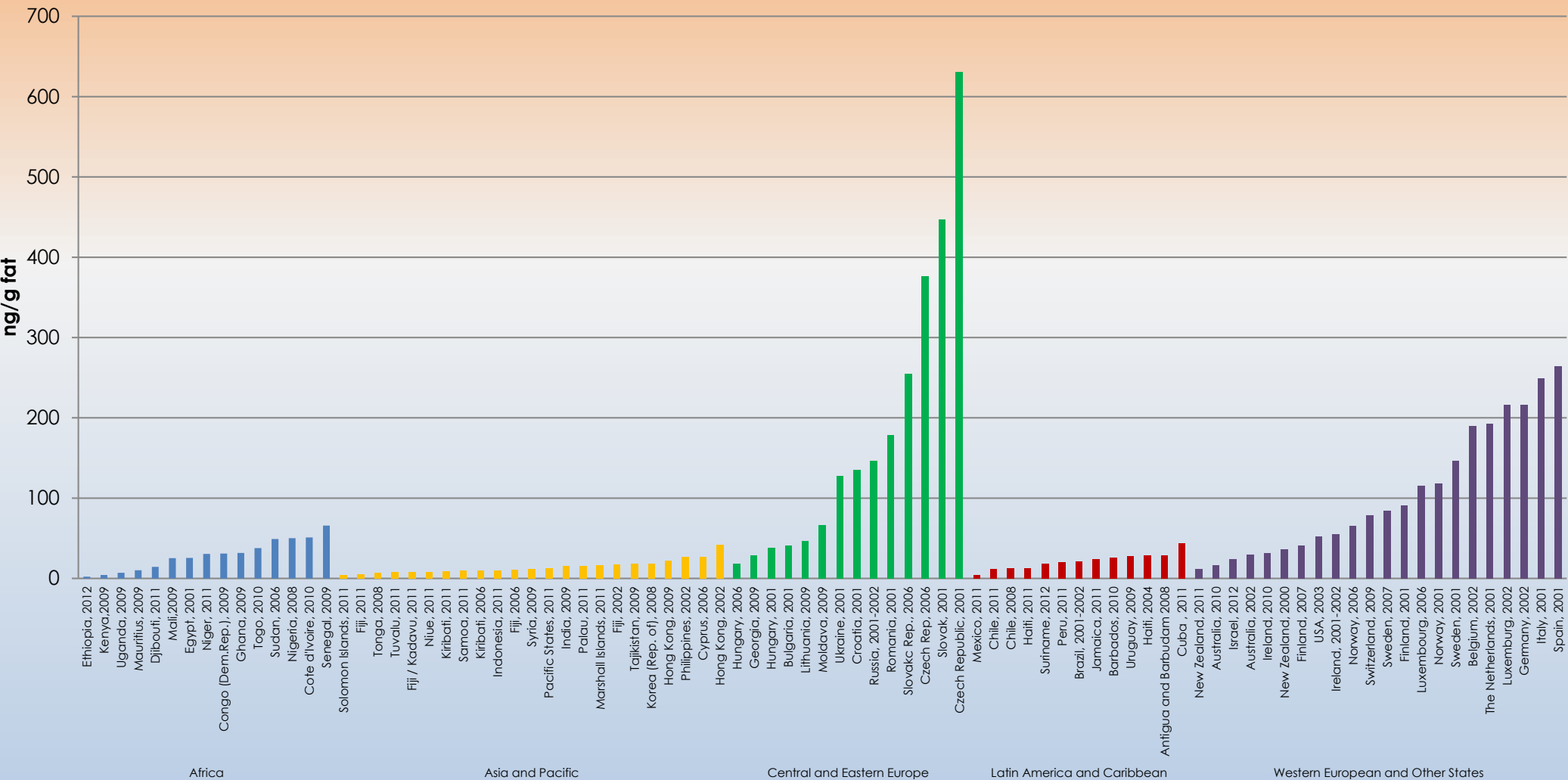
Haiti



Brazil

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

The screenshot displays the Stockholm Convention website interface. At the top, there are navigation tabs for 'Basel Convention', 'Rotterdam Convention', 'Stockholm Convention', and 'Synergies'. The main header features the Stockholm Convention logo and the text 'STOCKHOLM CONVENTION' and 'Protecting human health and the environment from persistent organic pollutants'. Below the header is a navigation menu with 'HOME', 'THE CONVENTION', 'PROCEDURES', 'IMPLEMENTATION', 'COUNTRIES', and 'PARTNERS'. A search bar is located on the right. The breadcrumb trail reads 'You are here: Stockholm Convention > Implementation > Global Monitoring Plan > Monitoring Activities'. On the left, a sidebar menu lists 'GMP' sub-items: Overview, Decisions, Regional organization groups, Monitoring Activities (highlighted), Monitoring Reports, Meetings, Capacity building, Additional Resources, and Partnerships. The main content area is titled 'Monitoring Activities' and contains the following text: 'Monitoring activities under the global monitoring plan are focused on generating measurement data from core media: ambient air, human milk and human blood, and surface water for water-soluble POPs (perfluorooctane sulfonic acid, its salts and perfluorooctane sulfonyl fluoride)'. It also states that monitoring data from the first phase is available through the 'GMP data warehouse' and that data from the second phase will be accessible by 2015. A link 'Click here to access the GMP data warehouse.' is provided. Below the text is a graphic titled 'GMP DATA WAREHOUSE' showing a globe and four circular icons labeled 'AIR', 'HUMAN BLOOD', 'WATER', and 'HUMAN MILK'.



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



SPATIAL
DISTRIBUTION

DATA
AVAILABILITY

SUMMARY
STATISTICS

TIME
SERIES

DATA
EXPORTS

GMP Data Warehouse – Data Visualization

- **Map Overview**

- **Data Availability**

- Available data – Parameters
- Available data – Time

- **Summary statistics**

- **Time Series**

- Trend Map
- Time Series Analysis

- Time Series Bar Charts Map

- **Data Exports**

- Sites Summary
- Data Sources Summary
- Analytical Methods Summary
- Export of All Data Selected

DATA VIZUALIZATION



Data Selection

Matrix

- Air (35583)
- Human milk (11159)
- Water (1153)

all none inverse

Next

Matrix specification

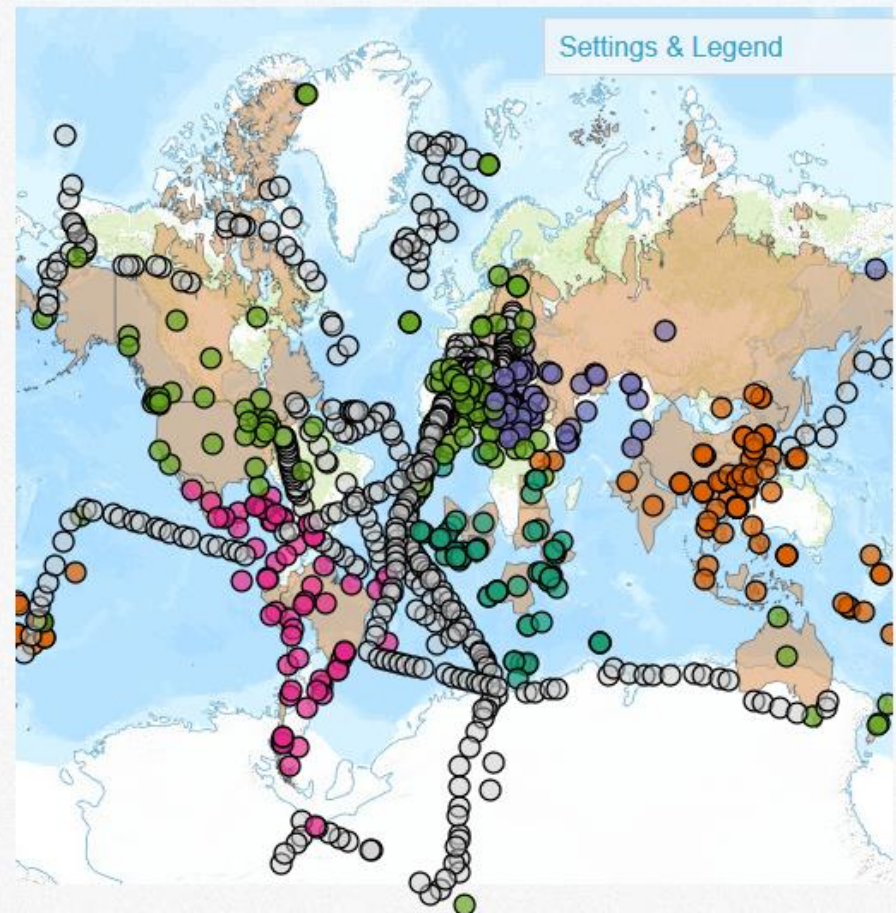
UN Regional Group

Country

Sea

Site Type

Time Range



DATA AVAILABILITY

Stockholm Convention on persistent organic pollutants (POPs)

SPATIAL DISTRIBUTION DATA AVAILABILITY SUMMARY STATISTICS TIME SERIES DATA EXPORTS

Submenu

Available Data – Parameters

Available Data – Time

Data selection

Available Data – Time

Matrix: **Air** (Ignore this option) Year: -- Choose an option --

Matrix: Air
Matrix specification: Active

Settings

Order by (rows)
Matrix - Region - Country - Site

Order direction
Ascending

Legend

Data availability parameters

- Minimum: 2
- Maximum: 97

Download legend

Stockholm Convention on persistent organic pollutants (POPs)

SPATIAL DISTRIBUTION DATA AVAILABILITY SUMMARY STATISTICS TIME SERIES DATA EXPORTS

Submenu

Available Data – Parameters

Available Data – Time

Data selection

Available Data – Parameters

Matrix: **Air** (Ignore this option) Compound: -- Choose an option --

Matrix: Air
Matrix specification: Active
UN Regional Group: CEE, WEOG

Settings

Order by (rows)
Matrix - Region - Country - Site

Order direction

Legend

Data availability years

- Minimum: 1
- Maximum: 19

Download legend

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

Time Range: 2006, 2012

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](#)

Compound: *

Hexabromocyclododecane (HBCD)

Parameter: *

Alpha-HBCD

Unit: *

ng/gfat

Site:

-- Choose an option --

Year:

Range

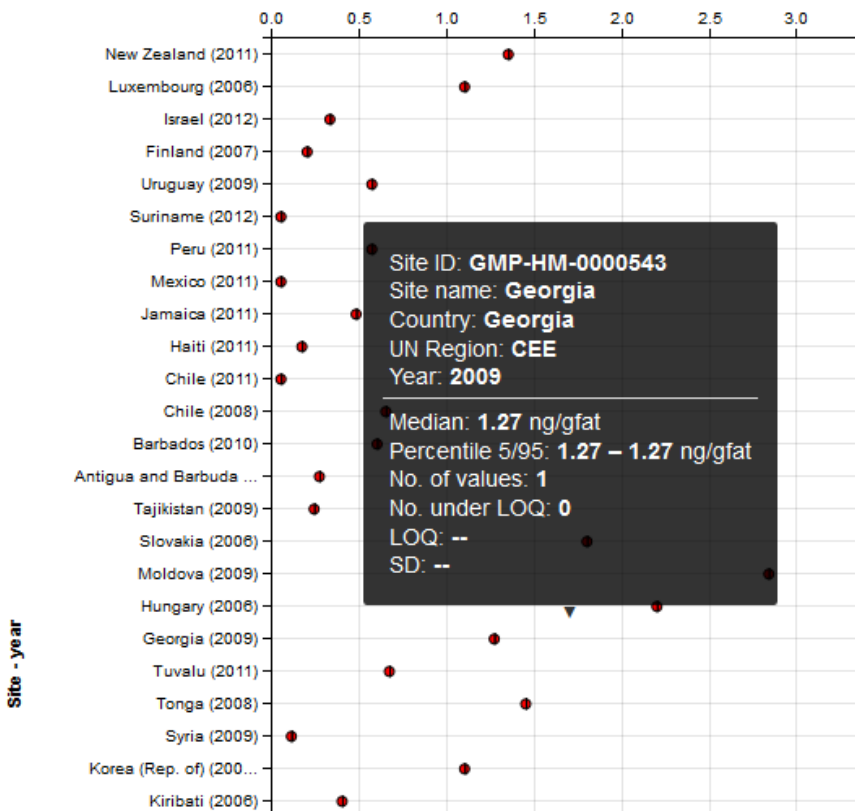
Percentile 5/95

Order by

Region - Country - Site - Year

Order direction

Ascending



Legend

Percentile 5/95:

Median:

[Download legend](#)

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

Time Series Analysis

Matrix: *

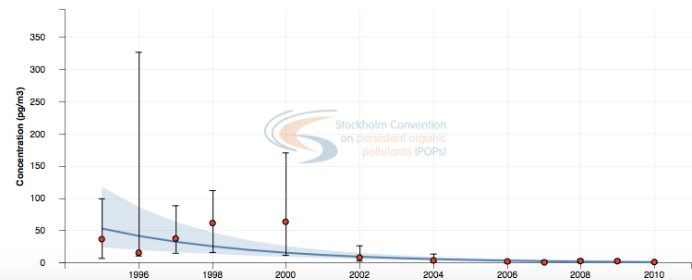
 Matrix specification: *

Compound: *

 Parameter: *

Unit: *

 Site: *



Settings

Central value

GMP Data Visualization 2014



- SPATIAL DISTRIBUTION
- DATA AVAILABILITY
- SUMMARY STATISTICS
- TIME SERIES**
- DATA EXPORTS

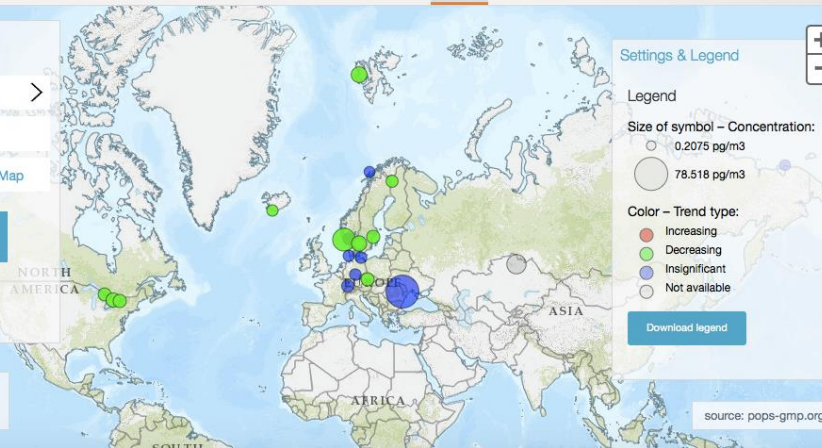
Submenu

- Trend Map
- Time Series Analysis
- Time Series Bar Chart Map

Data selection

Download map

Switch basemap



Settings & Legend

Legend

Size of symbol – Concentration:

- 0.2075 pg/m3
 - 78.518 pg/m3
- Color – Trend type:
- Increasing
 - Decreasing
 - Insignificant
 - Not available

Download legend

Filters

Matrix:

Matrix specification:

Compound:

Parameter:

Unit:

GMP Data Visualization 2014



- SPATIAL DISTRIBUTION
- DATA AVAILABILITY
- SUMMARY STATISTICS
- TIME SERIES**
- DATA EXPORTS

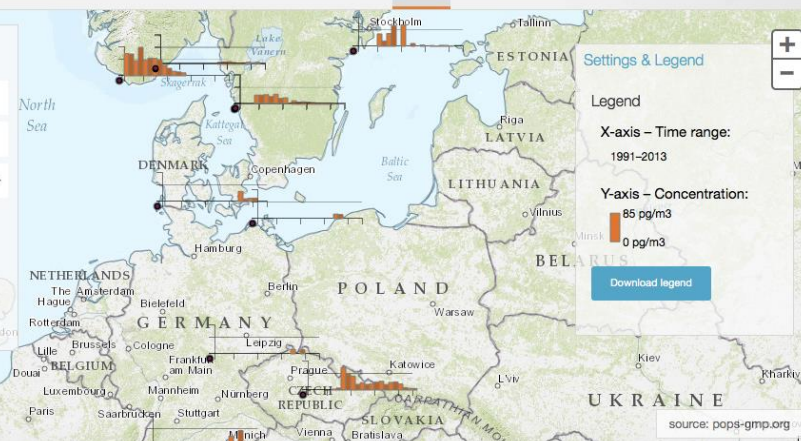
Submenu

- Trend Map
- Time Series Analysis
- Time Series Bar Chart Map

Data selection

Download map

Switch basemap



Settings & Legend

Legend

X-axis – Time range:
1991–2013

Y-axis – Concentration:
 65 pg/m3
 0 pg/m3

Download legend

Filters

Matrix:

Matrix specification:

Compound:

Parameter:

Unit:

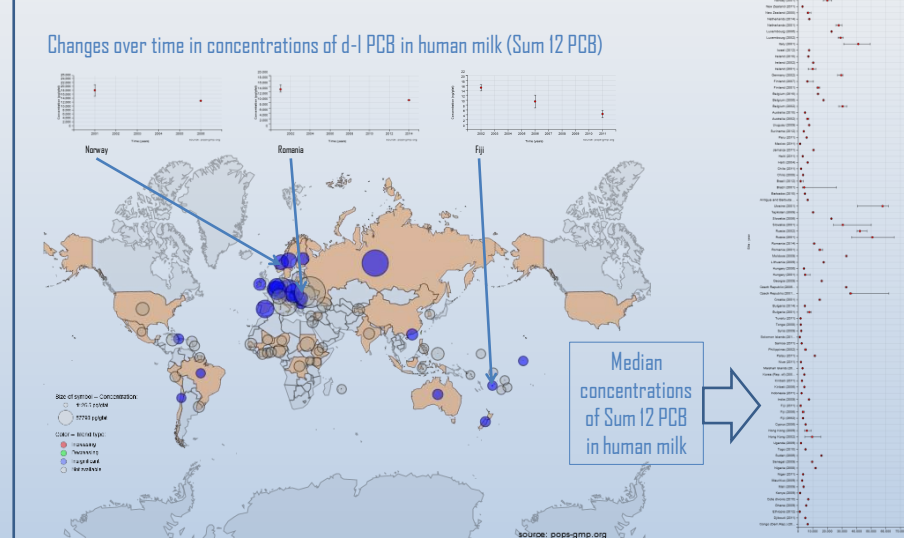
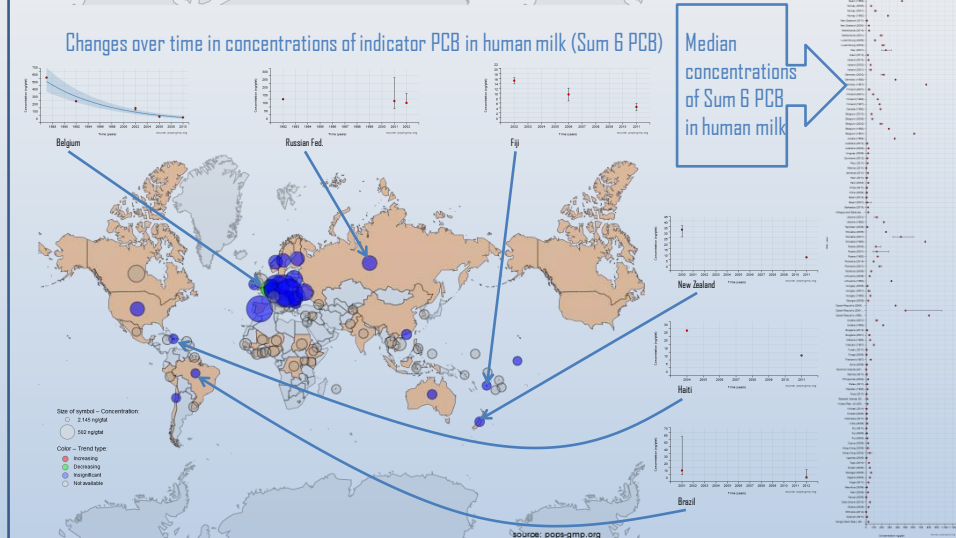
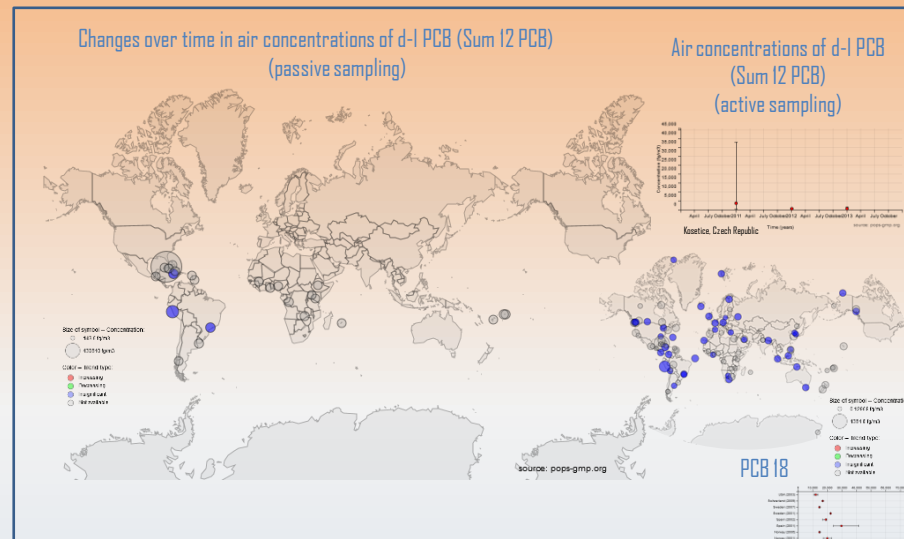
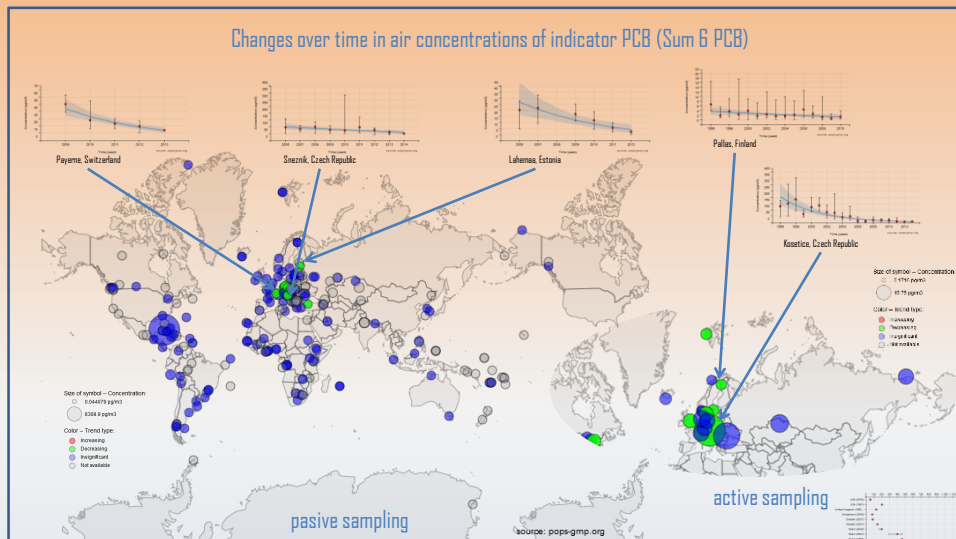


Some examples of outputs

Levels of and trends in concentrations of polychlorinated biphenyls (PCB) in air and in humans

Indicator PCB

Dioxin-like 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

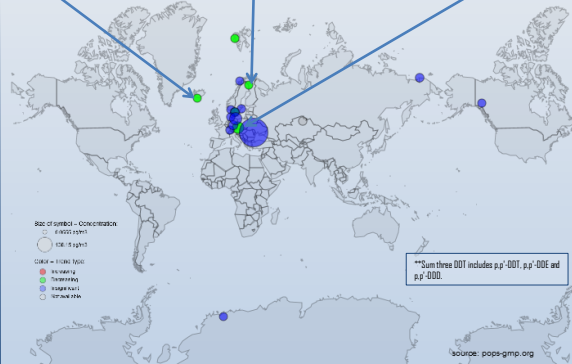
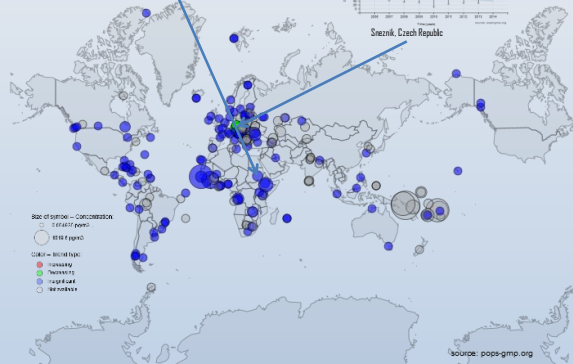
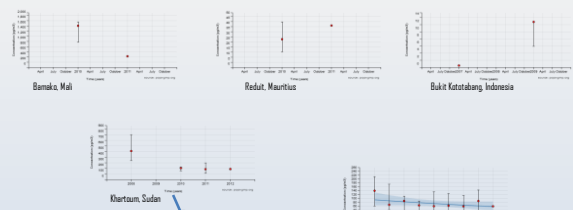
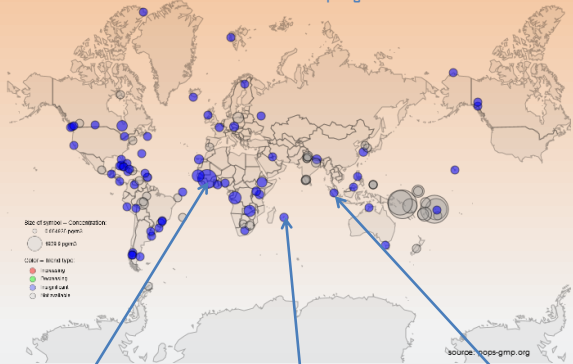
Ambient air

Human milk

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

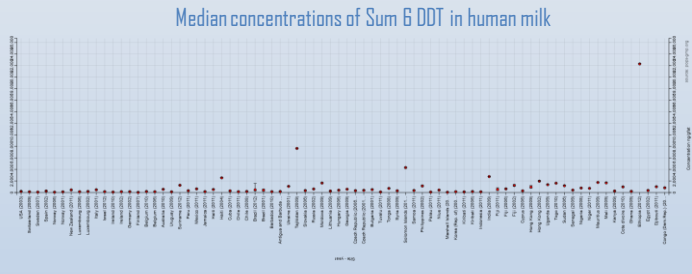
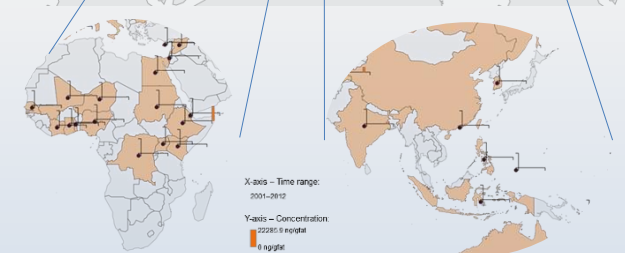
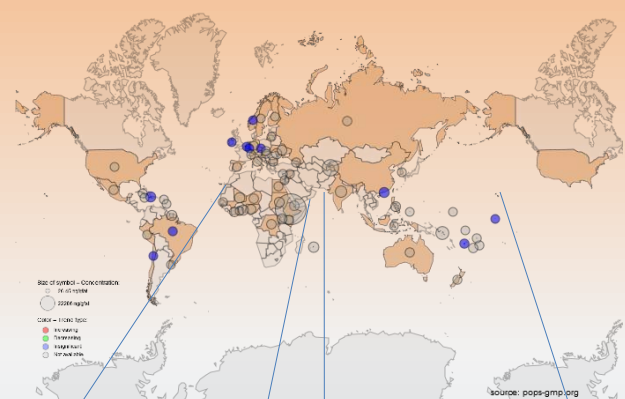
Passive air sampling

Active air sampling



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

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



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

MORE INFORMATION AT:



SPATIAL
DISTRIBUTION

DATA
AVAILABILITY

SUMMARY
STATISTICS

TIME
SERIES

DATA
EXPORTS

Data selection

Year:

-- Choose an option --



EUROPE

Settings & Legend



AFRICA

ASIA

SOUTH
AMERICA

AUSTRALIA

Switch basemap

source: www.pops-gmp.org

Site Detail

User can view additional information related to a sampling site. Click on a site (coloured point) to view: site name, latitude, longitude, UN region, country, sea, site type, and sources of pollution (Source type-air, Discharges-water). To leave the Site Detail view, click on the viewed site again.

Description

The Map Overview displays map with selected sampling sites in a given time interval. Sampling sites are marked by coloured points distinguishing the individual UN

<http://www.pops-gmp.org/>



Thank you for your attention
