

CHEMIE ŽIVOTNÍHO PROSTŘEDÍ IV

Vybrané typy environmentálních polutantů

(04/05)

Persistentní organické polutanty (POPs)

Persistentní, bioakumulativní a toxické látky (PBTs)

Persistentní toxické látky PTS

Mezinárodní úmluvy

Ivan Holoubek

RECETOX, Masaryk University, Brno, CR

holoubek@recetox.muni.cz; <http://recetox.muni.cz>

Research Centre for Toxic Compounds in the Environment

<http://recetox.muni.cz>

Introduction to Stockholm Convention

Stockholm Convention – objectives, responsibilities of signature country;

Stockholm Convention – considerations in the implementation;

POPs Review Committee. National Implementation Plan

Global monitoring plan

Effectiveness evaluation

SC Guidelines

POPs in Turkey – country situation, POPs Inventory report; National Implementation Plan of the SC

Global Chemicals Policy Goals: from Stockholm 1972, Rio 1992 and Johannesburg 2002

Stockholm principle 13:

“States should adopt an integrated and coordinated approach to their development planning so ... that development is compatible with the need to protect and improve environment for the benefit of their population.”

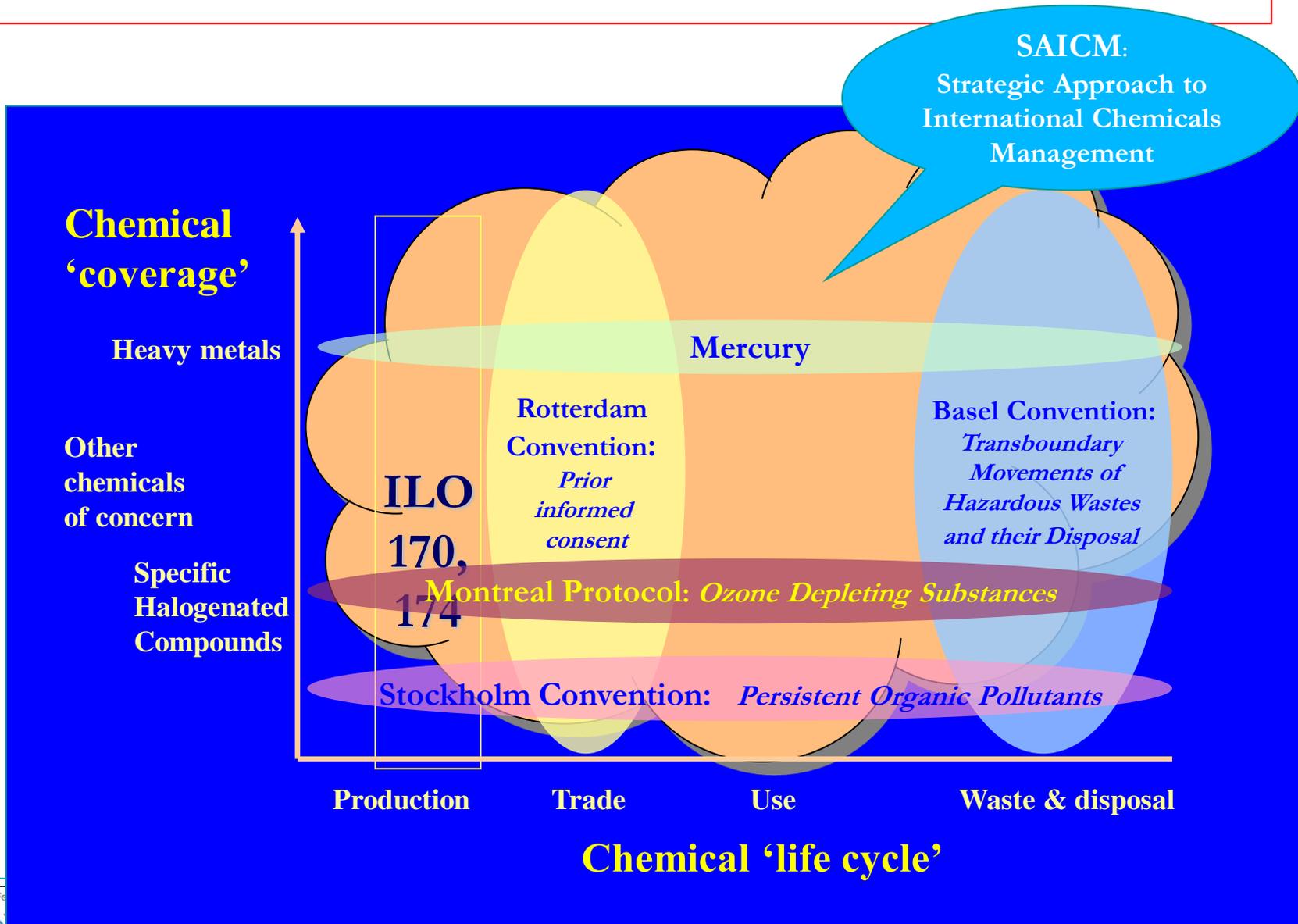
Rio Agenda 21, Chapter 19:

Environmentally Sound Management Of Toxic Chemicals, Including Prevention Of Illegal International Traffic In Toxic And Dangerous Products

World Summit on Sustainable Development (WSSD 2002)

“By 2020 chemicals are to be used and produced in ways that lead to the minimization of significant adverse effects on human health and the environment”

Words to Actions: Treaties to Partnerships





trav

for Toxic Compounds in the Environment

<http://recetox.muni.cz>



BASEL CONVENTION

Controlling transboundary movements of hazardous wastes and their disposal

ROTTERDAM CONVENTION

Sharing responsibility in the trade of hazardous chemicals

STOCKHOLM CONVENTION

Protecting human health and the environment from persistent organic pollutants (POP)



BASEL CONVENTION



ROTTERDAM CONVENTION



STOCKHOLM CONVENTION

Global agenda to prevent and control releases of persistent toxic contaminants

Chemicals covered by the three conventions

- ↪ **Basel** covers hazardous wastes that are explosive, flammable, reactive, poisonous, infectious, corrosive, toxic or ecotoxic
- ↪ **Rotterdam** covers 43 pesticides and industrial chemicals that have been banned or severely restricted for health or environmental reasons
- ↪ **Stockholm** covers 14 pesticides, and 8 industrial chemicals and by-products

Common Link

Most POPs are covered by all three Conventions

Many pesticides are subject to the three Conventions

The three chemicals conventions

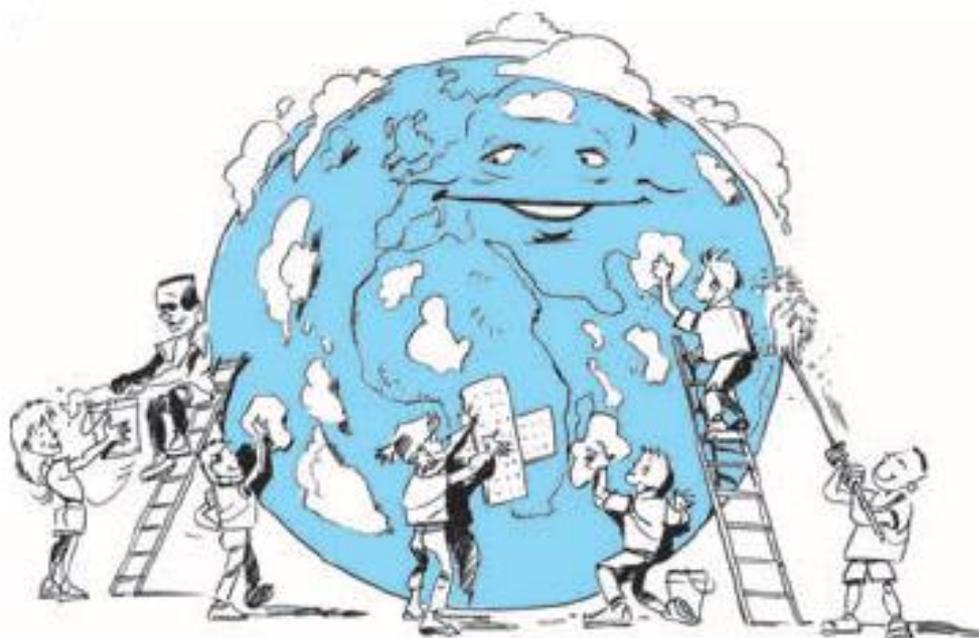
- ↪ **Common objective**
“To protect human health and the environment”
- ↪ **Covers “cradle-to-grave” management**
- ↪ **Basel Convention on Control of Transboundary Movement of Hazardous Wastes and their Disposal adopted in 1989**
179 Parties
- ↪ **Rotterdam Convention – international trade of certain hazardous chemicals adopted in 1998**
153 Parties
- ↪ **Stockholm Convention on persistent organic pollutants adopted in 2001**
179 Parties

Scope and coverage of the three conventions

	 Basel Convention	 Rotterdam Convention	 STOCKHOLM CONVENTION
Regulating for chemicals/wastes use (restrictions/bans)	X	X	X
Import/export controls	X	X	X
Evaluation and hazard assessment		X	X
Waste management	X		X
Hazard/risk communication	X	X	X
Replacement/alternatives		X	X
Environmental releases/emission reporting			X
Technical assistance	X	X	X
Financial assistance	x		x

What does the Convention aim at?

Protecting human health and the environment from
persistent organic pollutants



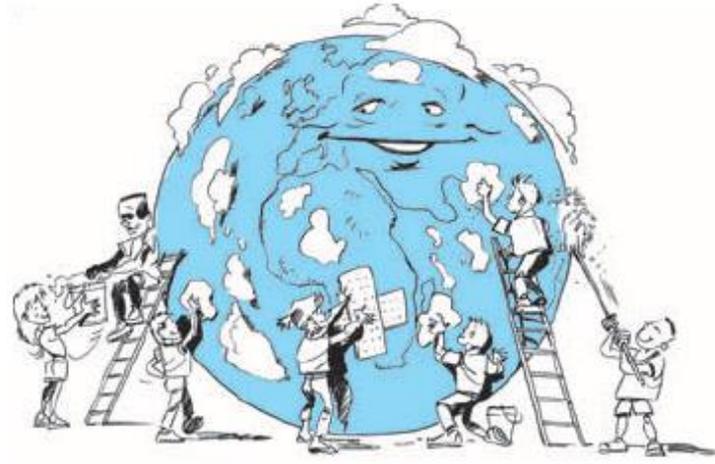
www.pops.int



Stockholm Convention

Stockholm, Sweden, May 22-23, 2001

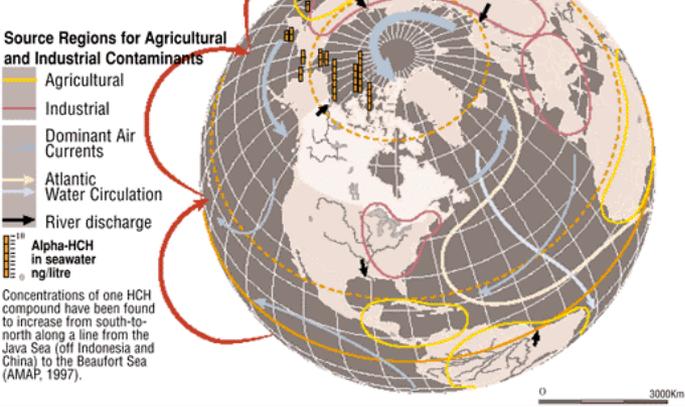




POPs



THE GRASSHOPPER EFFECT AND OUT-OF-CANADA SOURCES

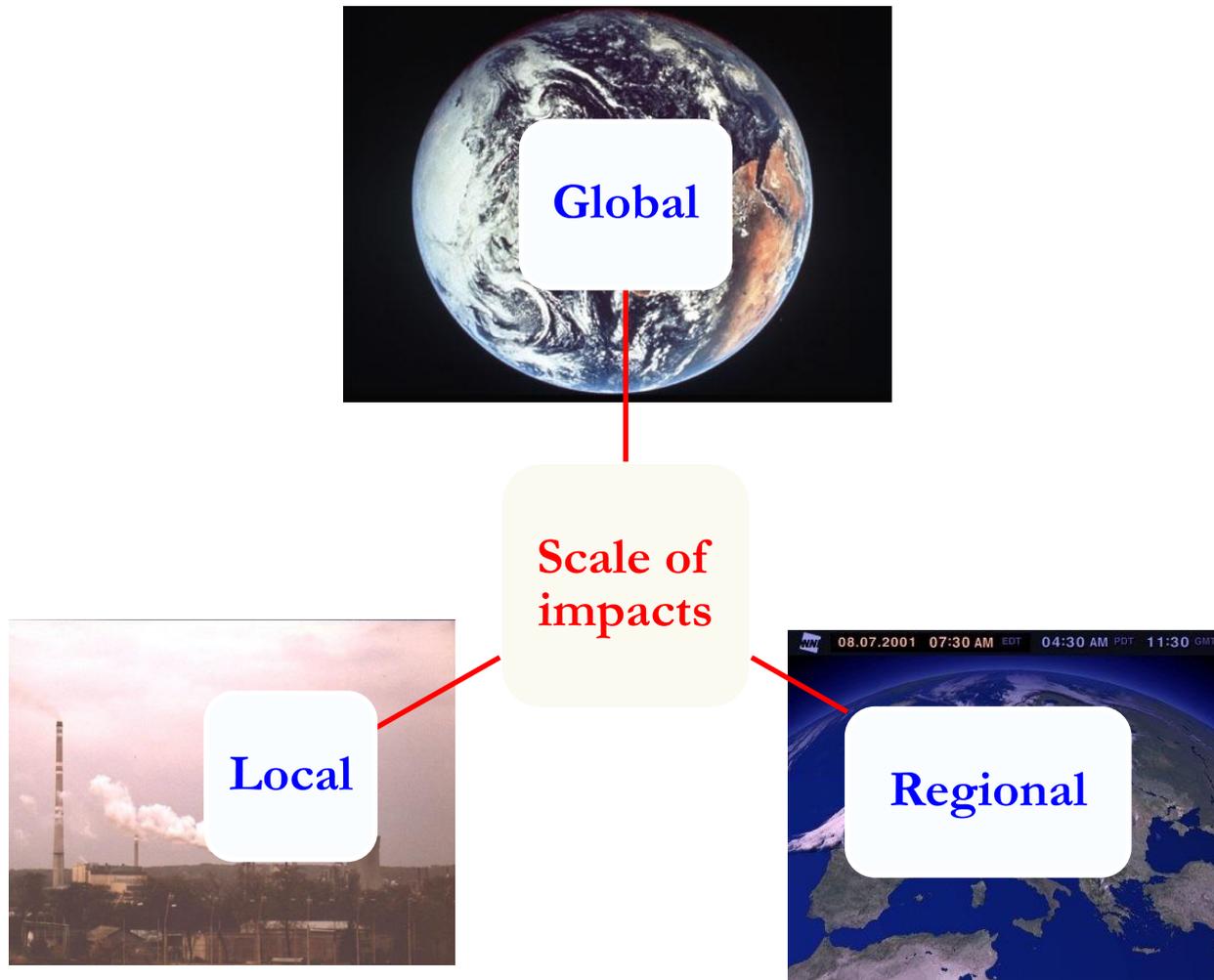


International impacts



BASEL CONVENTION ROTTERDAM CONVENTION STOCKHOLM CONVENTION

Scale of impacts



The objective of SC

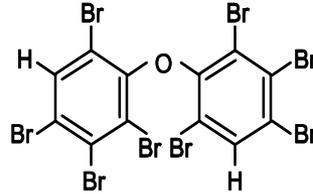
It differentiates between three categories of POPs:

- ↪ Intentionally produced POPs that are slated for elimination;
- ↪ Intentionally produced POPs are to be reduced and ultimately eliminated, except where there is a specified “acceptable purpose,” such as disease vector control, or exempted usage, in which case the production and/or use of the substance is restricted; and
- ↪ POPs that are unintentionally produced as the result of human activity and which are slated for continued minimization and, where feasible, ultimate elimination of total releases derived from anthropogenic sources.

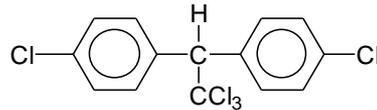
Persistent Organic Pollutants

Main groups:

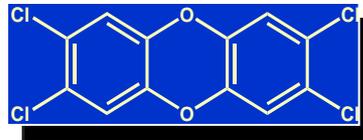
↪ Technical chemicals



↪ Pesticides



↪ Industrial by-products



↪ Wastes

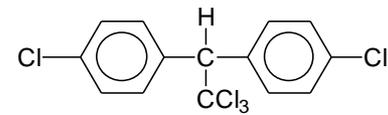


↪ Obsolete POPs

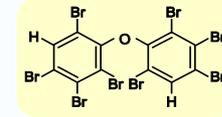
↪ Contaminated sites



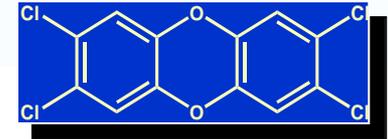
IP and UP POPs



↪ **Intentionally produced (IP):** Chlorinated pesticides, transformer/capacitor oils (PCB), polybrominated flame retardants, ...



↪ **Unintentionally produced (UP):** Dioxins/furans (byproducts in thermal processes)



**Elimination of wastes (IP) -
destruction (conservation)**

**Elimination of stockpiles (IP) -
destruction (conservation)**

**Elimination of byproducts (UP) -
prevention and destruction**

**Decontamination (IP + UP) - remediation of soils,
sludges, water, sediments, ...**



12 original POPs

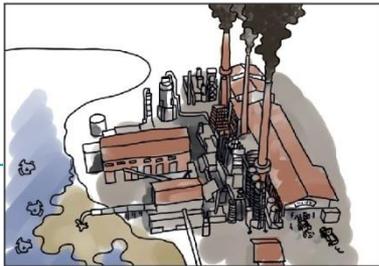
Chemical	Pesticides	Industrial chemicals	Unintentional production	Annex
Aldrin	+			A
Dieldrin	+			A
Endrin	+			A
Chlordane	+			A
DDT	+			B
Heptachlor	+			A
Mirex	+			A
Toxaphene	+			A
Hexachlorobenzene (HCB)	+			A / C
Polychlorinated biphenyls (PCBs)		+	+	A / C
Polychlorinated dibenzo-p-dioxins (PCDDs) and polychlorinated dibenzofurans (PCDFs)			+	C
			+	C

10 new POPs (added May 2009, 2010)

Chemical	Pesticides	Industrial chemicals	Unintentional production	Annex
Chlordecone	+			A
Lindane	+			A
Alpha hexachlorocyclohexane	+			A
Beta hexachlorocyclohexane	+			A
Endosulfan	+			A
Commercial pentabromodiphenyl ether		+		A
Commercial octabromodiphenyl ether		+		A
Hexabromobiphenyl		+		A
Perfluorooctane sulfonic acid, its salts and perfluorooctane sulfonyl fluoride	+	+		B
Pentachlorobenzene	+	+	+	A, C

How does it work?

- ↪ **Eliminate or restrict** the production, use, import and export of **POPs**
- ↪ Reduce releases from **unintentional POP** production
- ↪ Promote **BAT/BEP** to reduce **POP** emissions
- ↪ Eliminate **POPs stockpiles** and **wastes**
- ↪ Target additional **new POPs** for action
- ↪ Mechanism for **financial and technical assistance**
- ↪ Information exchange by **Clearing House Mechanism**

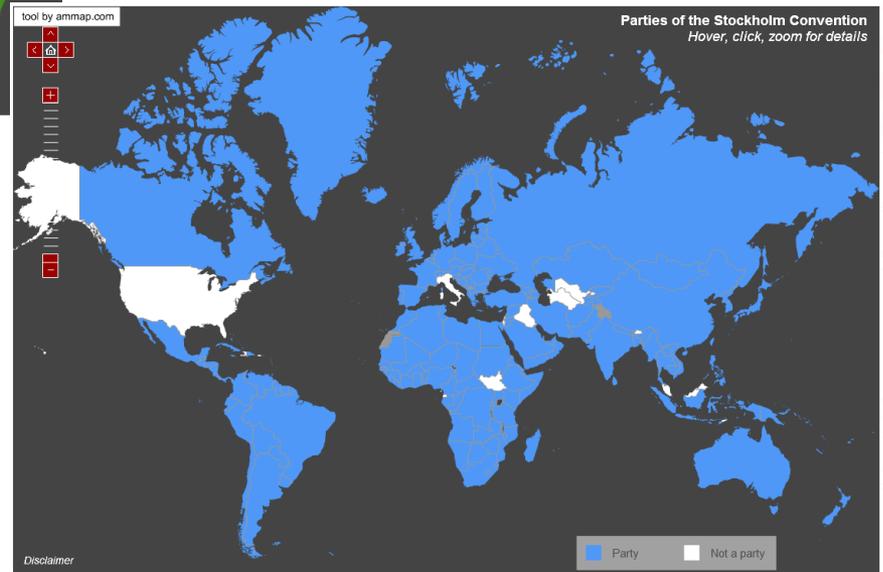
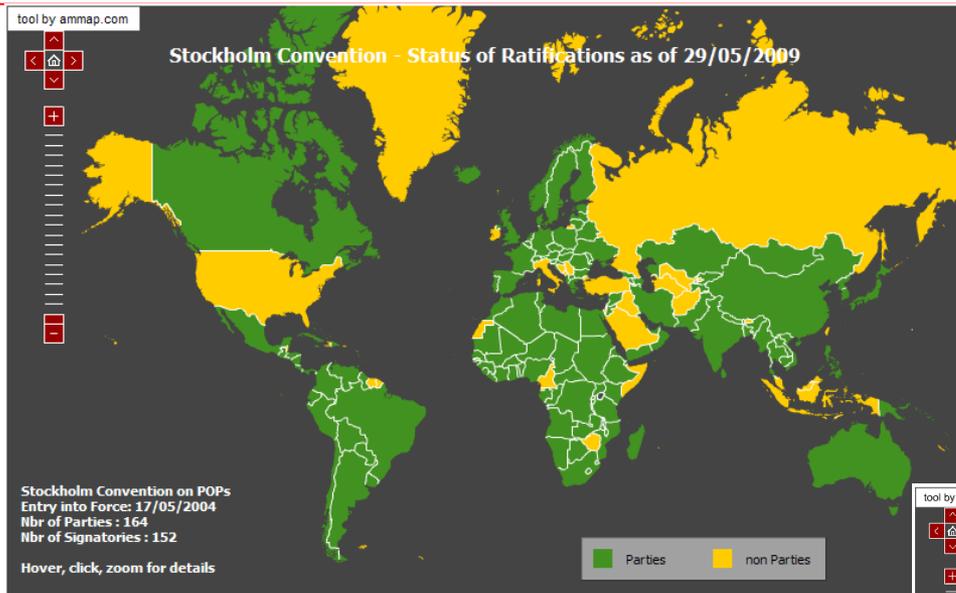


Centre for Toxic

<http://www.unep.org>

nment

Worldwide distribution of Parties



What is the status of the Convention?

- ↪ adopted on 22 May 2001
- ↪ entered into force on 17 May 2004
- ↪ 164 Parties to date (31 May 2009)
- ↪ 6 COPs have already been convened
 - ☞ COP-1, May 2005, Punta del Este, Uruguay
 - ☞ COP-2, Geneva, May 2006
 - ☞ COP-3, Dakar, Senegal, May 2007
 - ☞ COP-4 Geneva , Switzerland, May 2009
 - ☞ COP-5, Geneva, Switzerland, April 2011
 - ☞ COP-6, Geneva, Switzerland, May 2013
- ↪ Was amended to add 9 new chemicals at COP 4 + 1 at COP 5

How does the Convention do it?

- ↪ Elimination (POPs listed in annex A)
- ↪ Restriction (POPs listed in annex B)
- ↪ Continued reduction (POPs listed in annex C)
- ↪ Management of stockpiles and wastes
- ↪ Preparation of NIP
- ↪ Listing of new chemicals
- ↪ Promotion and research
- ↪ Technical assistance and Financial mechanism
- ↪ Exchange of information
- ↪ Reporting
- ↪ Effectiveness evaluation

Benefit of SC for global chemical management

- Capacity building
- Research and development
- Access to funding
- Legislative framework
- Technological improvement
- Awareness raising

For more information

The screenshot shows the homepage of the Stockholm Convention Clearing House (chm.pops.int). A blue callout bubble points to the URL chm.pops.int. The website features a navigation menu with tabs for Basel Convention, Rotterdam Convention, Stockholm Convention, and Synergies. A main banner highlights the Twelfth meeting of the Persistent Organic Pollutants Review Committee (POPRC.12) in Rome, Italy, from 19 to 23 September 2016. Below the banner, there are several news articles and sections:

- The BRS Blog:** "Kerstin Stendahl: In case of emergency" - The BRS Secretariat has been collaborating with the United Nations mechanism for coordination of international environmental emergency response – the Joint UNEP/OCHA Environment Unit (JEU) - in the area of emergency assistance for more than 10 years now.
- China ratifies the Stockholm Convention 2013 amendment on HBCD** - China is working towards elimination of the flame retardant HBCD after its government ratified the amendment listing it in Annex A to the Convention, as adopted by the Conference of the Parties in 2013.
- Ministers to be invited to attend high-level segment of the 2017 Triple COPs** - Ministers have been officially informed of the high-level segment of the meetings of the triple BRS COPs, which will be held in Geneva from 24 April to 5 May 2017.
- Is the Stockholm Convention effective in protecting human health and environment from POPs?** - From 4 to 7 October, Geneva hosts the 2nd meeting of the effectiveness evaluation committee, whose work is helping answer this important question.
- Uruguay playing lead regional role in sound management of chemicals and waste** - Our regional focus switches to Latin America and the role of The Uruguayan Technological Laboratory (LATU) in Montevideo, which assists parties implement the Basel and Stockholm Conventions.
- Outcomes of the twelfth meeting of the Chemical Review Committee (CRC) and the twelfth meeting of POPs Review Committee (POPRC)** - The objective of this webinar is to inform Parties to the Rotterdam and Stockholm Conventions, observers and other stakeholders on the outcomes of the twelfth meetings of the CRC and POPRC.

The website also includes a "Highlights" section with a "5 GENDER EQUALITY" icon and an "Announcements" section titled "Transmission of National Implementation Plans".

Stockholm Convention on POPs

Some key articles

Article number	Theme
3	Intentional production and use
4	Exemptions
5	Unintentional production
6	Wastes
7	Implementation Plans
8	Listing of chemicals
15	Reporting
16	Effectiveness evaluation

Tools

- ↪ **Standardized Toolkit** for Identification and Quantification of Dioxin and Furan Releases: Air, Water, Land, Products, Residues
- ↪ **Guidelines** for the Identification of PCBs and Materials Containing PCBs
- ↪ **Food contamination** monitoring and assessment programme
- ↪ **Brief Guide** to analytical methods for measuring lead in paint
- ↪ **Brief guide** to analytical methods for measuring lead in blood
- ↪ **Guidance** for Estimating Exposure to Mercury to Identify Populations at risk

Implementation plans (art. 7)

- ↪ **All Parties** to prepare a **NIP**
- ↪ **Provide** an indication on how the **Party** will implement its obligations under the **Convention**
- ↪ **Identifies** the priorities
- ↪ **Identifies** technical and financial needs for the **Party** in implementing its obligations
- ↪ **Process** for development and implementation promotes stakeholder engagement

The NIP documents

UNEP/POPS/COP.1/INF/13: “Interim guidance for developing national implementation plans for the Stockholm Convention”



Research Centre for Toxic Compounds in the Environment

<http://recetox.muni.cz>

Commitment required

- ↪ Approval of inventories
- ↪ Establishing priorities (justification for donor support)
- ↪ Development of action plans & strategies
- ↪ Endorsement of the NIP

Inter-ministerial coordination !!!

Types of change

External factors

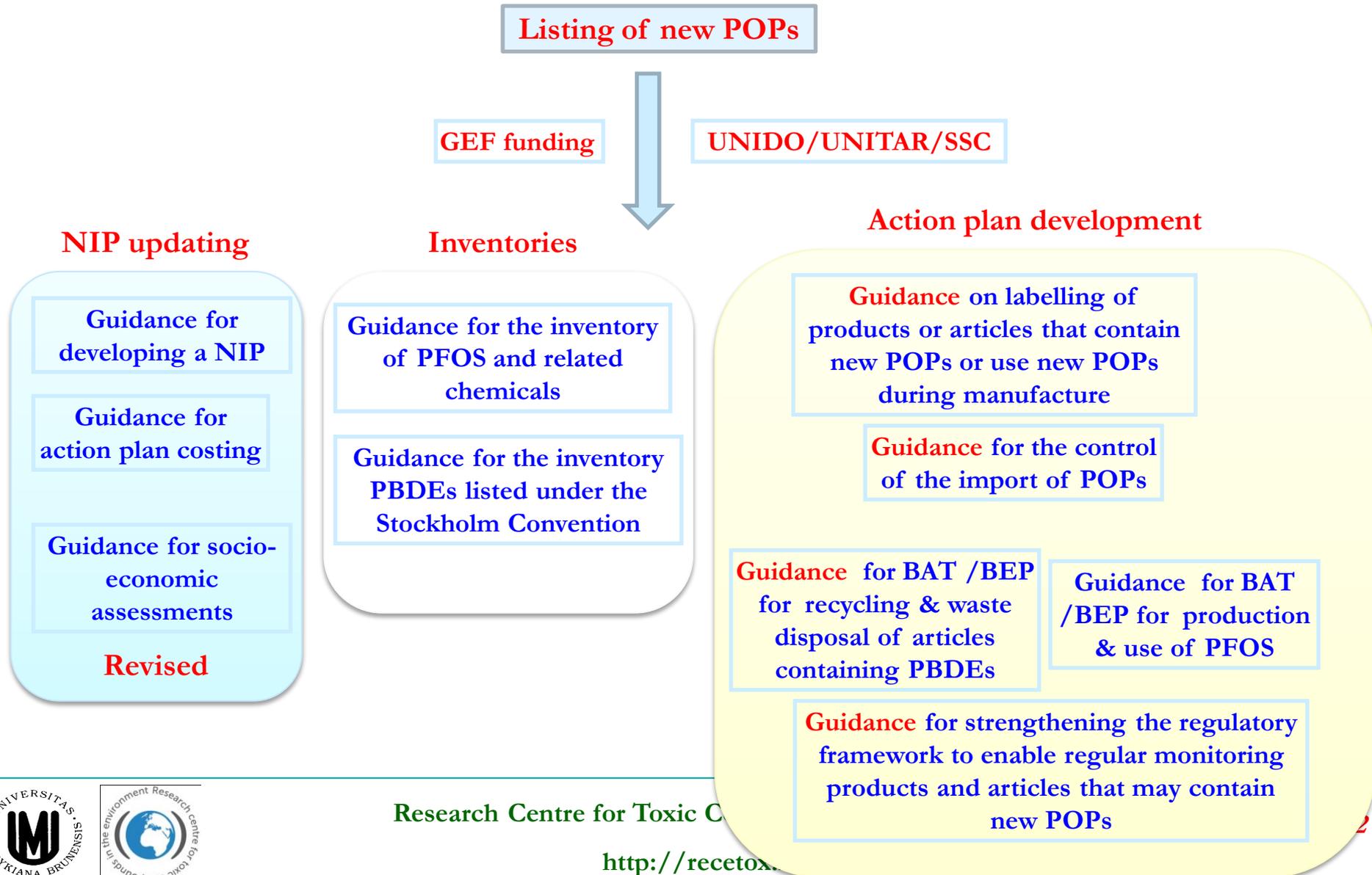
- ↪ Changes in obligations arising from amendments to the Convention
- ↪ COP decisions that may affect how a Party implements the Convention (e.g. adoption of guidance)
- ↪ Changes in availability of financial and technical assistance
- ↪ Changes in access to infrastructure

Internal factors

- ↪ Reporting under Article 15
- ↪ Change in national priorities
- ↪ Significant change in national circumstances
- ↪ Inventories of POPs, after improvement or updating, indicating a change in the scope of the problem addressed

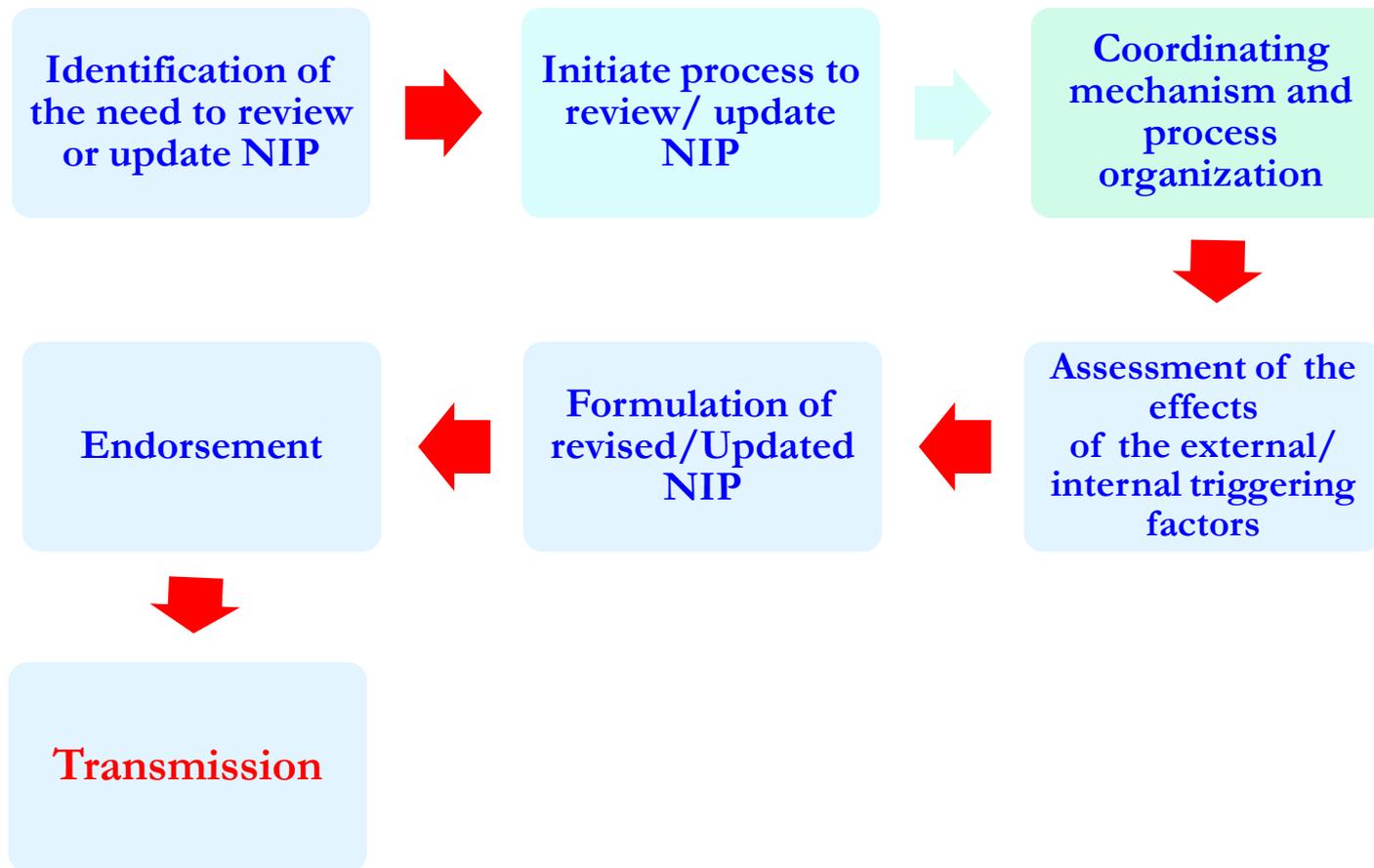
**New chemicals added to the Convention:
9 new POPs in 2009
1 new POP in 2011 + 1 in 2014**

Guidelines on updating of NIPs have been developed



Elaborated process for reviewing and updating NIPs

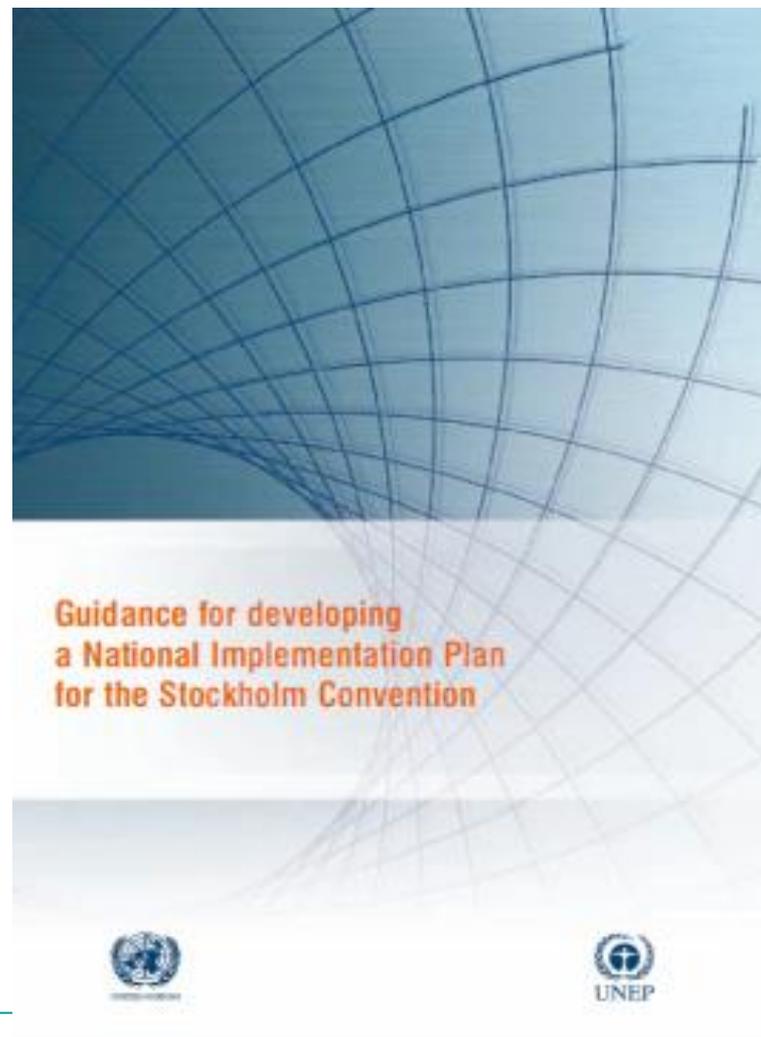
Annex to decision SC-2/7



Guidance for developing and updating a NIP

- ↗ **Guidance for developing a National Implementation Plan for the Stockholm Convention**
- ↗ **Guidance for the review and updating of NIPs (annex to decision SC-1/12)**
- ↗ **Elaborated process of reviewing and updating national implementation plans (annex to decision SC-2/7).**

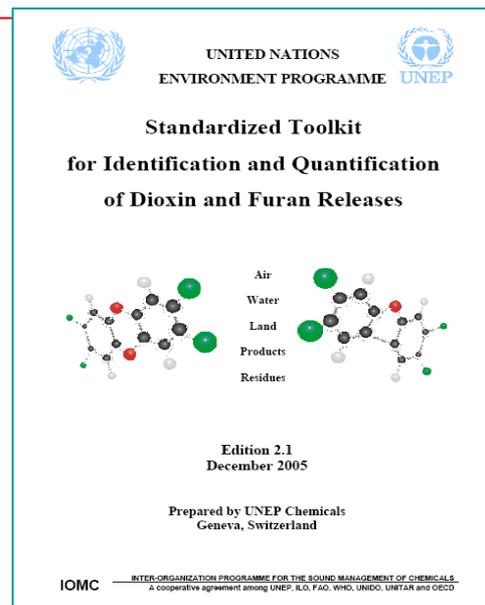
Revised



Resources for action plan development

Existing guidelines:

- ↪ BAT/BEP for Annex C chemicals
- ↪ Toolkit for quantification of dioxin and furan releases
- ↪ Waste disposal of POPs (Basel Convention)
- ↪ Guidance for action plan costing



New Guidance on:

- ↪ Regulatory framework for monitoring of new POPs
- ↪ Control of import
- ↪ Labelling
- ↪ BAT/BEP production & use of PFOS
- ↪ BAT/BEP recycling & waste disposal PBDEs



What is an action plan?

- ↗ A “road map” for the implementation of activities addressing an identified priority issue
- ↗ Can also be referred as “project planning”
- ↗ AP has a clearly defined start and end
- ↗ AP development can be ongoing process (accommodating changes as new information emerges)



Outline of an action plan

- ↪ Objectives
- ↪ Background
- ↪ Actions
- ↪ Timelines
- ↪ Budget
- ↪ Coordination
- ↪ Monitoring, evaluation

Annexes of the SC

Annex A

ELIMINATION

<http://chm.pops.int/Portals/0/download.aspx?d=UNEP-POPS-COP-CONVTEXT-A.En.pdf>

Annex B

RESTRICTION

<http://chm.pops.int/Portals/0/download.aspx?d=UNEP-POPS-COP-CONVTEXT-B.En.pdf>

Annex C

UNINTENTIONAL PRODUCTION

<http://chm.pops.int/Portals/0/download.aspx?d=UNEP-POPS-COP-CONVTEXT-C.En.pdf>

Annex D

INFORMATION REQUIREMENTS AND SCREENING CRITERIA (*POPs screening criteria*)

Annex E

INFORMATION REQUIREMENTS FOR THE RISK PROFILE

Annex F

INFORMATION ON SOCIO-ECONOMIC CONSIDERATIONS

Annexes of the SC

Annex A (Elimination)

Each Party shall prohibit and/or take the legal and administrative measures necessary to eliminate its production and use of chemicals in Annex A subject to the provisions of that Annex

Annex B (Restriction)

Each Party shall restrict its production and use of chemicals in Annex B in accordance with the provisions of that Annex

Annex C (Continuing minimization)

Each Party shall take measures to reduce the total releases derived from anthropogenic sources of each of the chemicals listed in Annex C, with the goal of their continuing minimization and, where feasible, ultimate elimination

Elimination of POPs (Art. 3)

Each Party shall prohibit and/or take the legal and administrative measures necessary to eliminate its production and use of chemicals in Annex A subject to the provisions of that Annex.

Elimination: Annex A

Annex A: Elimination of production and use of chemicals

- ↪ Alpha hexachlorocyclohexane, Aldrin, Beta hexachlorocyclohexane, Chlordane, Chordecene, Commercial octabromodiphenyl ether, Commercial octabromodiphenyl ether, Dieldrin, Endrin, Heptachlor, Hexabromobiphenyl, Hexachlorobenzene (HCB), Lindane, Mirex, PCBs, Pentachlorobenzene, and Toxaphene

Specific exemptions: (*Article 4: Register*)

- ↪ Aldrin, Chlordane, Dieldrin, Heptachlor, HCB, Lindane, Mirex

General exemptions:

- ↪ For unintentional trace contaminants: quantities in articles before entry-into-force of the Convention and laboratory-scale research quantities
- ↪ For HCB: closed-system limited intermediate

Elimination: Annex A Part II (PCBs)

- 1) **Cease production** of new PCBs *immediately*.
- 2) **Eliminate** use of in-place PCB equipment by 2025.
- 3) **Achieve** environmentally sound disposal of PCB wastes as soon as possible and not later than 2028.
- 4) **Report** every five years on progress of PCB elimination to the COP

Restriction: Annex B

Each Party shall restrict its production and use of chemicals in Annex B in accordance with the provisions of that Annex.

- ↪ **Currently listed: DDT, PFOs**
- ↪ **Production and use** of chemicals in Annex B is eliminated, except for “acceptable purposes”

For DDT

Parties shall:

- ↪ Eliminate production and use unless they have notified the Secretariat of their intent to use it

If so, they must:

- ↪ Restrict such production/use to disease vector in accordance with WHO recommendations
- ↪ Provide information on use to the Secretariat every three years

COP shall:

- ↪ Encourage Parties using DDT to develop and implement an action plan to ensure that DDT use is restricted to disease vector control, and implementation of suitable alternatives

Continued reduction: Article 5 Annex C

Measures to reduce or eliminate releases from unintentional production

- ↪ **Develop and implement an action plan to evaluate and address releases**
- ↪ **Promote alternatives and BAT/BET for priority sources of releases**
 - ☞ **When applying BAT/BEP, Parties to consider guidelines adopted by COP**

Annexes of the SC - examples

→ Listed in Annex B (Restriction) with Specific exemptions and Acceptable purposes

- Listed in: Annex A (Elimination)
- Production: Total ban - No exemption
- Use: Total ban - No exemption
- Listed in: Annex C (Unintentional production)

- Listed in: Annex A (Elimination)
- Production: Total ban - No exemption
- Use: Total ban of use in new products and articles
- Exemption for recycling of articles: May allow recycling of articles that (may) contain the chemicals

Article 8: Listing of new POPs

1. A Party Submits a proposal containing Annex D information

Mid May of Year 1

Secretariat verifies

2. POPRC Applies screening criteria in Annex D

October of Year 1

POPRC decides

3. POPRC Develops risk profile based on Annex E information submitted by Parties

October of Year 2

POPRC decides

4. POPRC Develops risk management evaluation based on Annex F information submitted by Parties and recommends to COP

October of Year 3

Secretariat

5. COP Decides whether to list the chemical in Annex A, B, or C to the Convention

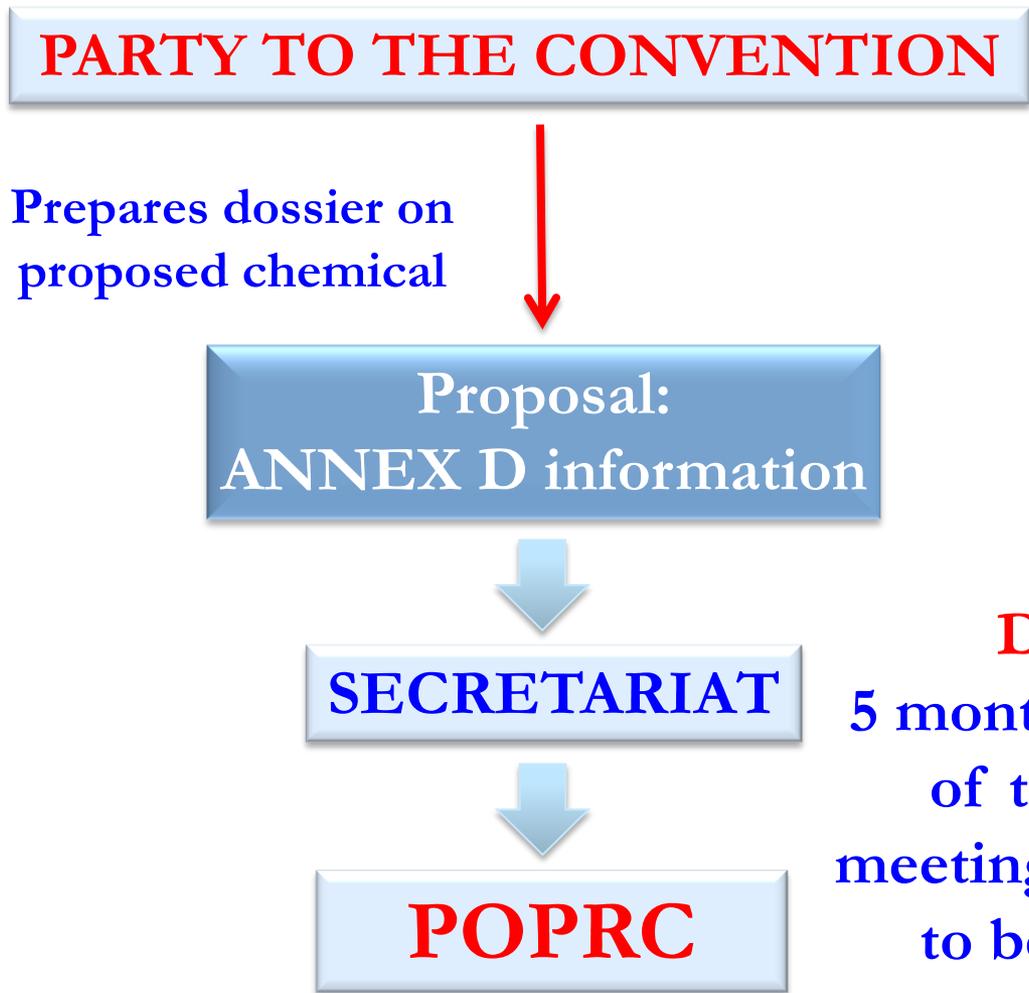
Year 4 or 5

The depositary communicates to Parties

whether to proceed
Research Centre for Toxic Compounds in the Environment
whether to proceed
communicates to Parties

<http://recetox.muni.cz>

How to submit a proposal



Deadline:
5 months in advance
of the POPRC
meeting at which it is
to be discussed

Annex D information requirements

1. Chemical identity
2. Persistence
3. Bio-accumulation
4. Potential for long-range environmental transport
5. Adverse effects
6. Statement of the reasons for concern and a short statement indicating the need for global control

Secretariat checks proposal for completeness, and if satisfied, forwards the proposal to POPRC

Annex D screening criteria

1. Persistence
2. Bio-accumulation
3. Potential for long-range environmental transport
4. Adverse effects

POPRC applies screening criteria & if satisfied, invites submission of information in Annex E for drafting of a risk profile

If proposal is set aside, a Party may resubmit it to the POPRC for reconsideration;
If the POPRC again sets the proposal aside the Party may challenge the decision and the COP shall consider the matter.

Annex D: INFORMATION REQUIREMENTS AND SCREENING CRITERIA (*POPs screening criteria*)

(b) Persistence:

- (i) Evidence that the half-life of the chemical in water is greater than two months, or that its half-life in soil is greater than six months, or that its half-life in sediment is greater than six months; or
- (ii) Evidence that the chemical is otherwise sufficiently persistent to justify its consideration within the scope of this Convention;

(c) Bio-accumulation:

- (i) Evidence that the bio-concentration factor or bio-accumulation factor in aquatic species for the chemical is greater than 5,000 or, in the absence of such data, that the log Kow is greater than 5;
- (ii) Evidence that a chemical presents other reasons for concern, such as high bio-accumulation in other species, high toxicity or ecotoxicity; or
- (iii) Monitoring data in biota indicating that the bio-accumulation potential of the chemical is sufficient to justify its consideration within the scope of this Convention;

Annex D: INFORMATION REQUIREMENTS AND SCREENING CRITERIA (*POPs screening criteria*)

(d) Potential for long-range environmental transport:

- (i) Measured levels of the chemical in locations distant from the sources of its release that are of potential concern;
- (ii) Monitoring data showing that long-range environmental transport of the chemical, with the potential for transfer to a receiving environment, may have occurred via air, water or migratory species; or
- (iii) Environmental fate properties and/or model results that demonstrate that the chemical has a potential for long-range environmental transport through air, water or migratory species, with the potential for transfer to a receiving environment in locations distant from the sources of its release. For a chemical that migrates significantly through the air, its half-life in air should be greater than two days; and

(e) Adverse effects:

- (i) Evidence of adverse effects to human health or to the environment that justifies consideration of the chemical within the scope of this Convention; or
- (ii) Toxicity or ecotoxicity data that indicate the potential for damage to human health or to the environment.

Annex E information requirements for the risk profile

1. Sources
2. Hazards
3. Environmental fate
4. Monitoring data
5. Exposure in local areas
6. Status of chemical under international conventions

Annex F information on socio-economic considerations

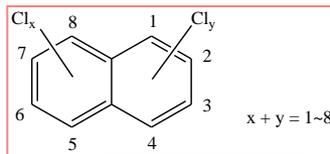
1. Efficacy and efficiency
2. Alternatives
3. Environmental fate
4. Impacts on society of implementing possible control measures
5. Waste disposal implications
6. Access to information and public education
7. Control and monitoring capacity
8. Control actions

POPs listed in 2009 and 2011

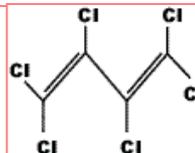
Chemical	Pesticides	Industrial chemicals	Unintentional production	Annex
Chlordecone	+			A
Lindane	+			A
Alpha hexachlorocyclohexane	+		By-product of lindane	A
Beta hexachlorocyclohexane	+		By-product of lindane	A
Endosulfan	+			A
Commercial pentabromodiphenyl ether		+		A
Commercial octabromodiphenyl ether		+		A
Hexabromobiphenyl		+		A
Perfluorooctane sulfonic acid, its salts and perfluorooctane sulfonyl fluoride	+	+		B
Pentachlorobenzene	+		+	A, C

Actually discussed new POPs

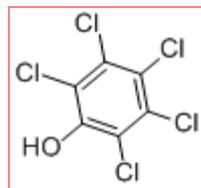
Chlorinated naphthalenes



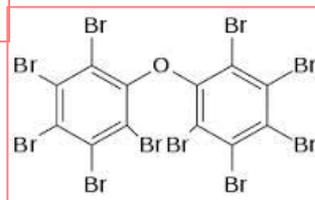
Hexachlorobutadiene



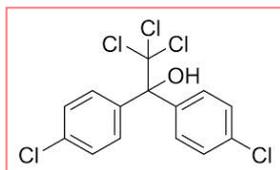
Pentachlorophenol



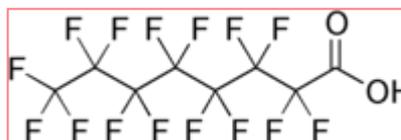
Decabromodiphenylether



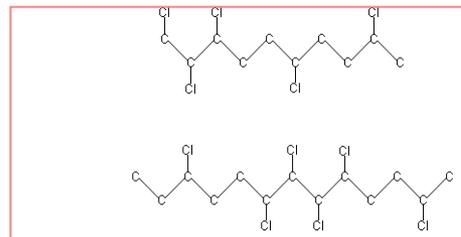
Dicofol



PFOA (perfluorooctane acid)



Short chain chlorinated paraffines



Promotion and research

- ↪ Public information, awareness and education (Article 10)
Parties shall promote the provision of POPs information to the public and decision makers, including training programs, public participation in efforts to address POPs
- ↪ Research, development and monitoring (Article 11): Parties shall encourage/undertake such activities pertaining to POPs and their alternative, and identifying new POPs

Technical Assistance and Financial resources

Technical assistance (Art. 12)

- ↪ Recognizes that rendering of timely and appropriate technical assistance is essential for the implementation of the Convention
- ↪ Calls for arrangements for the delivery of technical assistance
- ↪ There are 8 Stockholm Convention Regional and subregional centres for capacity-building and the transfer of technology

Financial resources and mechanisms

- ↪ Article 13 establishes a financial mechanism

Information exchange (Art. 9) & Clearing House Mechanism

Parties shall:

- ↻ Facilitate/undertake exchange of POPs information
- ↻ Designate national Stockholm Convention Official Contact Points and/or Focal Points

Clearing house mechanism:

- ↻ Secretariat to promote exchange of information between Parties and stakeholders;
- ↻ Promotion of technical and scientific exchanges
- ↻ Direct linkage between Parties and Secretariat
- ↻ www.pops.int

Reporting

Each Party reports on measures taken to implement the Convention

- ↪ Second reports are due by 31st October 2010
- ↪ Then every 4 years thereafter, next deadline: October 31 2014

Information considered:

- ↪ Quantities of POPs listed in Annex A and B produced, imported, exported, and where possible the States from which POPs are exported

On line reporting is available in the Convention web page

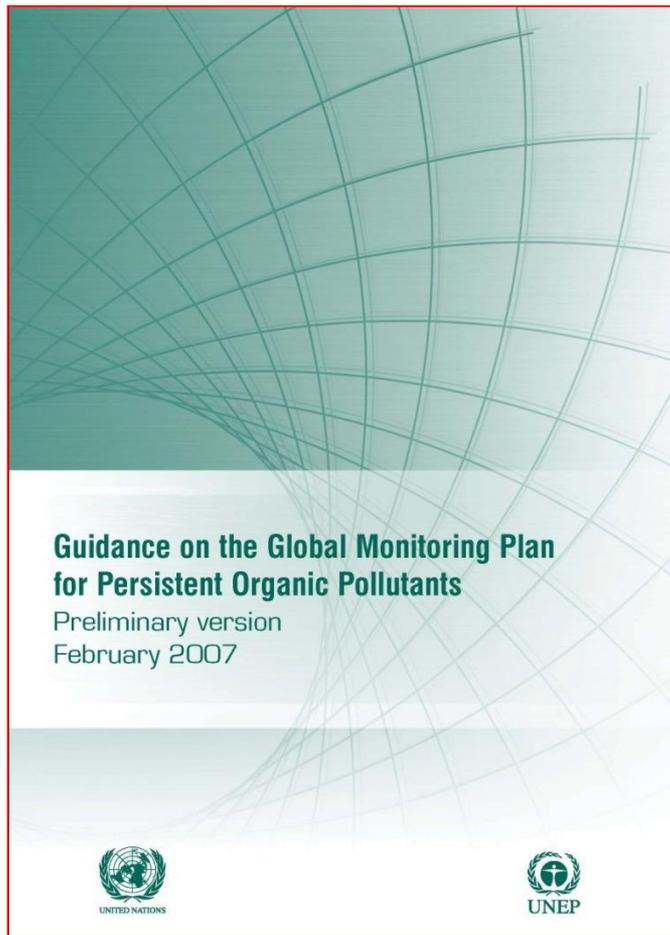
Global Monitoring Plan (GMP)

Provides a framework for the collection of comparable monitoring data and information on the presence of the POPs listed in annexes A, B and C of the Convention

Allows trends to be identified in levels over time as well as to provide information on their regional and global environmental transport

The GMP is being implemented in all 5 UN regions

Globální POPs monitoring - ovzduší



Ovzduší:

Pasivní vzorkování jako doplněk
aktivního velkoobjemového
vzorkování:

- ↪ Není potřeba čerpadlo a proud
- ↪ Malé a laciné
- ↪ Jednoduché

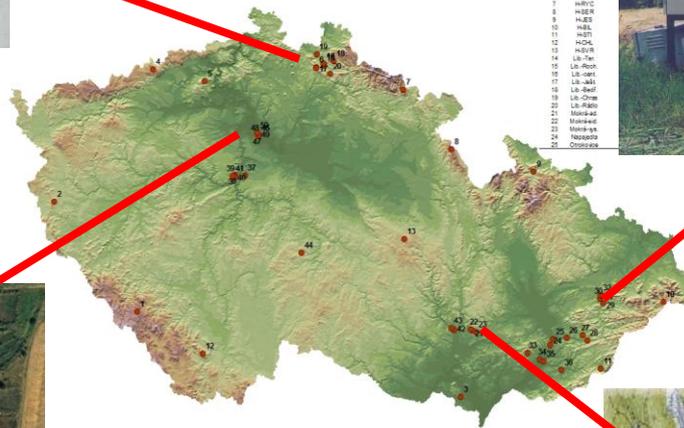
UNEP - Stockholm Convention on POPs
“Effectiveness Evaluation”

Studium modelových zdrojů POPs a studium lokálních vlivů



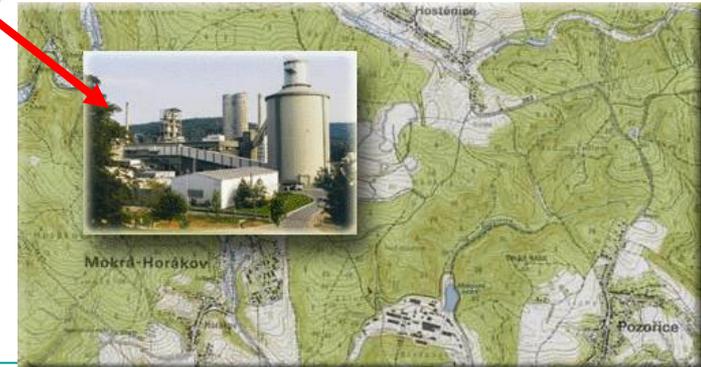
Spalovny odpadů

Spolana Neratovice



DEZA Valašské Meziříčí

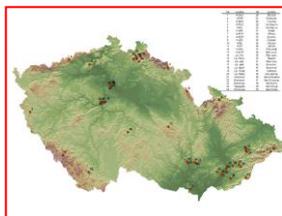
Cementárny



Global/national POPs monitoring - MONET

RECETOX Monitoring Network

MONET = MOⁿitoring NET^{work}



MONET-CZ =
Czech Republic

MONET-PIs =
Pacific islands -
Fiji



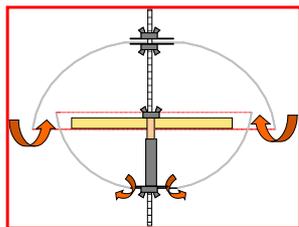
MONET-CEECs
= 20 CEE
countries + 2 CA
countries



MONET-Africa
= 17 African
countries



MONET-EUROPE – 55 sampling
sites round whole Europe



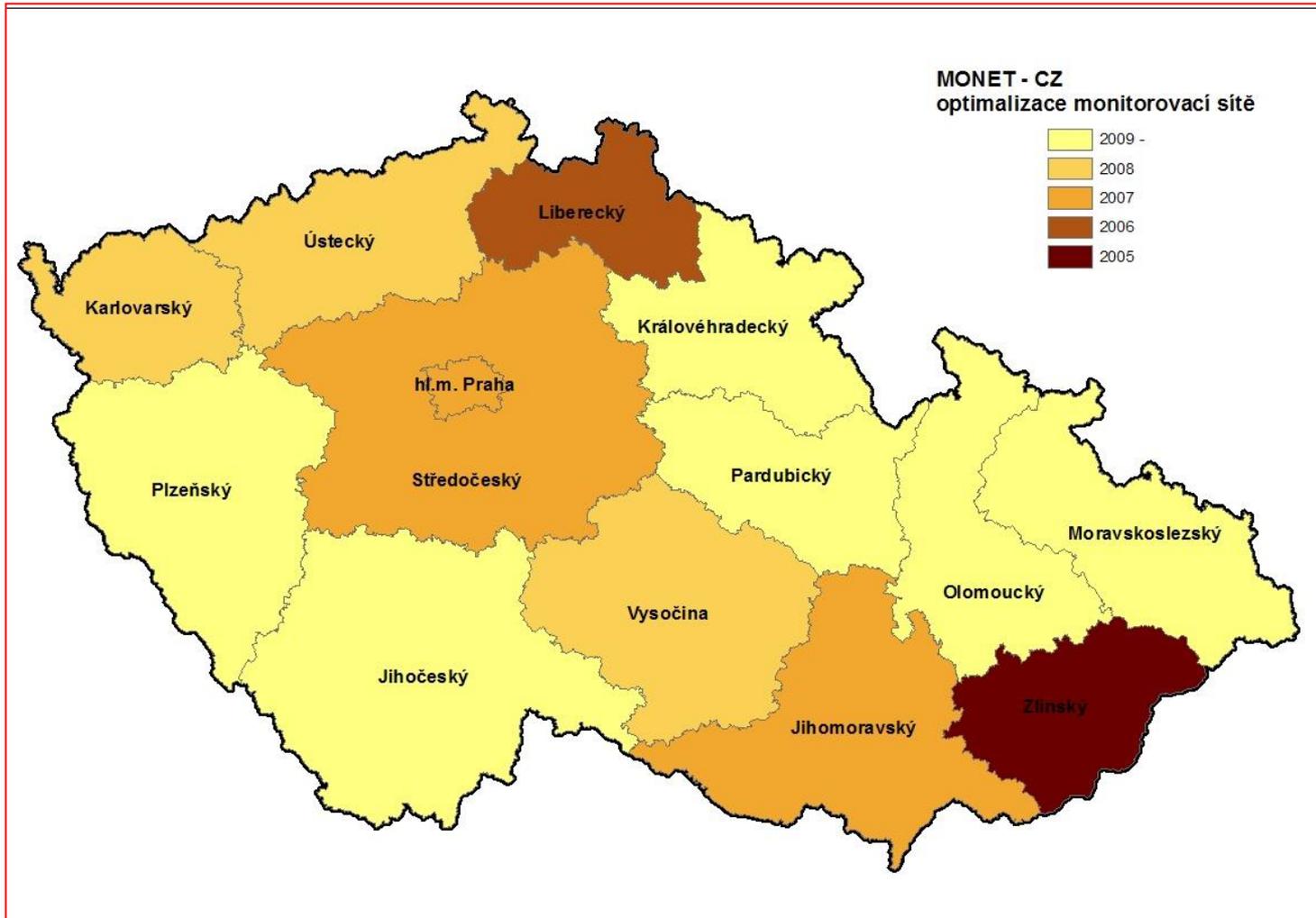
monet



Research Centre for Toxic Compounds in the Environment

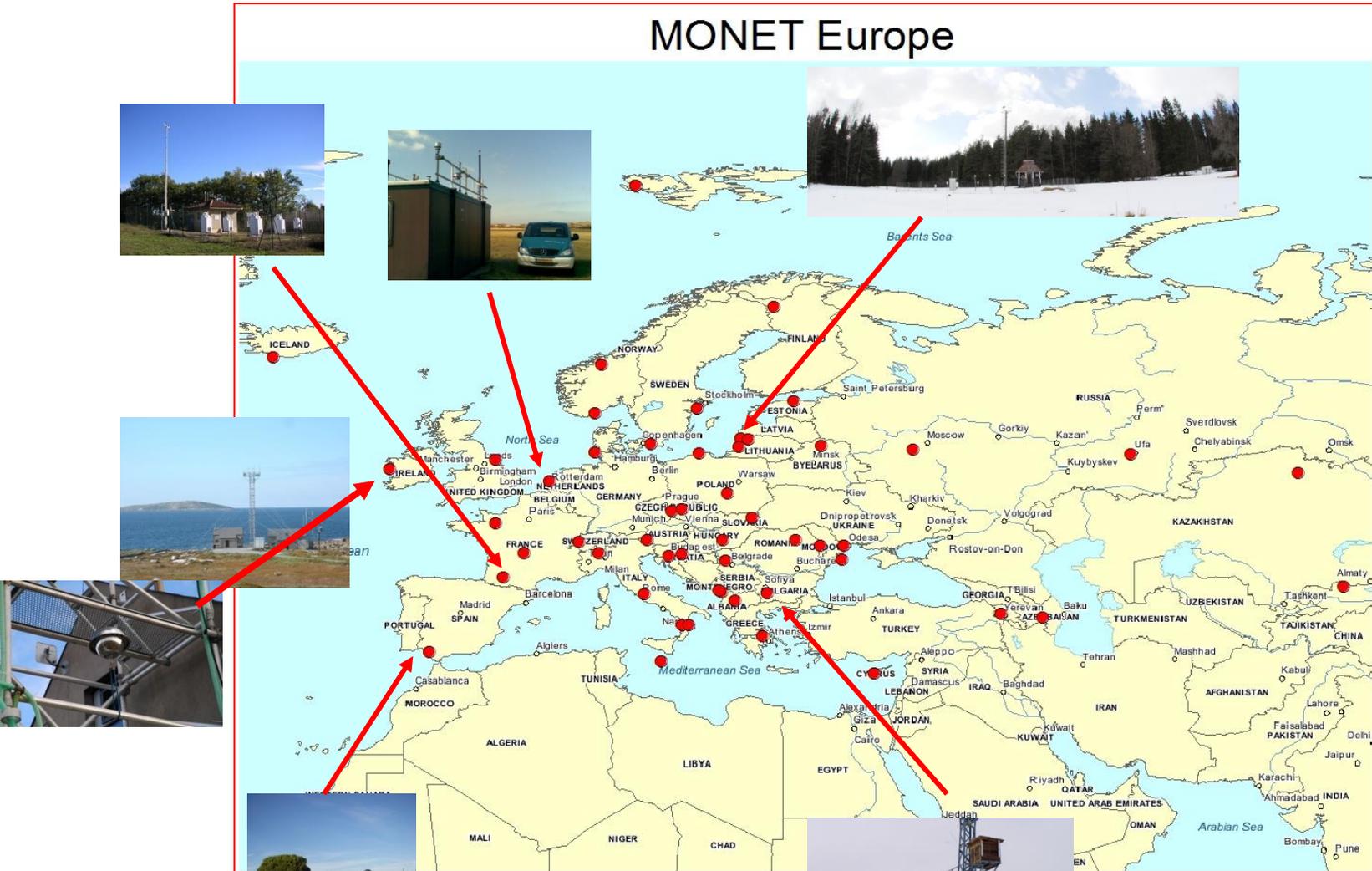
<http://recetox.muni.cz>

RECETOX/Národní POPs Centrum ČR – MONET-CZ/REGION – Krajské studie



MONET-EUROPE – 2009-2011 – 55 odběrových míst

MONET Europe

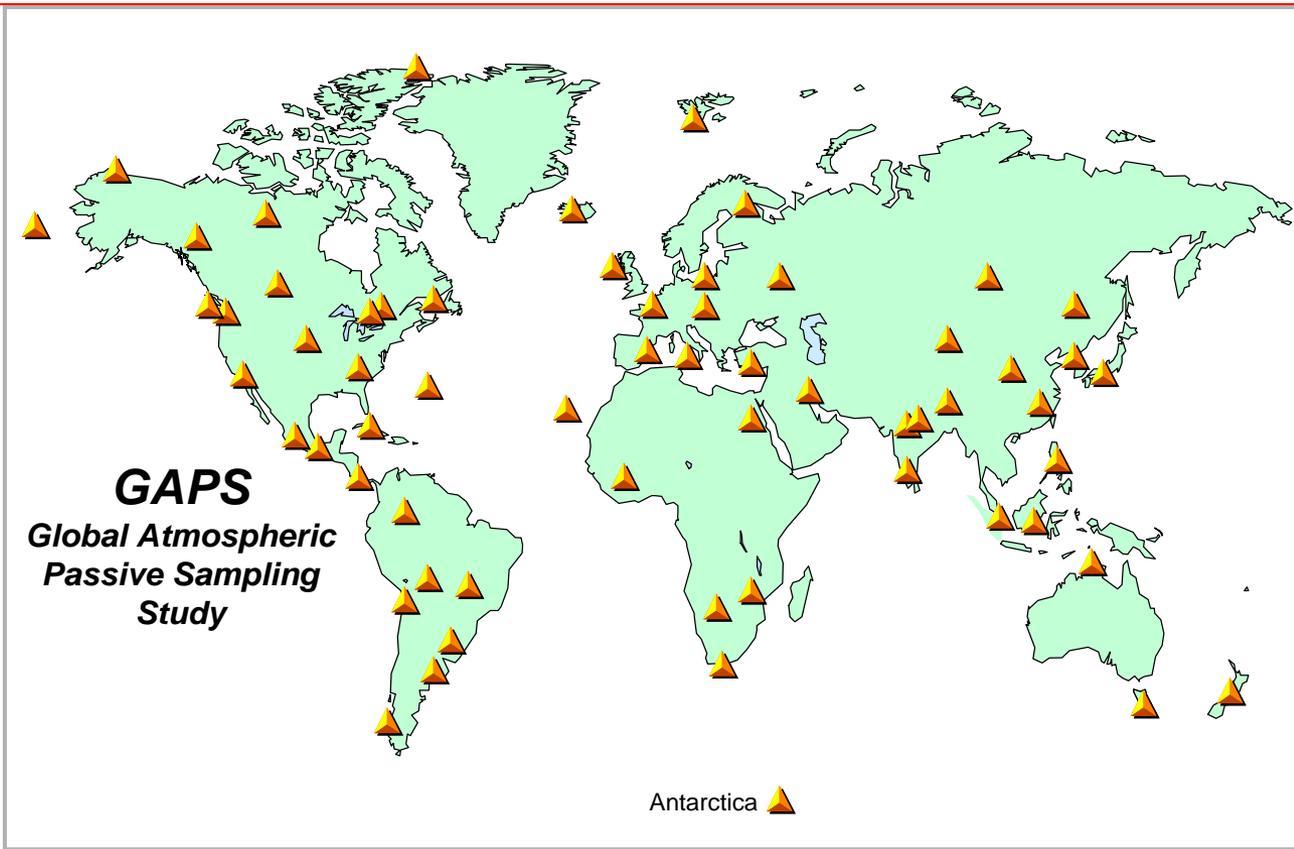


Research Centre for Toxicology and Environmental Health

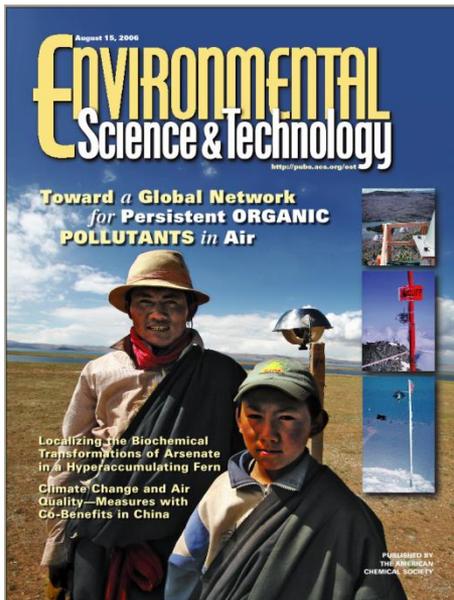
<http://>



Environment Canada - GAPS = Global Atmospheric Passive Sampling Study



Updated : August 2006 (Tom)



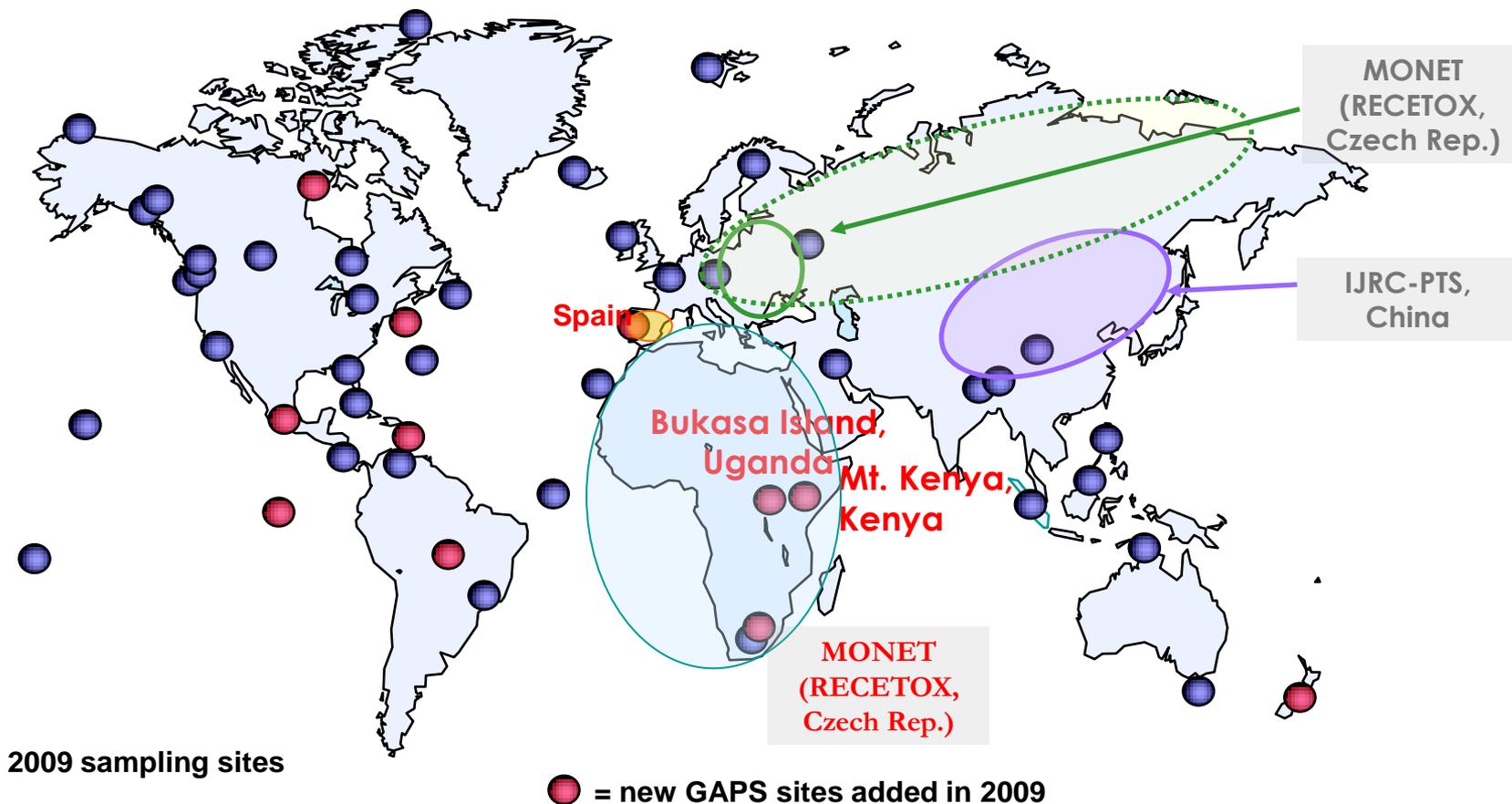
T. Harner



Research Centre for Toxic Compounds in the Environment

<http://recetox.muni.cz>

Global Passive Air Sampling Programs



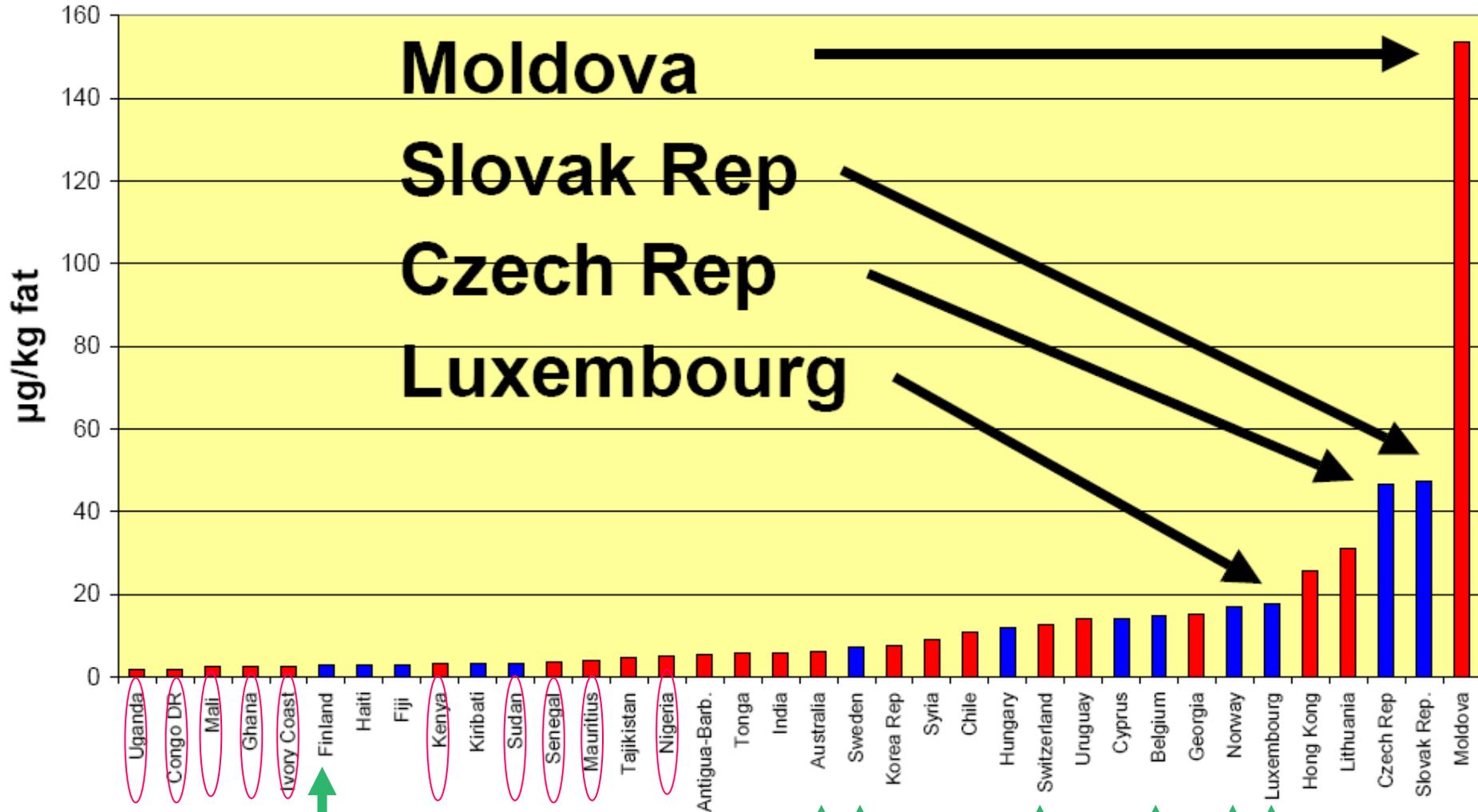
2009 sampling sites

● = new GAPS sites added in 2009

POPs v mateřském mléce, studie WHO, 2008-9 – HCB

[$\mu\text{g}\cdot\text{kg}^{-1}$ tuku]

4th and 5th round: HCB

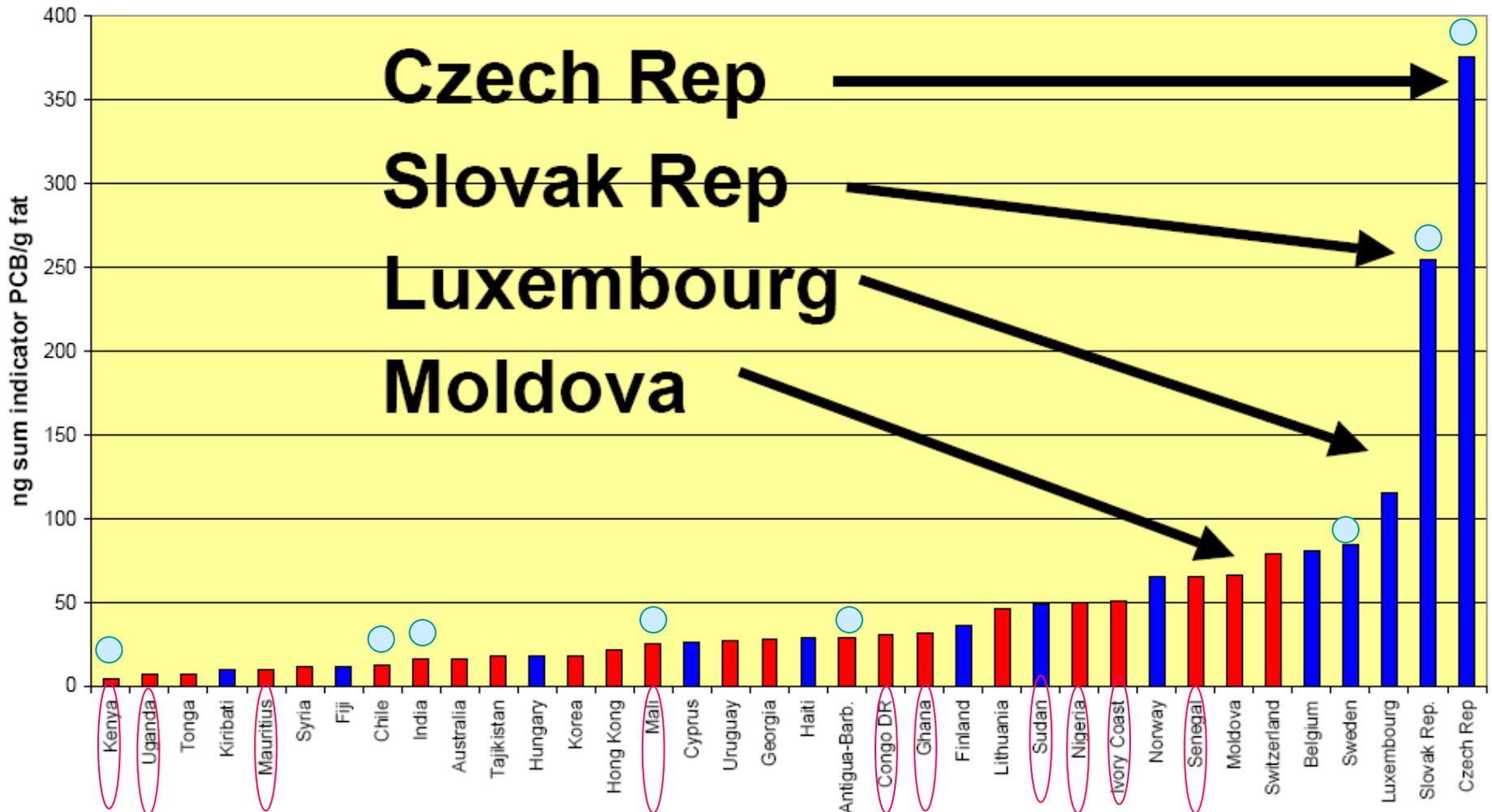


Malisch et al., Dioxin2010, San Antonio, TX

POPs v mateřském mléce, studie WHO, 2008-9 – Σ 6 PCBs

[$\mu\text{g}\cdot\text{kg}^{-1}$ tuku]

4th and 5th round: sum of 6 indicator PCB



Czech Rep

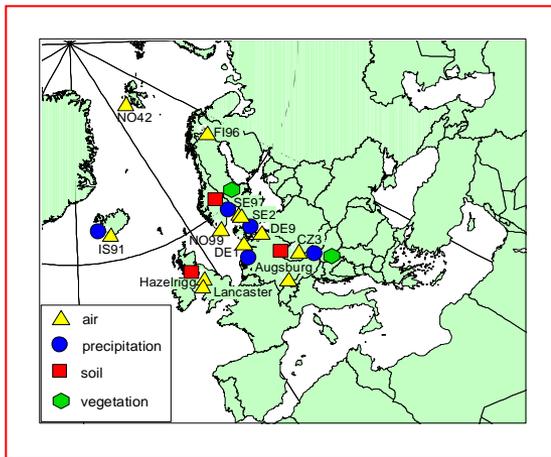
Slovak Rep

Luxembourg

Moldova

Superstation concept - Observatory Košetice, CR

EMEP POPs Network

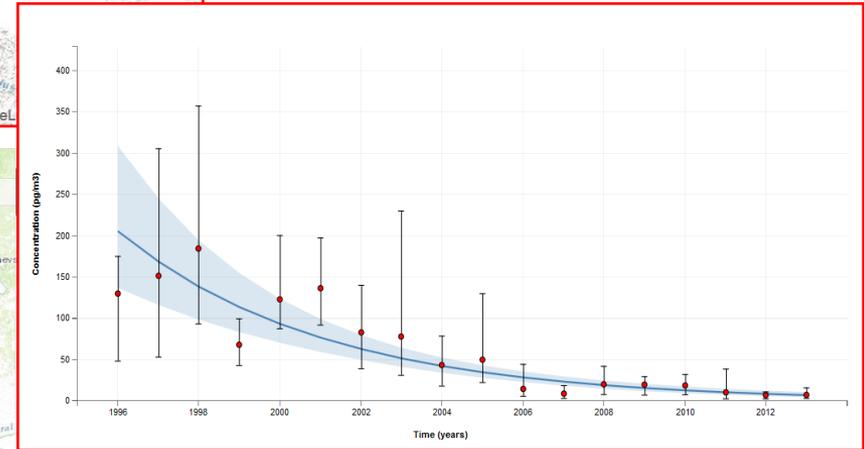
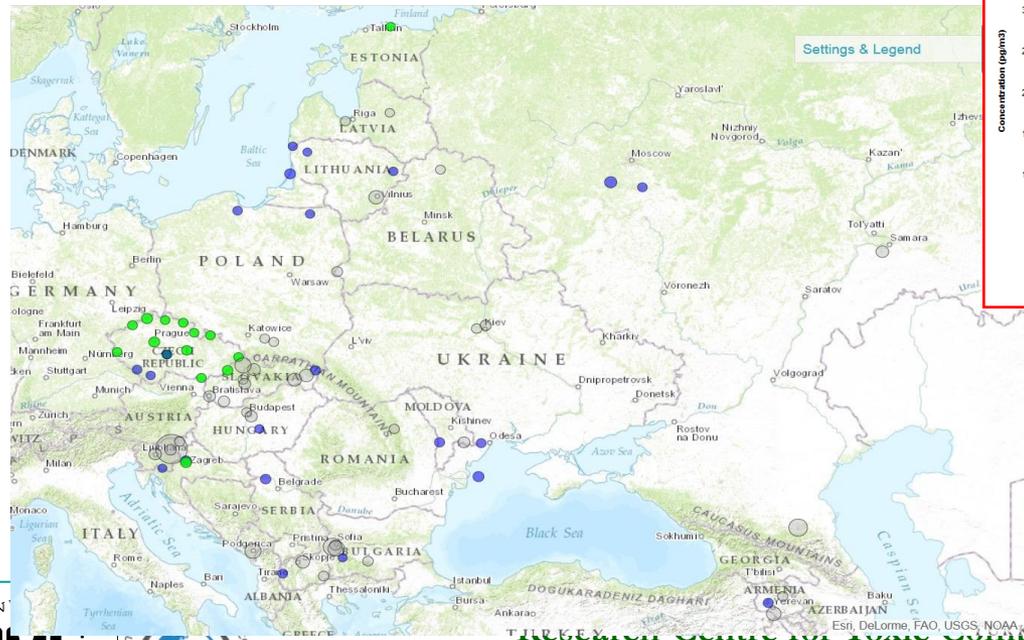
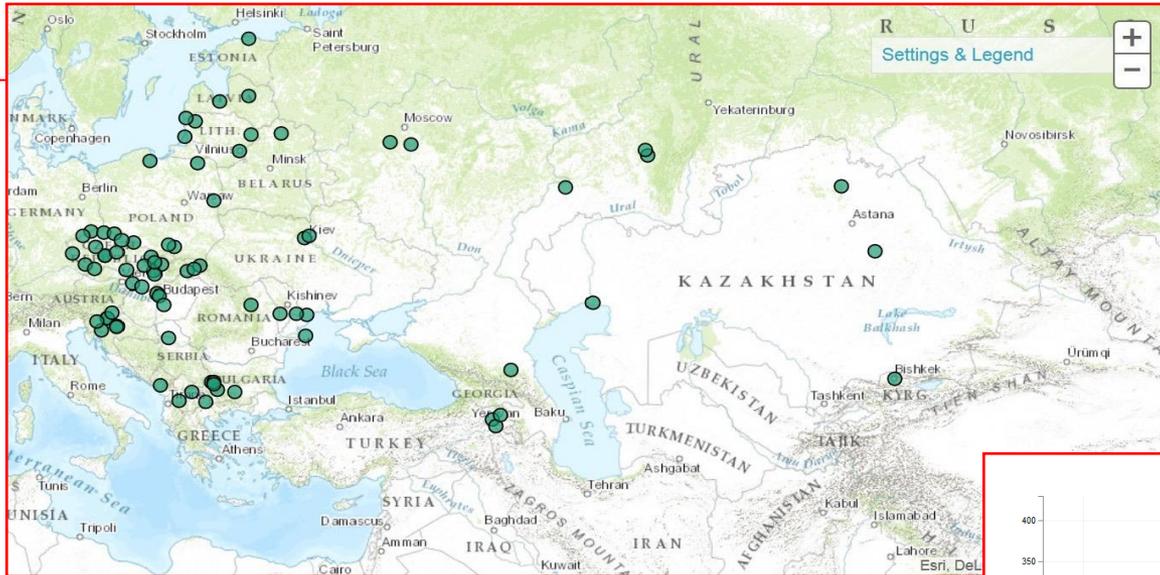


Integrated POPs monitoring - Observatory Košetice



Comparison of existing programmes (EMEP, GAPS, MONET) and approaches (active vs. passive)

Global Monitoring Plan (GMP)

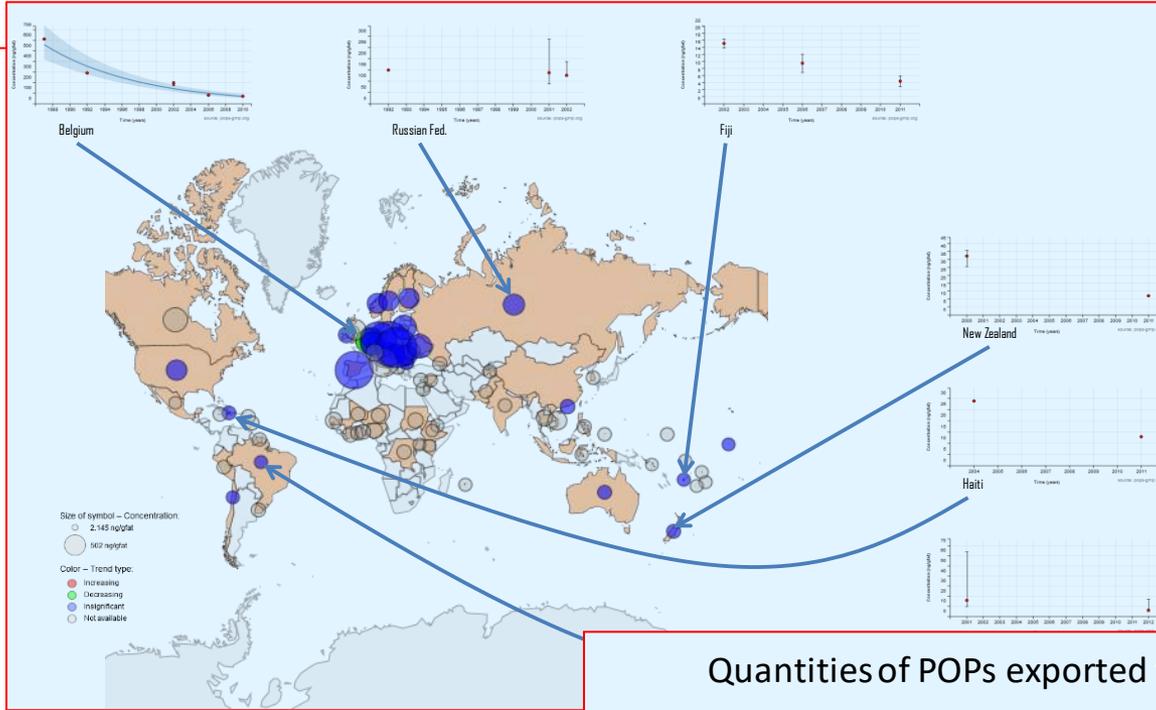


Research Centre for Toxic Compounds in the Environment

<http://recetox.muni.cz>

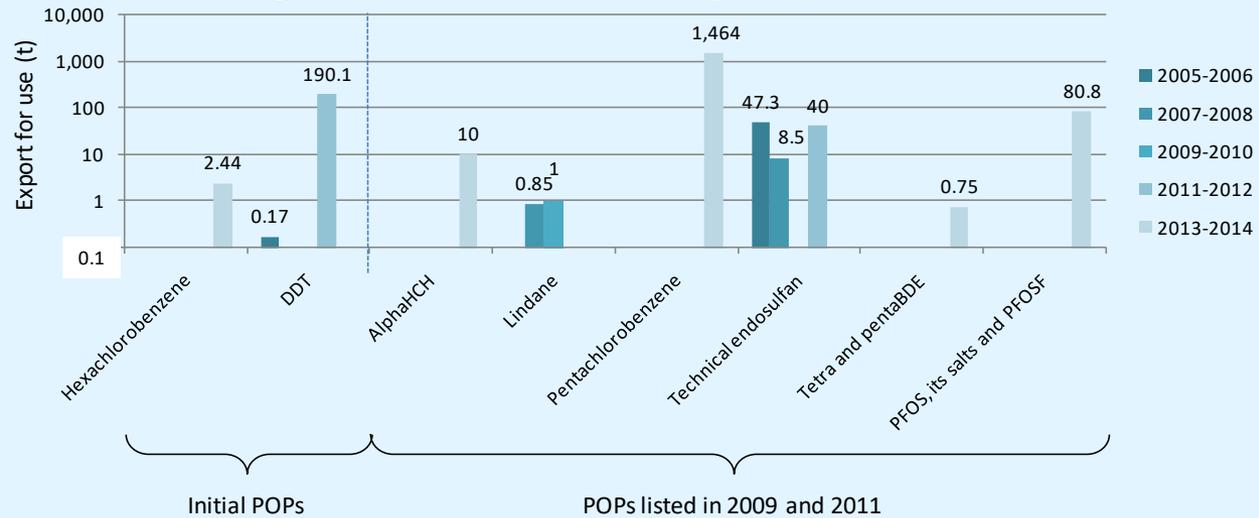


Effectiveness evaluation



Quantities of POPs exported for use

(Indicated in log scale. The number on the bars are the reported quantities in tonnes.)



Effectiveness evaluation (art. 16)

Assess the progress of implementation of the Convention through:

- ↪ Review and Analysis of National Reports
- ↪ Non-compliance reports
- ↪ Environmental monitoring

Contribution to overall environmental assessment (one of UNEP's Key mandate)

Data collection ongoing, first review was undertaken at COP4, and provided baseline levels for future evaluations

Guidance for BAT/BEP

Guidelines on best available techniques and provisional guidance on best environmental practices relevant to Article 5 and Annex C of the Stockholm Convention on Persistent Organic Pollutants

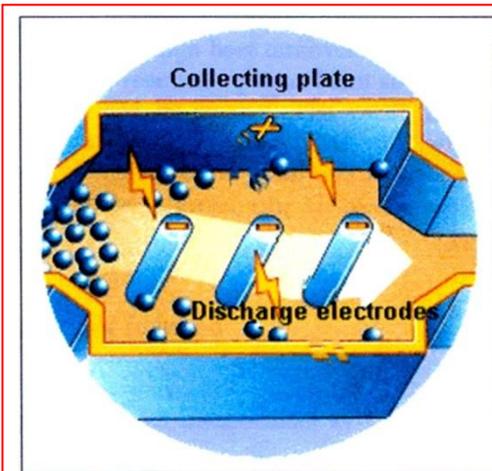
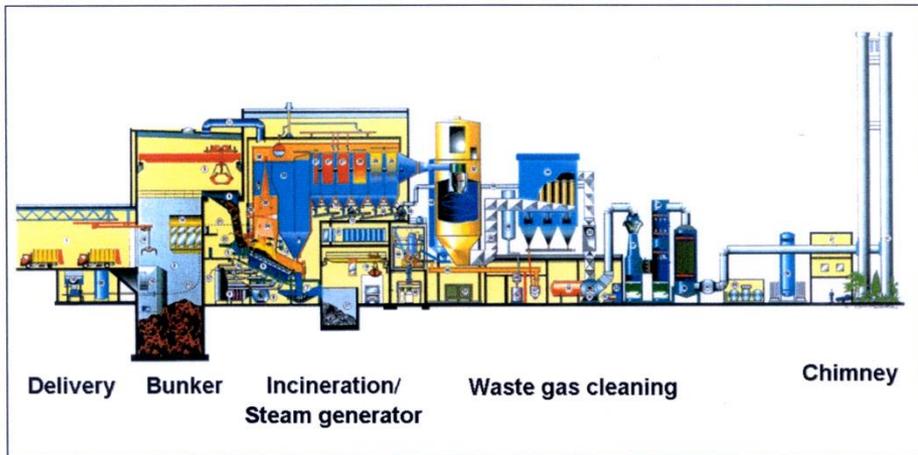
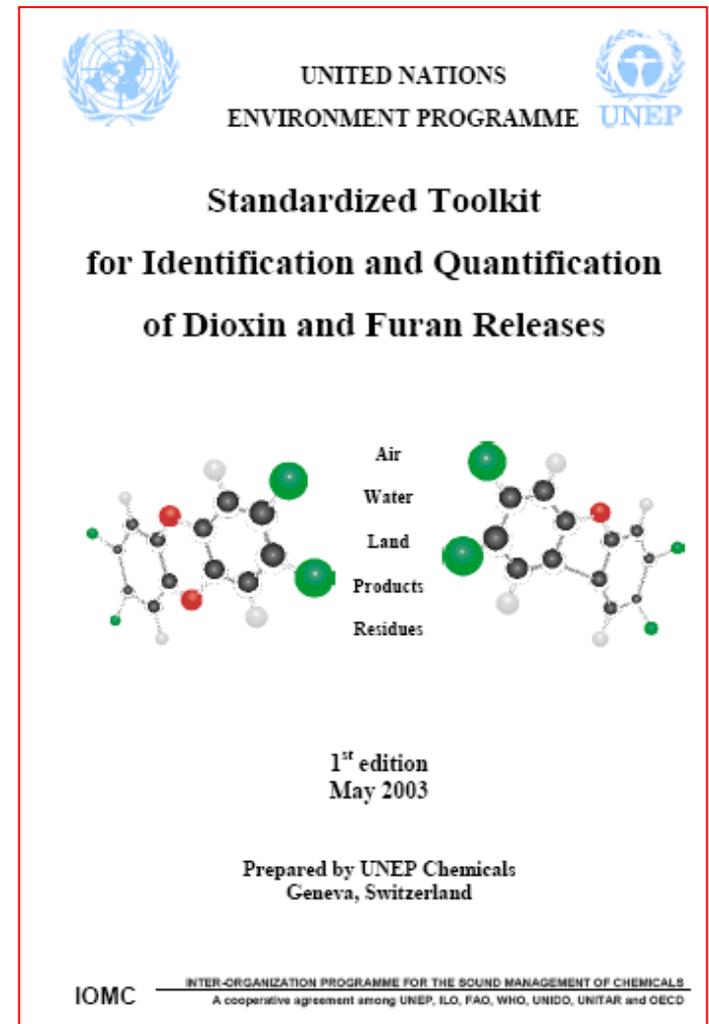


Figure 4.1 Electrostatic Precipitator Principle [source: EU BREF, 2004]

Dioxin Toolkit

The United Nations Environment Programme **UNEP Standardized Toolkit for Identification and Quantification of Dioxin and Furan Releases** is designed to cover all source categories and processes that are listed in Annex C, Parts II and III of the Stockholm Convention.

The Toolkit can be used where there are no measured data available and provides default emission factors for all source categories.

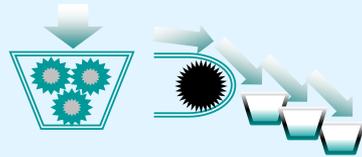


Hazards associated with the recycling chain

Recycling chain



Disassembly



Size reduction
and separation



Metallurgical
treatment



Final
treatment

Hazards

Removal of hazardous
components

Hg switches: Hg
Batteries: Cd, Pb, Hg
Gas discharge lamps:
Hg
CRTs: Pb, phosphors

Shredding

Formation of dust
particles containing
plastics, metals,
ceramic and silica

Smelting

Emission of metal
fumes, mixed
chlorinated and
brominated dioxins
and furans
(PXDD/Fs)

Incineration and
landfilling

Emission of metal
fumes, PXDD/Fs
Leaching of heavy
metals and BFRs

Risks in the recycling and waste treatment process

Research Centre for Toxic Compounds in the Environment

<http://recetox.muni.cz>

Convention on Long-range Transboundary Air Pollution and its POPs Protocol



<http://www.unece.org/env/lrtap> (for general information)

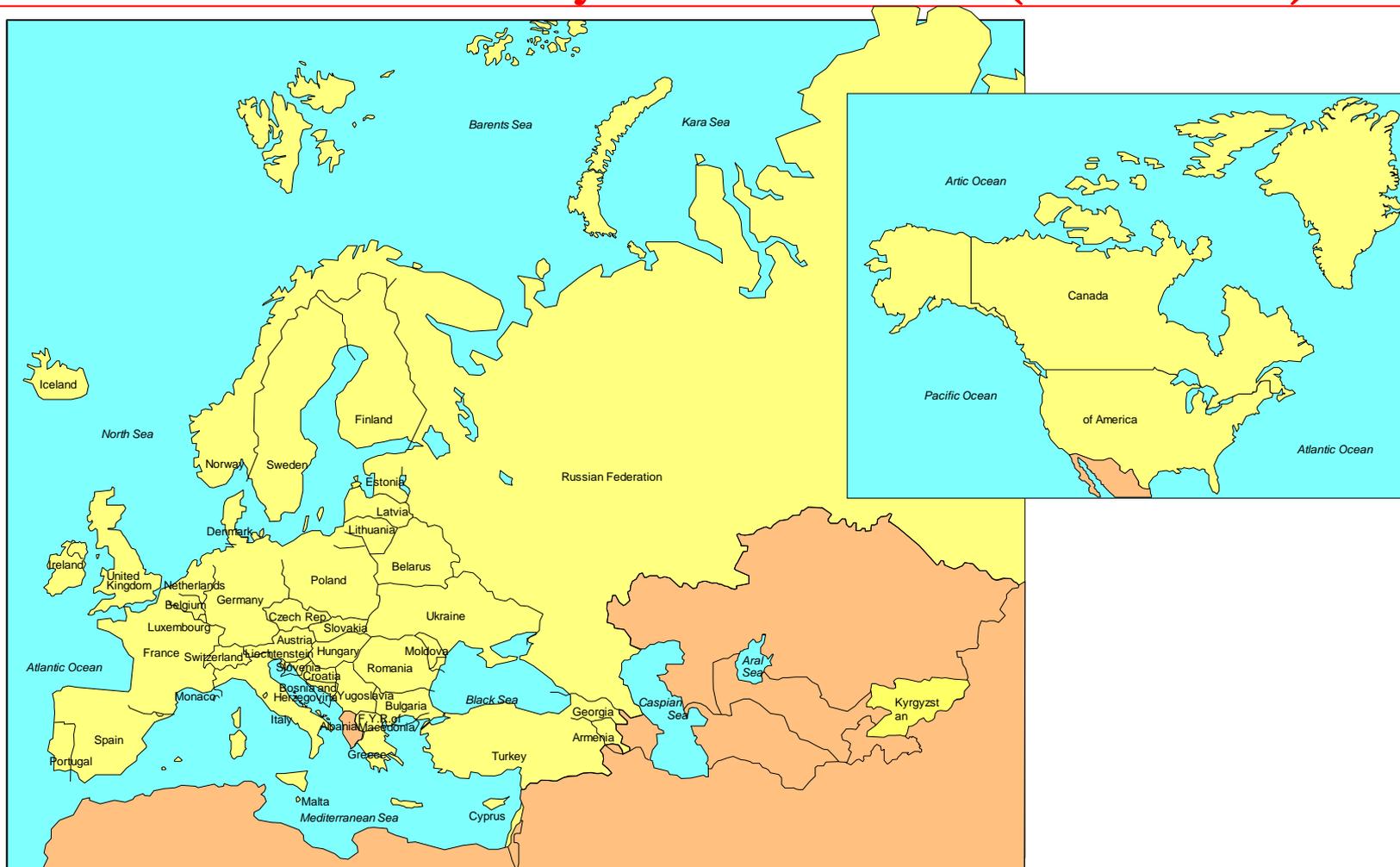
<http://www.unece.org/env/wgs> (for documents)



UNITED NATIONS ECONOMIC COMMISSION FOR EUROPE



The coverage of the Convention on Long-range Transboundary Air Pollution (49 Parties)

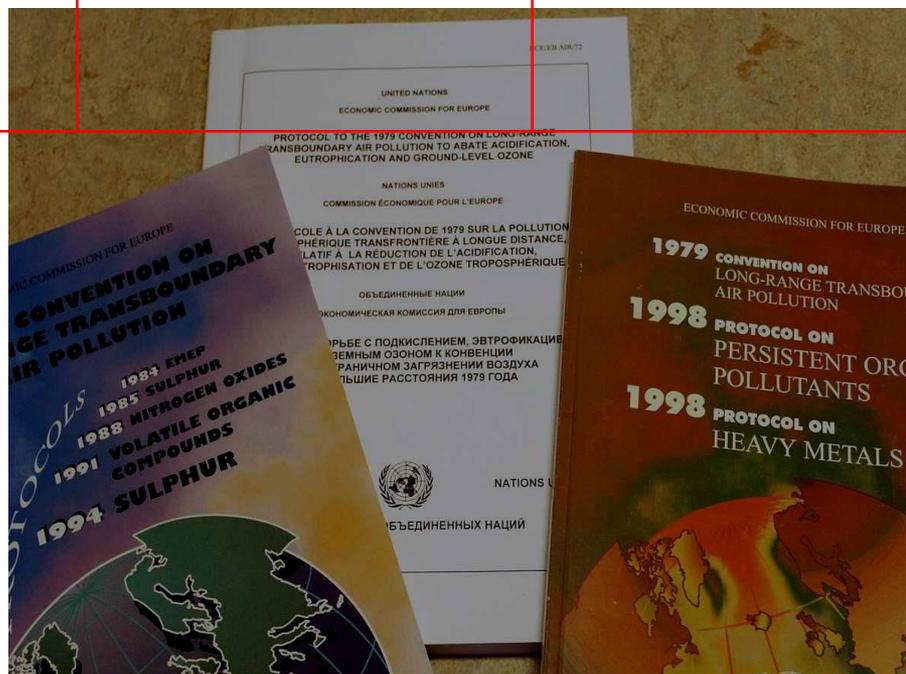


The Protocols in force

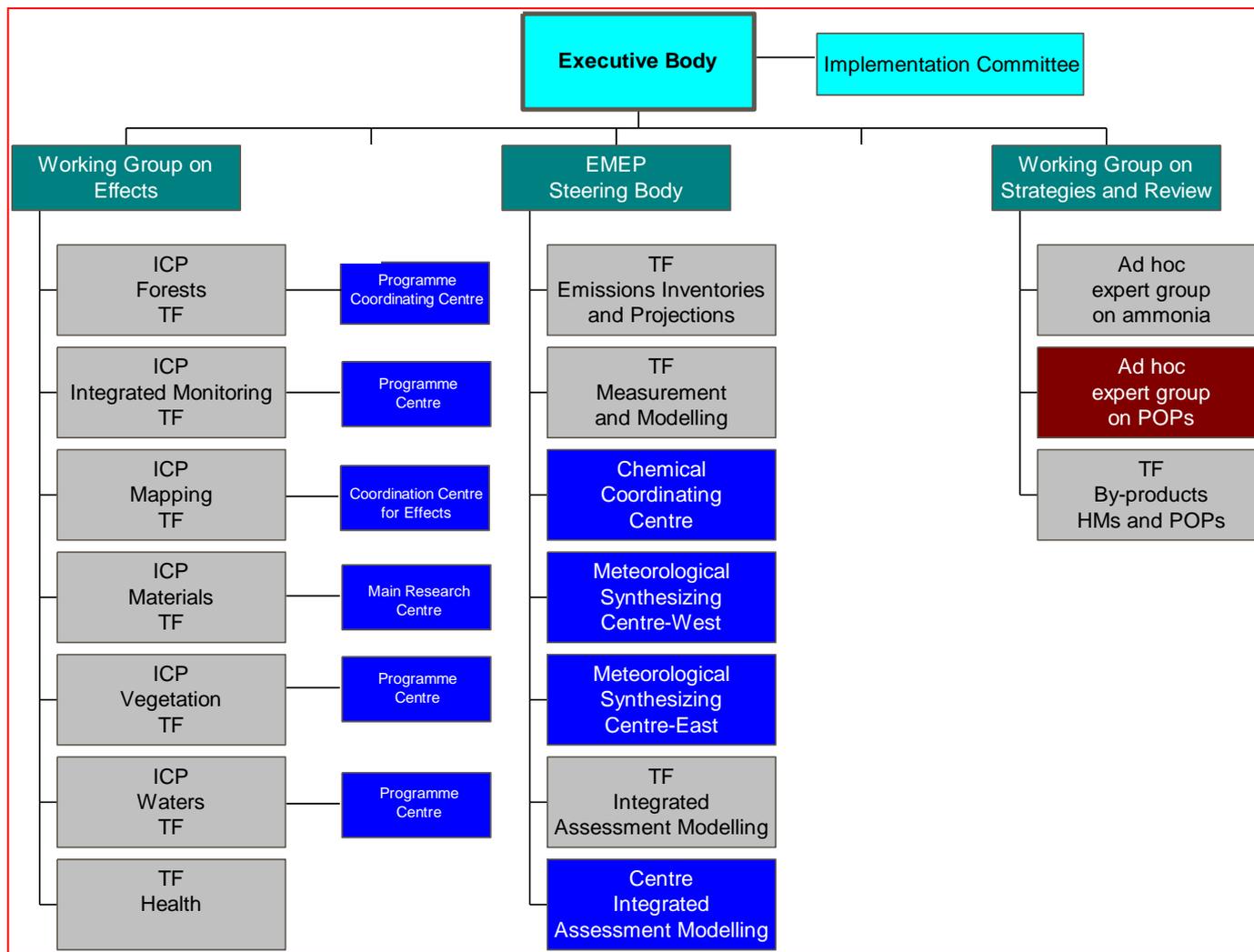
Geneva 1984	EMEP Protocol	40 Parties	Cost-sharing of monitoring and evaluation work
Helsinki 1985	Sulphur Protocol	22 Parties	Flat-rate reduction (30%) of 1980 emissions by 1993
Sofia 1988	NO_x Protocol	28 Parties	Flat-rate, stabilization of 1987 emissions by 1994, BAT requirements
Geneva 1991	VOC Protocol	21 Parties	Flat-rate reduction (30%) by 1999, optional base year, stabilization for low-emission areas, BAT requirements
Oslo 1994	2nd Sulphur Protocol	25 Parties	Effects-based emission ceilings (acidification), mandatory limit values for major sources

The new Protocols

Aarhus 1998	Heavy Metals Protocol	36 Signatories, 17 ratifications	Stabilize emissions of cadmium, lead and mercury; limit values for major sources
Aarhus 1998	POPs Protocol	36 Signatories, 17 ratifications	Stabilize emissions of PAH, dioxins/furans and HCB; phase out selected pesticides, limit values for major sources

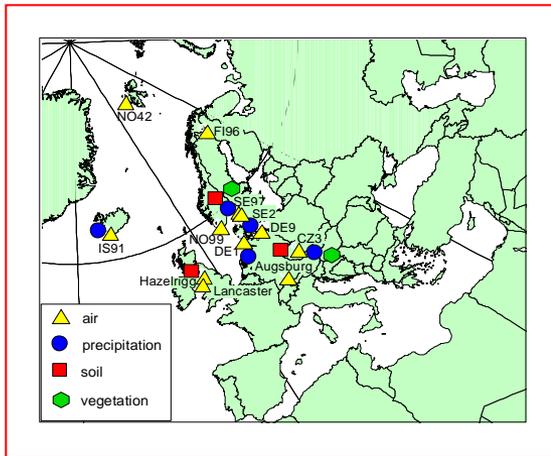


Intergovernmental bodies, expert groups and scientific centres under the Convention



Superstation concept - Observatory Košetice, CR

EMEP POPs Network



Integrated POPs monitoring - Observatory Košetice



Comparison of existing programmes (EMEP, GAPS, MONET) and approaches (active vs. passive)

Integrated Atmospheric Deposition Network (IADN)

- ↙ 1992 – now
- ↙ Canada-US network
- ↙ Bi-national Steering Committee
- ↙ 5 year implementation plan
- ↙ International peer-review every 5 years
- ↙ Atmospheric loadings and trends of toxic chemicals in air and precipitation
- ↙ 5 master stations

