



Research centre
for toxic compounds
in the environment

International conventions for persistent, toxic, mobile and bioaccumulative chemicals

International conventions for PTMB chemicals

- Objectives
- Basic concepts of PTMB chemicals
- Key conventions dealing with PTMB chemicals
- Global monitoring of PTMB chemicals



Basic concepts of PTMB chemicals



- You will remember these from a previous lecture(s)

- What is persistent?

Lasting for years or even decades before degrading into less dangerous forms. High resistance to degradation (abiotic and biotic)

- Which toxic compounds?

Everything is, right? Even water? High toxicity at very low concentrations

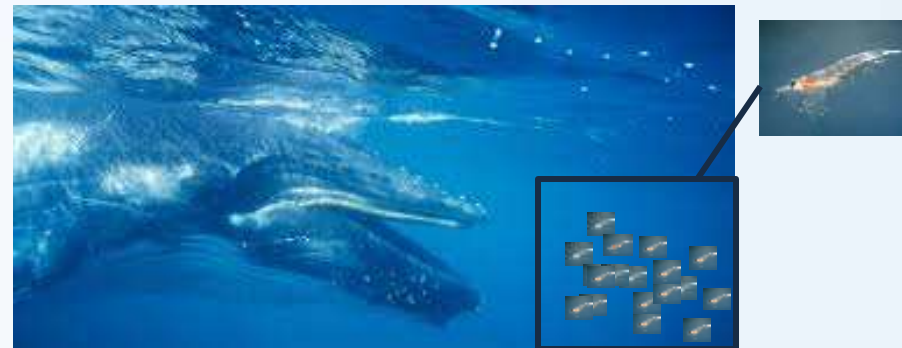
- How mobile?

Moves to remote areas far from sources

- What is bioaccumulative?

Toxic substance taken up at a higher rate than being removed from an organism. Lipophilic compounds (they like lipids).

Biomagnification through the food web results in higher trophic organisms accumulating more PBTs through consumption of lower trophic organisms



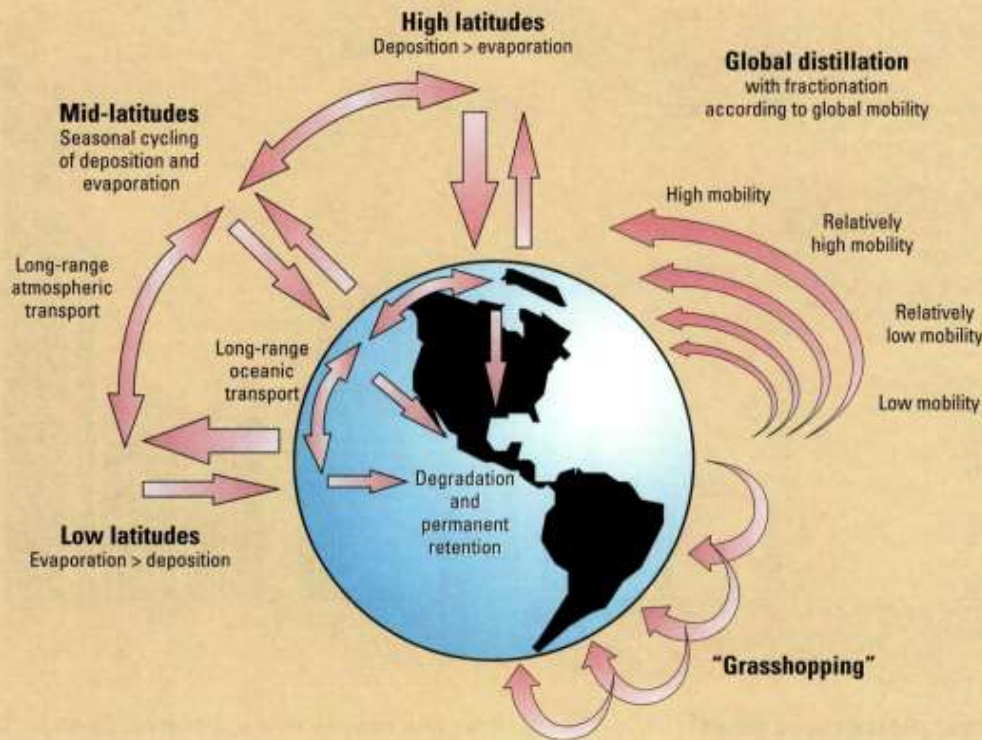
Basic concepts of PTMB chemicals

- Transboundary movement

FIGURE 1

POP migration processes

Global deposition processes become more pronounced than evaporation at high latitudes and lower temperatures.



featured on iFunny.com

Tracking the Distribution of Persistent Organic Pollutants
Wania & Mackay, VOL. 30, NO. 9,
1996 Environmental Science & Technology (News)

Key conventions dealing with PTMB chemicals

Global treaties to protect human health and the environment from chemicals

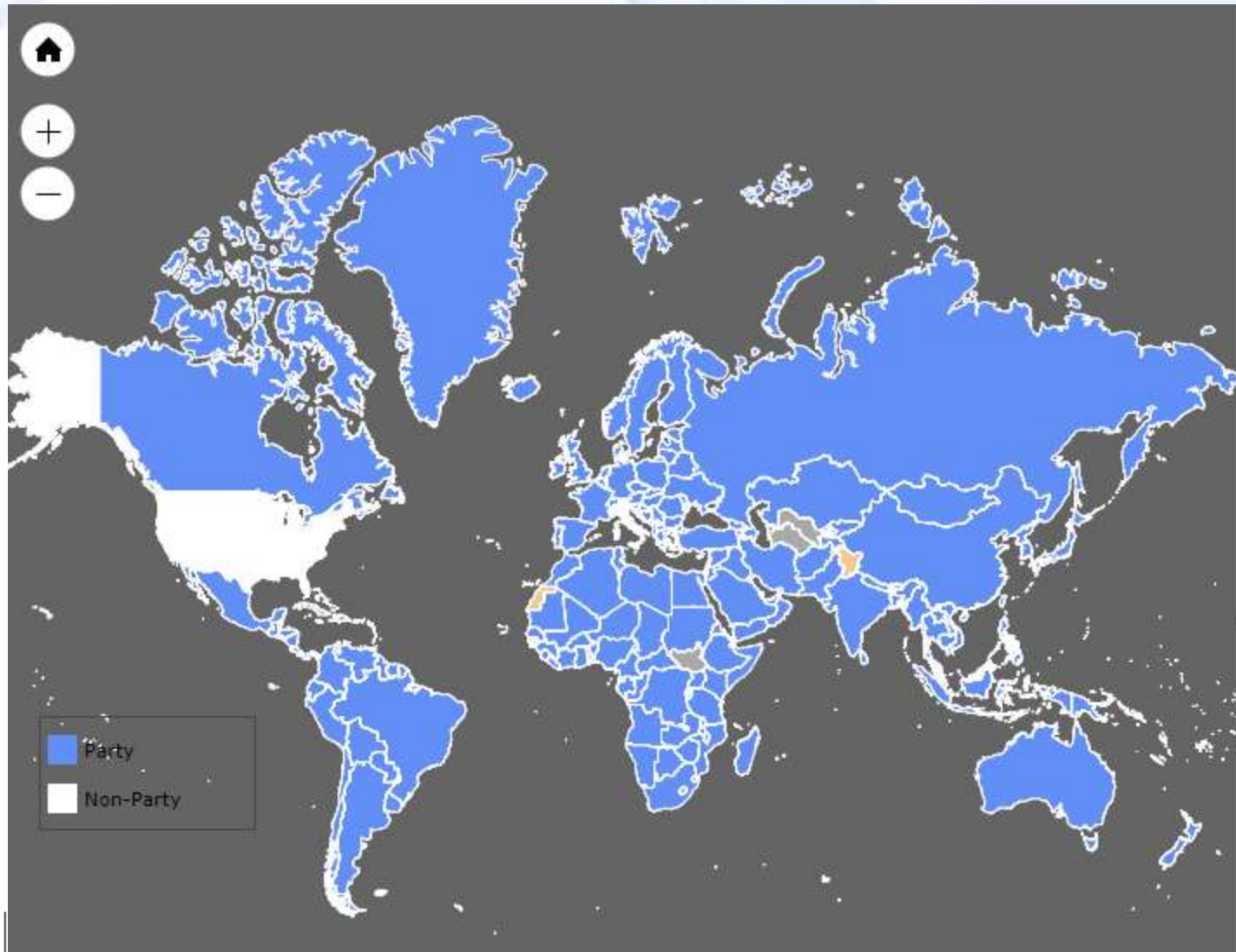
- Stockholm Convention (SC) on Persistent Organic Pollutants (POPs)
 - Reduce exposure by eliminating or reduce use and emissions



- Requires parties to:
 - Restrict, prohibit and/or eliminate the production and use, import and export intentionally or unintentionally produced POPs
 - Promotes the use of best available techniques and best environmental practices for preventing releases of POPs into the environment.
 - Ensure POPs stockpiles and wastes managed safely and in an environmentally sound manner
 - To target additional POPs /list new ones



Parties to Stockholm Convention



Key convention ch

- Stockholm Convention on Persistent Organic Pollutants (POPs)
 - A POP by definition shall have these properties:
 - highly toxic
 - persistent
 - travel long distances
 - accumulate in fatty tissue

Annex A (Elimination)

Parties must take measures to eliminate the production and use of the chemicals listed under Annex A. Specific exemptions for use or production are listed in the Annex and apply only to Parties that register for them.

<u>Aldrin</u> ●	<u>Chlordane</u> ●	<u>Chlordecone</u> ●
<u>Decabromodiphenyl ether (commercial mixture, c-decaBDE)</u> ▲	<u>Dieldrin</u> ●	<u>Endrin</u> ● <u>Heptachlor</u> ●
<u>Hexabromobiphenyl</u> ▲	<u>Hexabromocyclododecane (HBCDD)</u> ▲	<u>Hexabromodiphenyl ether and heptabromodiphenyl ether</u> ▲
<u>Hexachlorobenzene (HCB)</u> ● ▲	<u>Hexachlorobutadiene</u> ▲	<u>Alpha hexachlorocyclohexane</u> ●
<u>Beta hexachlorocyclohexane</u> ●	<u>Lindane</u> ●	<u>Mirex</u> ●
<u>Pentachlorobenzene</u> ● ▲	<u>Pentachlorophenol and its salts and esters</u> ●	<u>Polychlorinated biphenyls (PCB)</u> ▲
<u>Polychlorinated naphthalenes</u> ▲	<u>Short-chain chlorinated paraffins (SCCPs)</u> ▲	<u>Technical endosulfan and its related isomers</u> ●
<u>Tetrabromodiphenyl ether and pentabromodiphenyl ether</u> ▲	<u>Toxaphene</u> ●	

Annex B (Restriction)

Parties must take measures to restrict the production and use of the chemicals listed under Annex B in light of any applicable acceptable purposes and/or specific exemptions listed in the Annex.

<u>DDT</u> ●	<u>Perfluorooctane sulfonic acid, its salts and perfluorooctane sulfonate fluoride</u> ● ▲
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Annex C (Unintentional production)

Parties must take measures to reduce the unintentional releases of chemicals listed under Annex C with the goal of continuing minimization and, where feasible, ultimate elimination.

<u>Hexachlorobenzene (HCB)</u> ■	<u>Hexachlorobutadiene (HCBd)</u> ■	<u>Pentachlorobenzene</u> ■	<u>Polychlorinated biphenyls (PCB)</u> ■
<u>Polychlorinated dibenzo-p-dioxins (PCDD)</u> ■	<u>Polychlorinated dibenzofurans (PCDF)</u> ■	<u>Polychlorinated naphthalenes</u> ■	
Pesticide ●	Industrial chemical ▲	Unintentional Production ■	



Key conventions dealing with PTMB chemicals



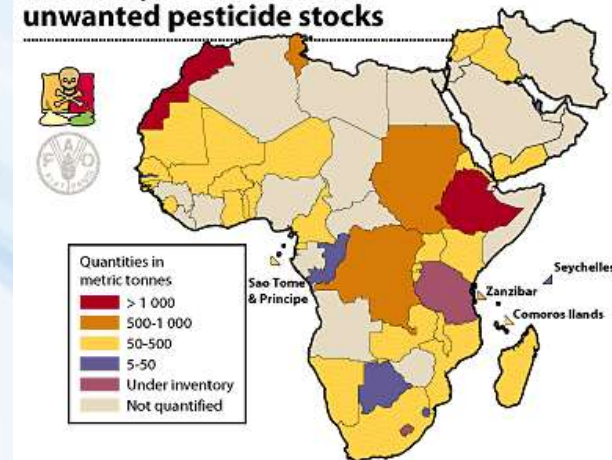
- Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal
 - Under which framework was set up for controlling movement of hazardous wastes across international borders
 - Criteria developed for “environmentally sound management” of hazardous wastes



Key conventions dealing with PTMB chemicals

- Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal
 - *The provisions of the Convention center around the following principal aims:*
 - *the reduction of hazardous waste generation and the promotion of environmentally sound management of hazardous wastes, wherever the place of disposal;*
 - *the restriction of transboundary movements of hazardous wastes except where it is perceived to be in accordance with the principles of environmentally sound management; and*
 - *a regulatory system applying to cases where transboundary movements are permissible.”*
[<http://www.pic.int/>]

Inventory of obsolete and unwanted pesticide stocks

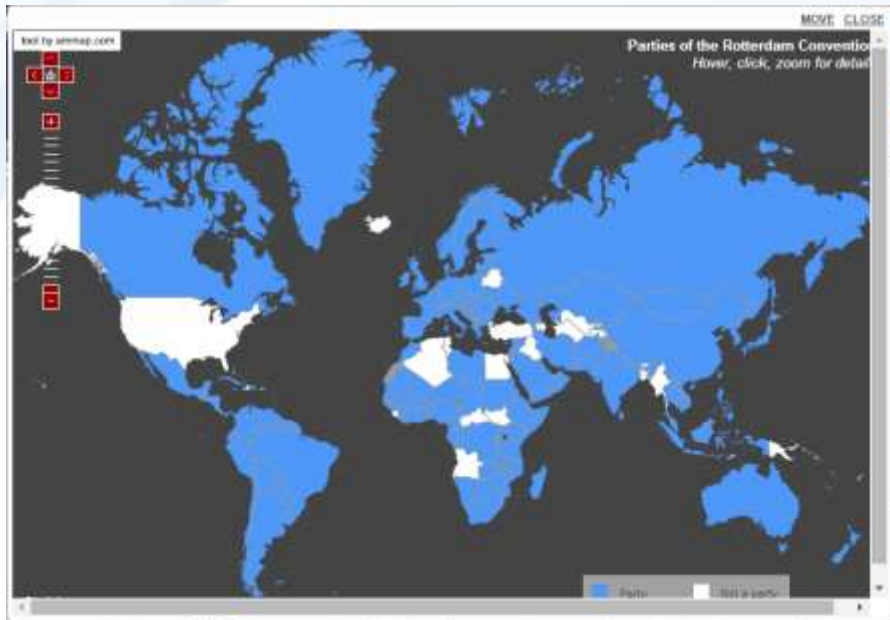


Key conventions dealing with PTMB chemicals

- Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade
 - “*Objectives of the convention are:*
 - *to promote shared responsibility and cooperative efforts among Parties in the international trade of certain hazardous chemicals in order to protect human health and the environment from potential harm;*
 - *to contribute to the environmentally sound use of those hazardous chemicals, by facilitating information exchange about their characteristics, by providing for a national decision-making process on their import and export and by disseminating these decisions to Parties.”*
[<http://www.pic.int/>]



Key conventions dealing with PTMB chemicals



- Rotterdam Convention
 - “*The Prior Informed Consent (PIC) procedure – The PIC procedure is a mechanism for formally obtaining and disseminating the decisions of importing Parties as to whether they wish to receive future shipments of those chemicals*” listed in the Convention or “*for ensuring compliance with these decisions by exporting Parties.*”
 - “*Information Exchange - The Convention facilitates information exchange.*” Notification required “*when taking a domestic regulatory action to ban or severely restrict a chemical.*”

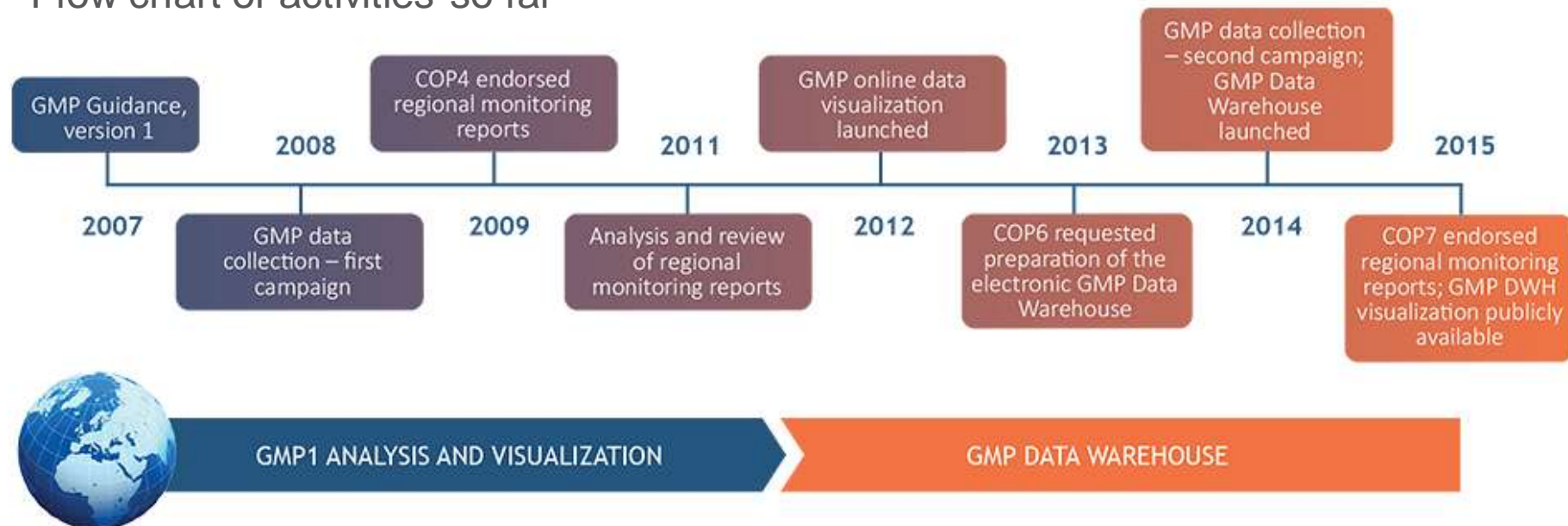


Global monitoring of PTMB chemicals

- Example - The Global Monitoring Plan on Persistent Organic Pollutants (GMP)
 - Article 16 of SC on POPs: requires effectiveness of measures adopted by the Convention regularly evaluated

GMP: aims at collecting comparable, harmonized and reliable information on POP levels in core environmental matrices (air, breast milk/blood and water).

Flow chart of activities so far

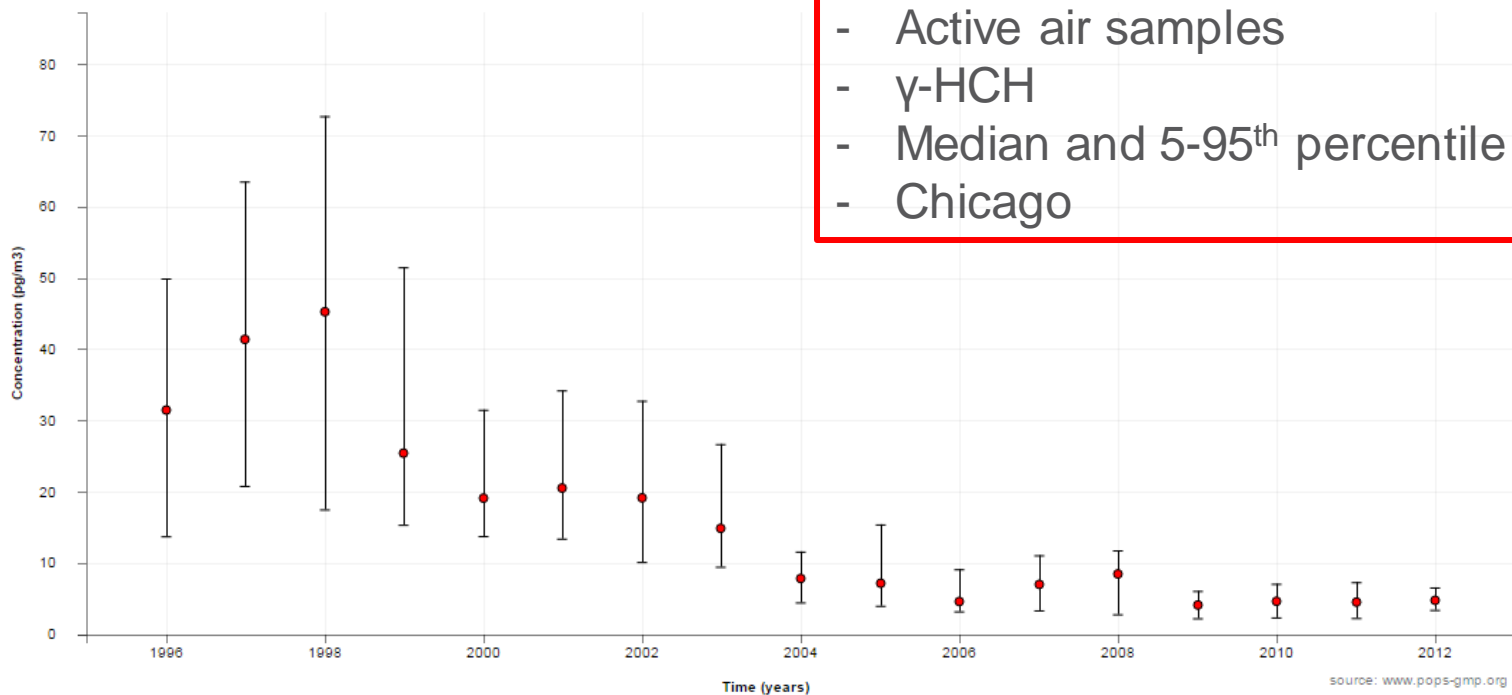


Global monitoring of PTMB chemicals

- Available Global Monitoring Plan (GMP) data

What happens to POPs levels over time? Are measures to eliminate or reduce emissions working?

- Time series analysis
- Active air samples
- γ -HCH
- Median and 5-95th percentile
- Chicago



Global monitoring of PTMB chemicals

- Available Global Monitoring Plan (GMP) data

Do we know anything about spatial trends? Where are the highest POPs contaminations? Can we figure out why? Are the POPs mobile?

Summary Statistics

Matrix: *
Water

Matrix specification: *
Marine water - open ocean

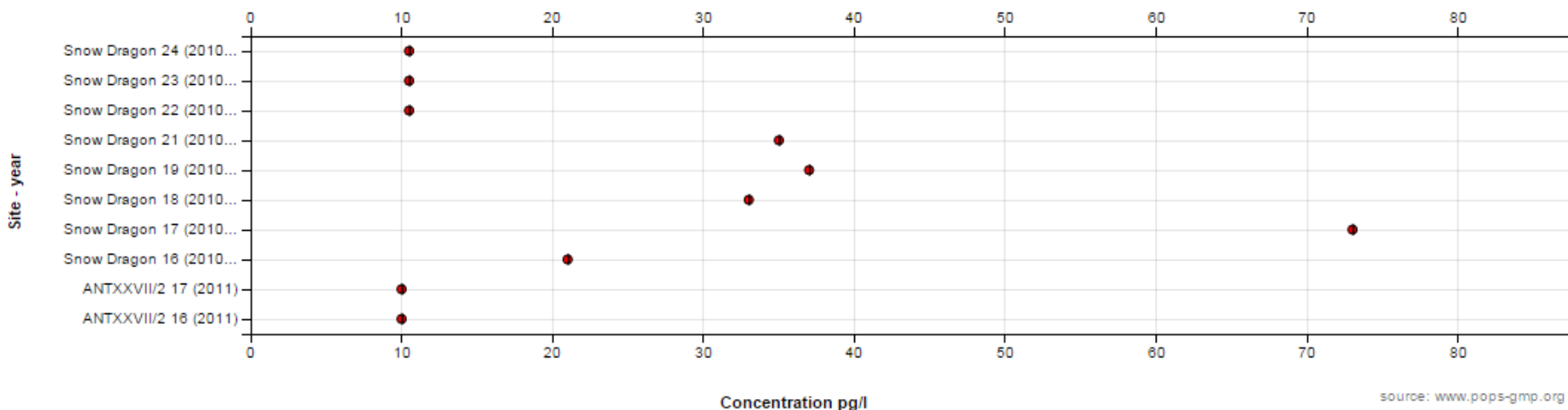
Compound: *
Perfluorooctane sulfonic acid (PFO₈)

Parameter: *
PFOS

Unit: *
pg/l

Site:
-- Choose an option --

Year:
-- Choose an option --



The end.....any questions?

