Dominando el análisis de las parafinas cloradas:
Desde el muestreo hasta los procedimientos de análisis estándar

Buenos Aires, 26–27 de noviembre 2025

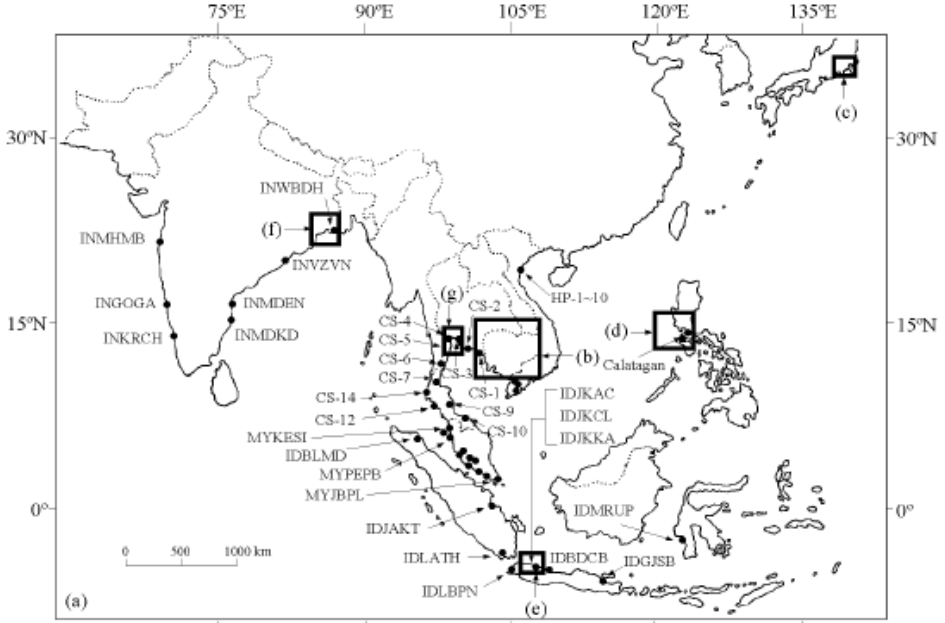
BASEL / ROTTERDAM / STOCKHOLM
CONVENTIONS

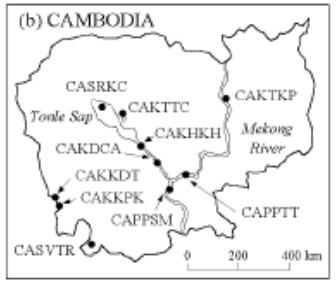
De la ciencia a la regulación: Gestión de las parafinas cloradas de cadena corta y mediana bajo el Convenio de Estocolmo y avance en la evaluación de nuevos contaminantes persistentes orgánicos

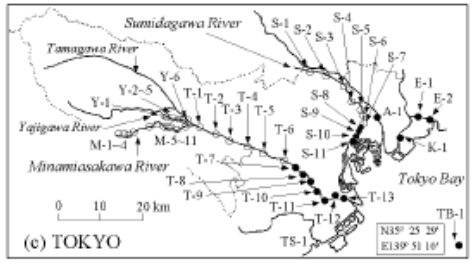
Kei Ohno Woodall

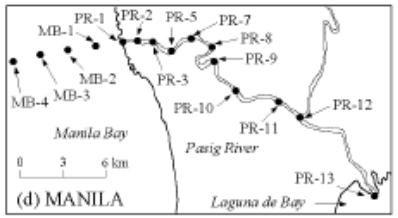
Secretaría de los Convenios de Basilea, Rotterdam y Estocolmo

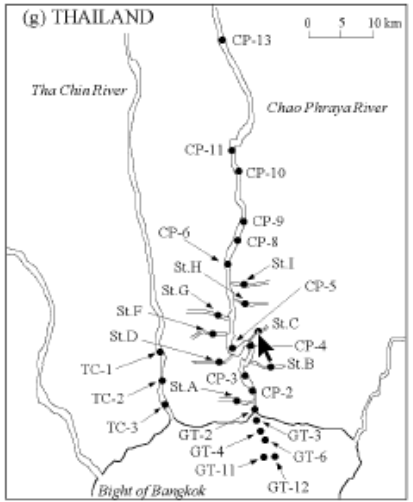
Monitoring Through Sampling and Analysis

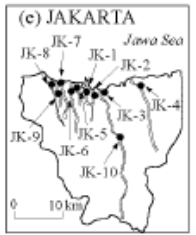


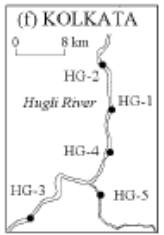


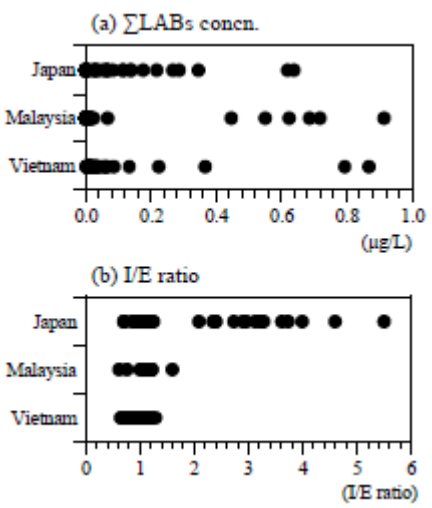


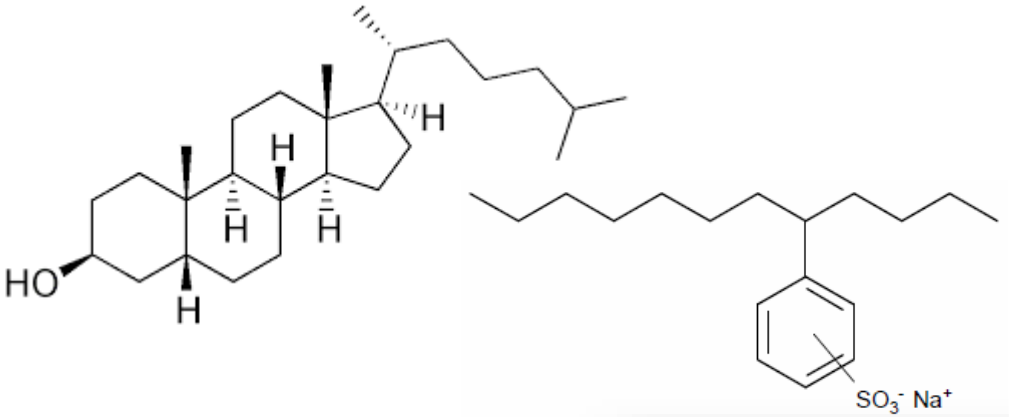


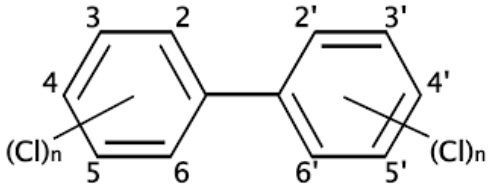


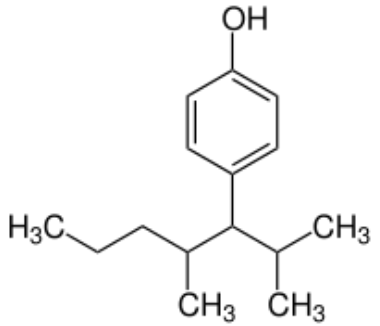




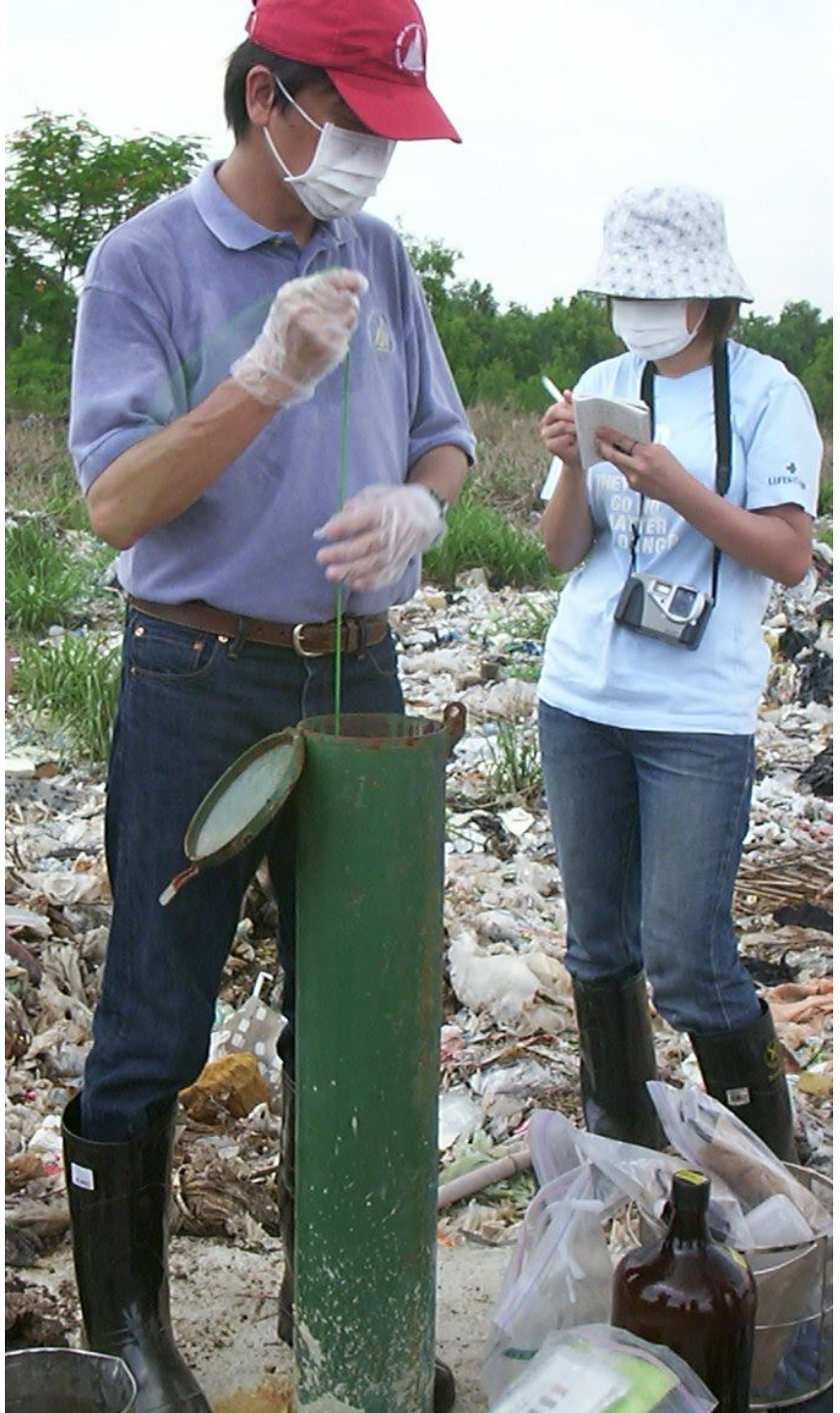









Blank
Tube blank
pcm1
DCM3




Cooking Foil
業務用
ホイル

From science to regulation - De la ciencia a la regulación

Environ. Sci. Technol. **2002**, *36*, 4497–4507

Quantitative Application of Fecal Sterols Using Gas Chromatography—Mass Spectrometry To Investigate Fecal Pollution in Tropical Waters: Western Malaysia and Mekong Delta, Vietnam

KEI O. ISOBE,† MITSUNORI TARAO,† MOHAMAD P. ZAKARIA,‡ NGUYEN H. CHIEM,§ LE Y. MINH,§ AND HIDESHIGE TAKADA*,†

Faculty of Agriculture, Tokyo University of Agriculture and Technology, Fuchu, Tokyo 183-8509, Japan, Faculty of Science and Environmental Studies, Universiti Putra Malaysia, 43400 Serdang, Selangor, Malaysia, and College of Agriculture, Can Tho University, 3/2 Street, Can Tho City, Can Tho Province, Vietnam

These coprostanol conc
proposed as criteria in t
owing to greater surviva
waters. On the basis of t
of sediments suggests tl
in most of the urbanizec
urban and rural sites in

Introduction

Fecal pollution has been
as its population grows r
wastewater managemen
of waterborne disease are
among them, as many
regions (*1*). Understandi
through precise monitor
in this region. The ultima
reveal the current statu
pollution) in the whole ar
have been used as indic
decades (*2*, *3*). Water qua
densities have been es
although the definitions
countries. However, in
dicators are not suitab
throughout tropical Asia.

TABLE 3. Concentrations of Sterols Determined Using Different Extraction Methods[a]

	concentration (ng/g-dry)				
	ultrasonication				Soxhlet
sterol	100% MeOH	DCM/ MeOH	100% DCM	three solvents[b]	DCM/ MeOH
coprostanone	407	332	421	380	464
coprostanol	934	724	703	897	637
epicoprostanol	77	210	121	134	62
cholesterol	1502	1823	1480	1497	871
cholestanol	784	647	649	786	446
campesterol	483	457	343	465	383
stigmasterol	676	626	449	640	481
β-sitosterol	1564	1523	1186	1440	903
fucosterol	51	123	63	134	199
stigamstanol	362	283	252	417	126
estrone	na[c]	0.27	0.15	2.06	na
estradiol	na	0.42	0.51	7.48	na

[a] The sediment sample was taken in Malaysia (no. 13, Figure 1) in 1999. [b] 100% MeOH, DCM/MeOH, and 100% DCM. [c] Not analyzed.

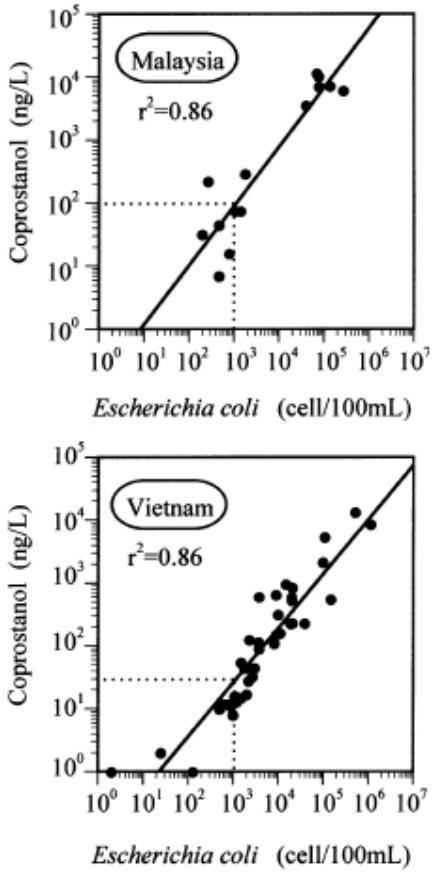
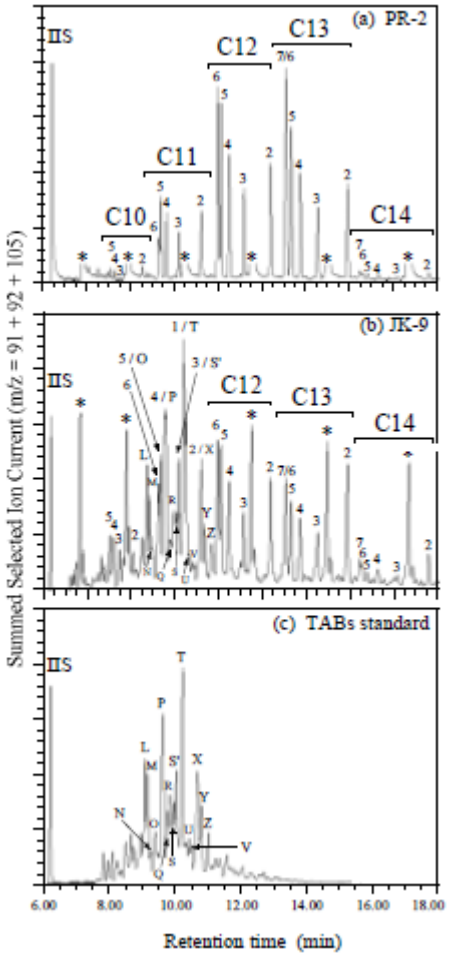


FIGURE 7. Relationship between coprostanol and *E. coli* in river waters in Malaysia (top) and Vietnam (bottom). Log(*E. coli*) and log(coprostanol concentration) are linearly regressed (solid lines). Coprostanol concentrations corresponding to 1000 cells of *E. coli* per 100 mL are indicated by dotted lines.



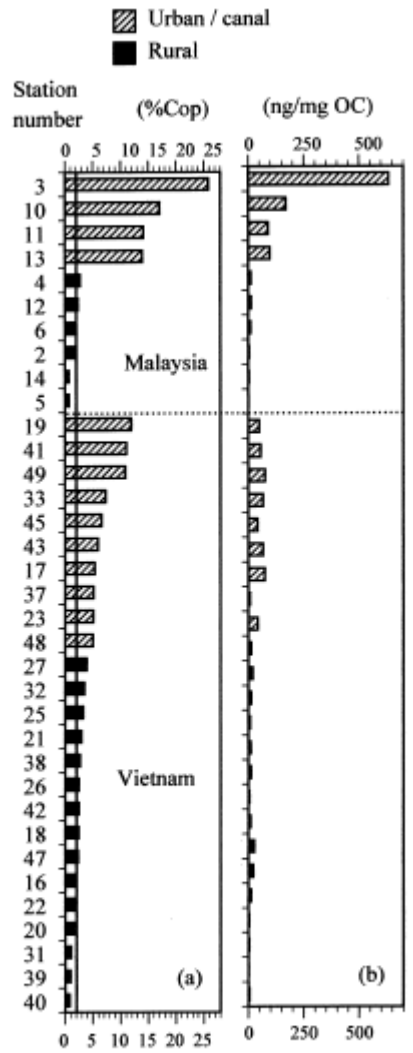
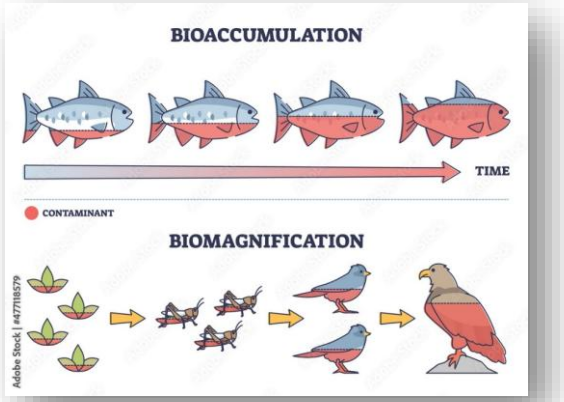
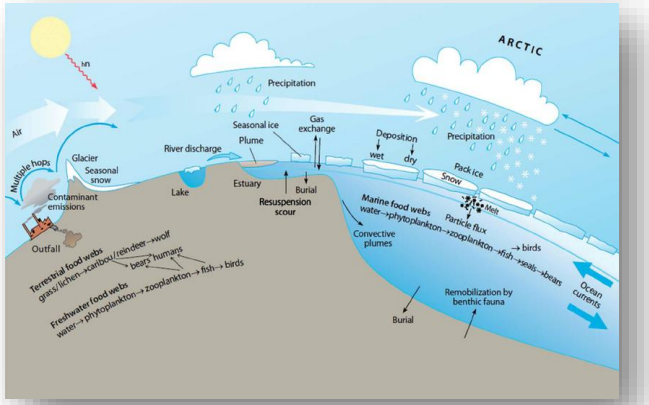
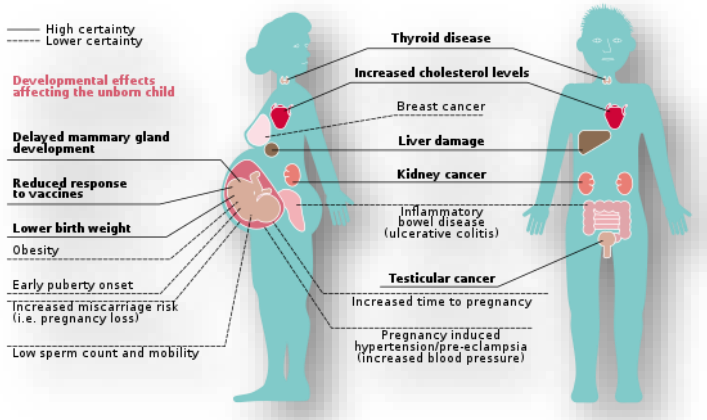


FIGURE 8. (a) %Cop and (b) organic-carbon-normalized coprostanol concentration in sediment. Shaded bars and solid bars indicate urban/canal stations and rural stations, respectively. Numbers on the *y*-axis indicate station number corresponding to those shown in Figure 1.

Stockholm Convention on Persistent Organic Pollutants







A group of organic compounds that possess characteristics of:

- Persistence
- Bio-accumulation
- Adverse effects
- Potential for long-range environmental transport

POPs listed in Annex A, B, C or under review

As of November 202

Elimination

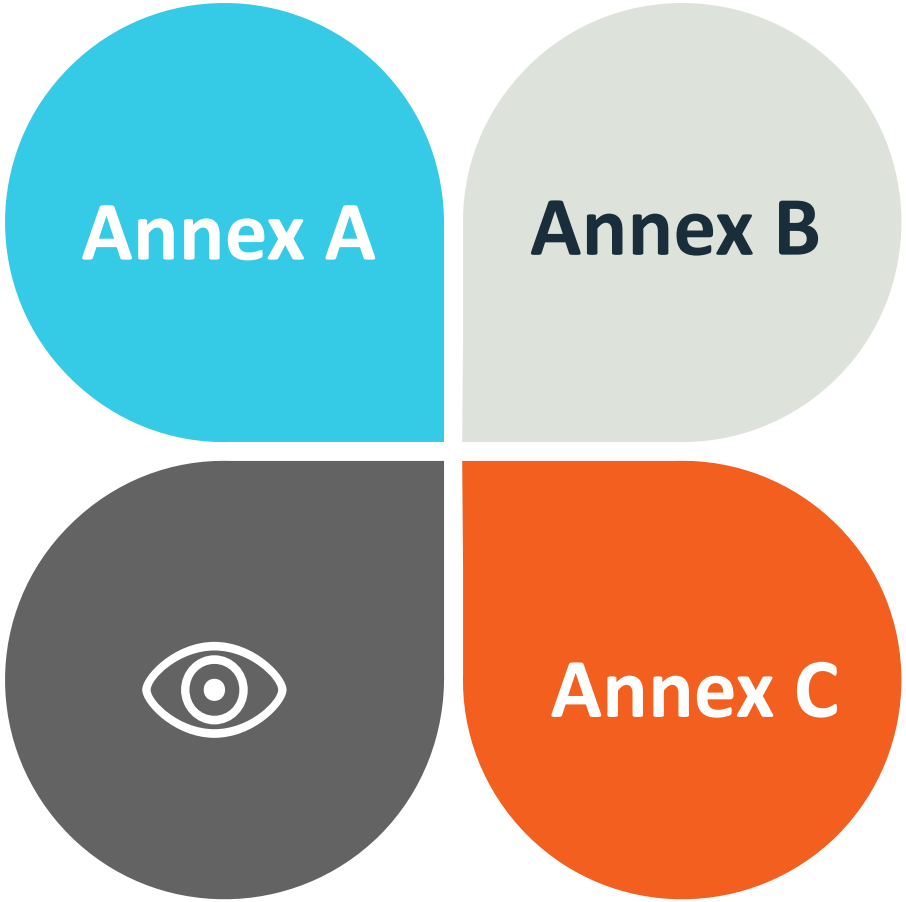
16 Pesticides:

Aldrin; Chlordane; Chlordecone; Dicofol; Dieldrin; Endosulfan; Endrin; Heptachlor; AlphaHCH; BetaHCH; Lindane (gamma HCH); Mirex; PCP; Toxaphene; Methoxychlor; Chlorpyrifos

17 Industrial POPs:

DecaBDE; Hexa- and heptaBDE; Tetra- and pentaBDE; HBB; HBCD; HCB; HCBD; PCBs; PCNs; PFOA, its salts and PFOA-related compounds; PFHxS, its salts and PFHxS-related compounds; SCCPs; pentachlorobenzene; Dechlorane Plus; UV-328; MCCPs; Long-chain PFCAs

Total 37 listings



Restriction

1 Pesticide: DDT

1 Industrial POP: PFOS, its salts and PFOSF

*Annex B chemicals have "Acceptable purposes" for which Parties can continue production/use if registered.

Unintentional releases

7 U-POPs:

HCB, HCBD, pentachlorobenzene
PCBs, PCDDs, PCDFs,
polychlorinated naphthalenes

Under review

Article 8, Annex D, E, F,
POPs Review Committee (POPRC)

PBDD/Fs and PBCDD/Fs


SWEDEN
Observer


MANTOA SEKOTA
Lesotho


JIANXIN HU
China


Global Silicones
Council
Observer
PETER DAWSON
New Zealand


SYLVAIN BINTEIN

Process for listing a new chemical under the Stockholm Convention – Article 8

A Party submits a proposal with information specified in Annex D

POPRC decides whether the proposal fulfills the **screening criteria in Annex D**

POPRC develops a **risk profile (Annex E information)** and decides whether:

POPRC develops RME **(Annex F socio-economic considerations)**; makes a recommendation to COP

COP decides whether to list the chemical in Annex A, B and/or C

The chemical is likely as a result of its long-range environmental transport to lead to significant adverse human health and/or environmental effects such that <u>global action is warranted</u>.

Annex D screening criteria

(b) Persistence

i. Half-life of the chemical in water is >2 months, in soil is >6 months, in sediment is >6 months

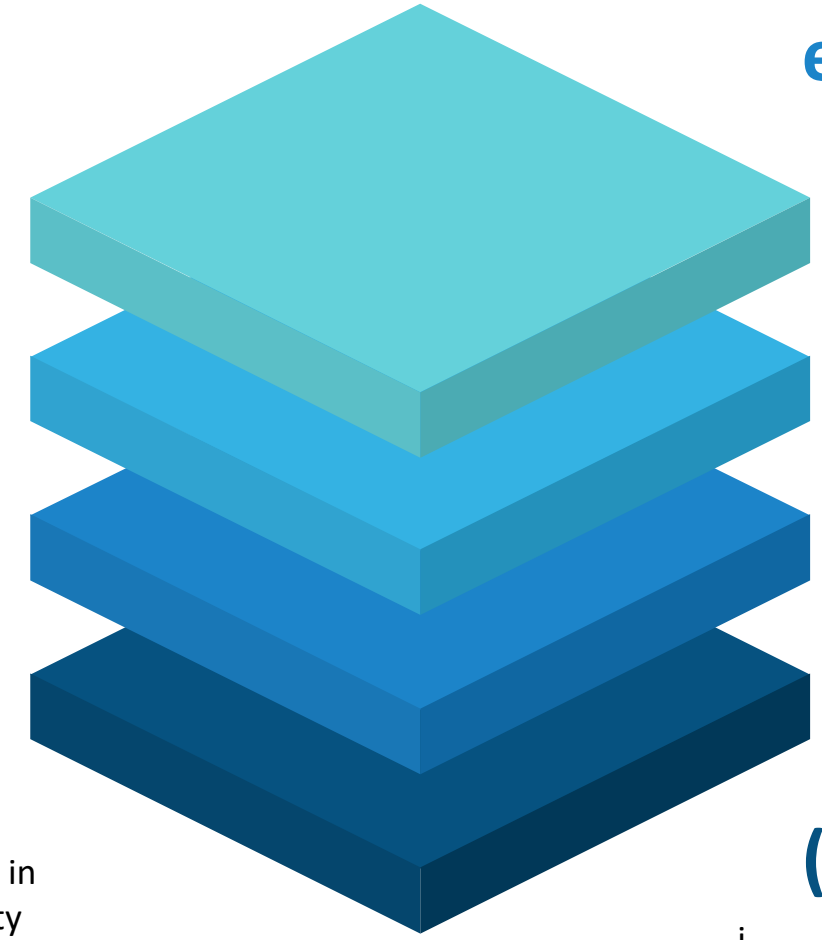
ii. Chemical is otherwise sufficiently persistent to justify its consideration within the scope of the Convention

(c) Bioaccumulation

i. BCF or BAF in aquatic species for the chemical is >5,000, or logKow is >5

ii. A chemical presents other reasons for concern, such as high bio-accumulation in other species, high toxicity or ecotoxicity

iii. Monitoring data in biota indicating that the bio-accumulation potential of the chemical is **sufficient to justify its consideration** within the scope of the Convention



(d) Potential for long-range environmental transport

i. Measured levels of the chemical in locations distant from the sources of its release

ii. Monitoring data showing that LRTP of the chemical, with the **potential for transfer to a receiving environment**, may have occurred via air, water or migratory species

iii. Environmental fate properties and/or **model results** that demonstrate that the chemical has a LRTP 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 >2 days.

(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.

ii. Toxicity or ecotoxicity data that indicate **the potential for damage** to human health or to the environment.

Annex E risk profile

To evaluate, whether the chemical is **likely, as a result of its long-range environmental transport, to lead to significant adverse human health and/or environmental effects such that global action is warranted**.

a) **Sources** (Production, use, releases)

b) **Hazard assessment for the endpoint**

c) **Environmental fate** (including properties linked to environmental transport)

d) **Monitoring data**

e) **Exposure in local areas**, in particular as a result of long-range environmental transport, including information regarding bio-availability

f) **National and international risk evaluations**, assessments or profiles and labelling information and hazard classifications

g) **Status** of the chemical under international conventions

ANNEX F

INFORMATION ON SOCIO-ECONOMIC CONSIDERATIONS

An evaluation should be undertaken regarding possible control measures for chemicals under consideration for inclusion in this Convention, encompassing the full range of options, including management and elimination. For this purpose, relevant information should be provided relating to socio-economic considerations associated with possible control measures to enable a decision to be taken by the Conference of the Parties. Such information should reflect due regard for the differing capabilities and conditions among the Parties and should include consideration of the following indicative list of items:

(a) Efficacy and efficiency of possible control measures in meeting risk reduction goals:

  (i) Technical feasibility; and

  (ii) Costs, including environmental and health costs;

(b) Alternatives (products and processes):

  (i) Technical feasibility;

  (ii) Costs, including environmental and health costs;

  (iii) Efficacy;

  (iv) Risk;

  (v) Availability; and

  (vi) Accessibility;

(c) Positive and/or negative impacts on society of implementing possible control measures:

  (i) Health, including public, environmental and occupational health;

  (ii) Agriculture, including aquaculture and forestry;

  (iii) Biota (biodiversity);

Annex F risk management evaluation stage

The Committee shall, based on the risk profile and the risk management evaluation, recommend whether the chemical should be considered by the Conference of the Parties for listing in Annexes A, B and/or C.

Listing stage – COP

The Conference of the Parties, taking due account of the recommendations of the Committee, including any scientific uncertainty, shall decide, in a precautionary manner, whether to list the chemical, and specify its related control measures, in Annexes A, B and/or C.


PRESIDENT
ROTTERDAM CONVENTION
COORDINATOR


GUINEA-BISSAU
GUYANA


STONIA
EL SALVADOR

POPs Chemicals & PIC Industrial Chemicals

Short-chain chlorinated paraffins

CAS No. 85535-84-8;
CAS No. 68920-70-7;
CAS No. 71011-12-6;
CAS No. 85536-22-7;
CAS No. 85681-73-8;
CAS No. 108171-26-2
HS Code: 3824.90

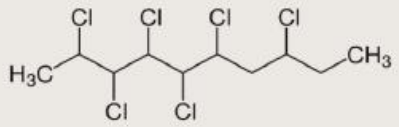
Full Name: Short-chain chlorinated paraffins (SCCPs) with a chlorination degree of more than 48% by weight.

Trade Name:
A 70 (wax); Chloroflo; Adekacizer E; Chlorparaffin; Arubren; Chlorowax; Cereclor; Cloparin; Chlorcosane; Cloparol; Chlorex; Clorafin; Chlorofin; CW; Derminolfett; Derminolol; EDC-tar; Electrofine; Enpara; Hordaflam; Horda-flex; Hordalub; Hulz; Khp; Meflex; Monocizer; Paroil; Poliks; Tenekil; Toyoparax; Unichlor

Synonyms:
Alkanes, $C_{10\text{-}13}$, chloro; Chlorinated paraffins with a chlorination degree of more than 48% by weight.

Uses:
Short-chain chlorinated paraffins (SCCPs) have been used as softeners in plastics, paints, coatings and sealants, as flame retardants in rubber, plastics and textiles as well as an extreme pressure lubricant in metal working fluids.

Hazards and Risks to human health and the environment:
SCCPs strongly bonds to soil and sediments, where it can remain during a considerable time and be detected in a wide range of biosphere including freshwater, foods, aquatic and terrestrial mammals. Particularly, they can cause long-term adverse effects in the aquatic environment. SCCPs may cause skin and eye irritation upon repeated application, but do not appear to induce skin sensitization.



Reference

1. Risk profile on short-chain chlorinated paraffins. Persistent Organic Pollutants Review Committee. 2015; UNEP/POPS/POPRC.11/10/Add.2
2. Risk management evaluation on short-chain chlorinated paraffins. Persistent Organic Pollutants Review Committee. 2016; UNEP/POPS/POPRC.12/11/Add.3
3. US Environmental Protection Agency. Short-Chain Chlorinated Paraffins (SCCPs) and Other Chlorinated Paraffins Action Plan. US Environmental Protection Agency. 2009 (https://www.epa.gov/sites/production/files/2015-09/documents/sccps_ap_2009_1230_final.pdf, accessed 9 June 2017).
4. Toxipedia. Chlorinated Paraffins. Toxipedia. 2011. (http://www.toxipedia.org/display/toxipedia/Chlorinated+Paraffins, accessed 9 June 2017).
5. Decision Guidance Document on Short-chain chlorinated paraffins. 2016; UNEP/FAO/RC/COP.8/12/Add.1.

Secretariat of the Basel, Rotterdam and Stockholm Conventions
11-13, Chemin des Anémones
1219 Châtelaine, Switzerland
Tel: +41 22 917 8271
Email: brs@brsmeas.org
Website: www.brsmeas.org

ROTTERDAM CONVENTION STOCKHOLM CONVENTION Food and Agriculture Organization of the United Nations UN environment programme

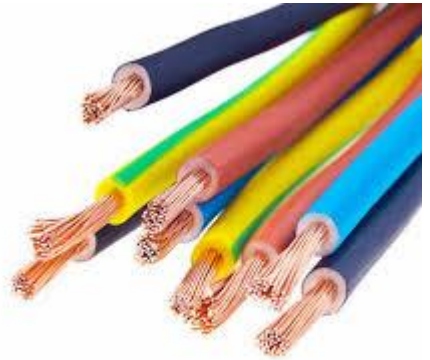
SCCPs, listed in Annex A in 2017

Entered into force: 18 Dec 2018
Specific exemptions: expired 18 Dec 2023

- Additives in the production of transmission belts in the natural and synthetic **rubber industry**
- Spare parts for **rubber conveyor belts** in the mining and forestry industries
- **Leather industry**, in particular fatliquoring in leather
- **Lubricant additives**, in particular for automobile engines, electric generators, wind power facilities, drilling in oil and gas exploration and petroleum refining to produce diesel oil
- **Tubes** for outdoor decoration bulbs
- Waterproofing and fire-retardant **paints**
- **Adhesives**
- **Metal processing**
- Secondary **plasticizers in flexible polyvinyl chloride**, except in toys and children's products

MCCPs, listed in Annex A in 2025

Enters into force one year after the communication by the depositary, most likely in late 2026



- **For <u>five years</u> from the date of entry into force of the amendment:**
  - Flexible polyvinyl chloride (**PVC**), limited to the 4 uses:
    - Construction sector, including maintenance of buildings and other structures, for uses other than flooring in indoor spaces that are not used for commercial purposes
    - Wires and cables in the construction sector
    - Wires and cables in medical devices and in-vitro diagnostic devices
    - Calendered films in the packaging field, excluding food packaging
  - Solid woven **conveyor belts** used in underground coal mines
  - Flexible **elastomeric foam** for thermal insulation
  - **Adhesives and sealants**, limited to the 3 uses:
    - Polysulfide sealant and one-component polyurethane foam used in sealing for doors and windows
    - Waterproof coatings and anticorrosion coatings
    - Aerospace and defence applications
  - **Tape** used for non-structural bonding in aerospace and defence products
  - Fatliquoring component in **leather**, except in children's products
  - Emergency response **pyrotechnic devices**
  - **Paints and coatings** for ammunition and ammunition markings

MCCPs, listed in Annex A in 2025

Enters into force one year after the communication by the depositary, most likely in late 2026

- **Until 2036:**
  - Metalworking fluids, in accordance with the provisions of paragraphs 5 and 6:
    - Examples of applicable applications and sectors provided in paragraph 5 of part XIII
    - Professional or industrial settings, “heavy-duty” processes only
    - Protection of workers
- **Until the end of service life of the articles or 2041, whichever comes earlier:**
  - Polymers and rubbers (including PVC, ethylene propylene diene monomer (EPDM) rubber, chloroprene (CR), nitrile butadiene rubber (NBR) and chlorinated polyethylene (CPE)), used in replacement parts for, and repair of, articles, limited to the three applications provided in paragraph 7 of part XIII
- **Until the end of service life of the articles or 2041, whichever comes earlier, subject to review at COP-15 in 2033:**
  - Ammunition pyrotechnic defence devices to achieve specific effects (e.g. sound, smoke, light)
  - Intumescent coating and paint for space and defence equipment and its packaging to protect against extreme temperature
- **Until the end of service life of the equipment, subject to review by the COP no later than 2041:**
  - Coating and paint for the repair of, and use in replacement parts for, space and defence equipment
  - Protection of workers

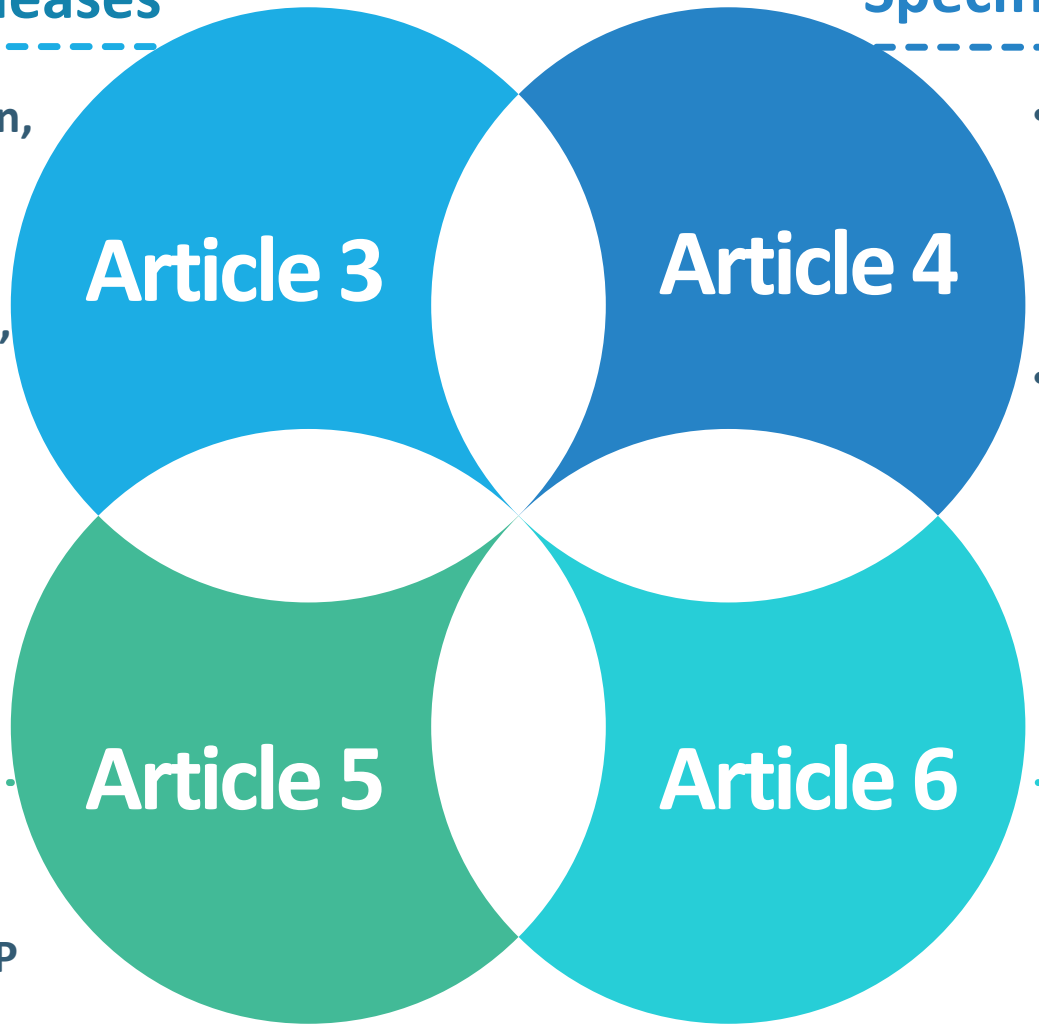
Stockholm Convention key provisions

Intentional releases

- Prohibit use and production, except for exempted applications
- Prohibit import and export, except for exempted applications and for environmentally sound waste management

Specific exemptions

- Parties may register for specific exemptions, which generally expire after five years unless otherwise specified.
- Once no Parties are registered for an exemption, new registrations are no longer permitted, though a review process exists for five-year extension requests.



Unintentional releases

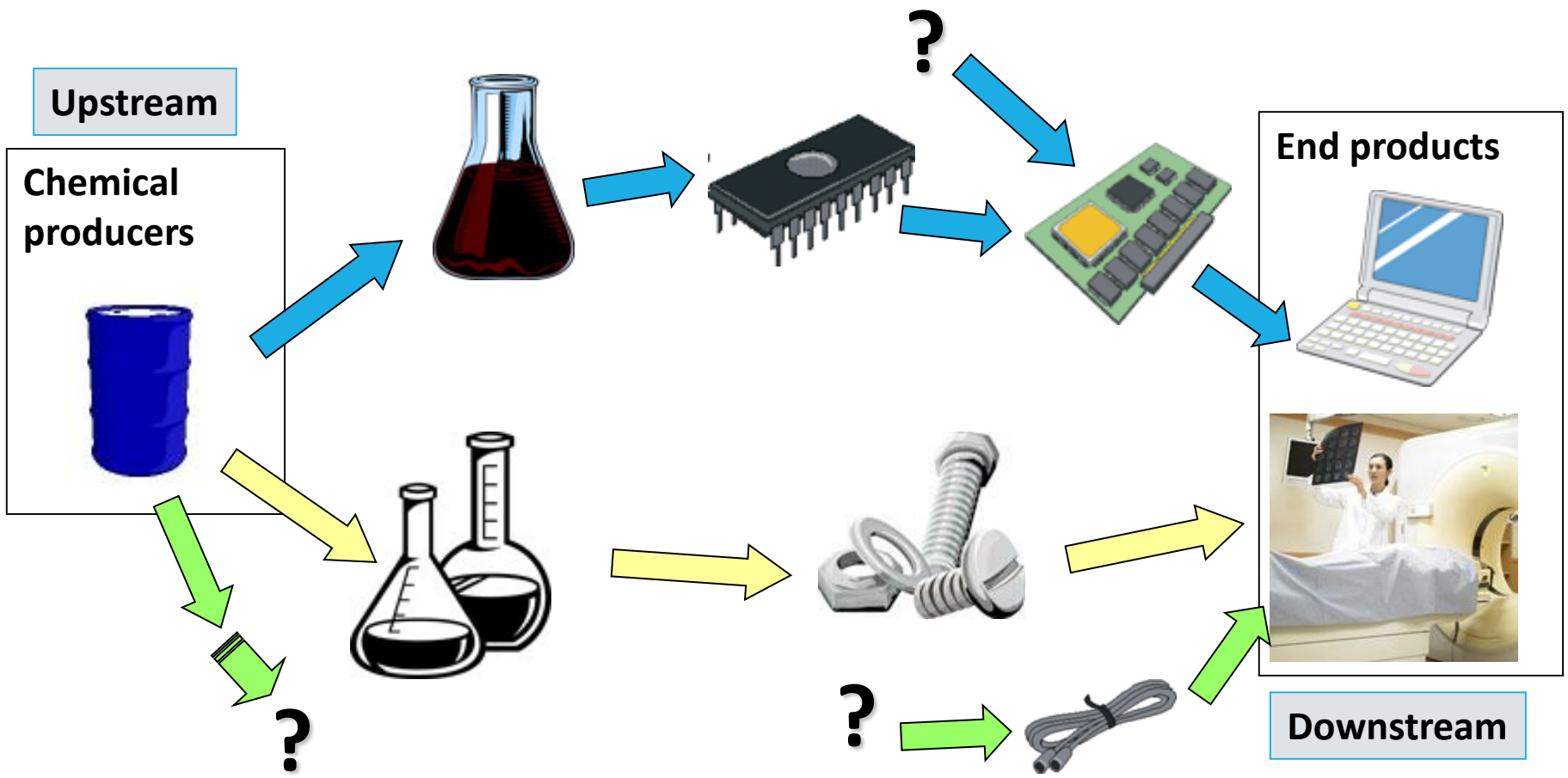
- Develop and implement national action plans, promote the use of BAT/BEP
- Report on progress in reducing unintentional POPs releases

POPs stockpiles and waste

- Identify stockpiles and wastes containing POPs
- Ensure that POPs wastes are managed and disposed of in an environmentally sound manner (Basel technical guidelines)


IRC

Special care is needed for industrial chemicals because they are used in numerous processes and parts:



How to identify hazardous chemicals in products / wastes?

POPs Review Committee (POPRC-21) intersessional working group on POPs in products and articles, established in Oct 2025

Challenges:

- **Capacity and cost barriers:** Limited resources, high costs, and technical constraints hinder chemical identification.
- **Labeling challenges:** Physical labels may degrade, be impractical for small components, or be ineffective when applied retrospectively.
- **Regulatory inconsistencies:** Varying global regulations complicate compliance and chemical tracking.
- **Data gaps and traceability issues:** Limited testing and missing information hinder monitoring across supply chains and waste management.
- **Complex value chains:** Multiple stakeholders, diverse materials, and technical constraints make identification difficult.

Stockholm Convention

Article 16

- **Periodic evaluation:** Starting 4 years after the Convention's entry into force, the COP periodically evaluates the Convention's effectiveness

  ✓ **Every 6 years**

- **Monitoring arrangements:** COP-1 initiates arrangements to provide comparable monitoring data on chemicals in Annexes A, B, and C and their regional/global transport.

- **Basis of the Effectiveness Evaluation:**

  ✓ **Monitoring reports and data collected under GMP.**

  ✓ **National reports under Article 15.**

  ✓ **Information on non-compliance under Article 17.**

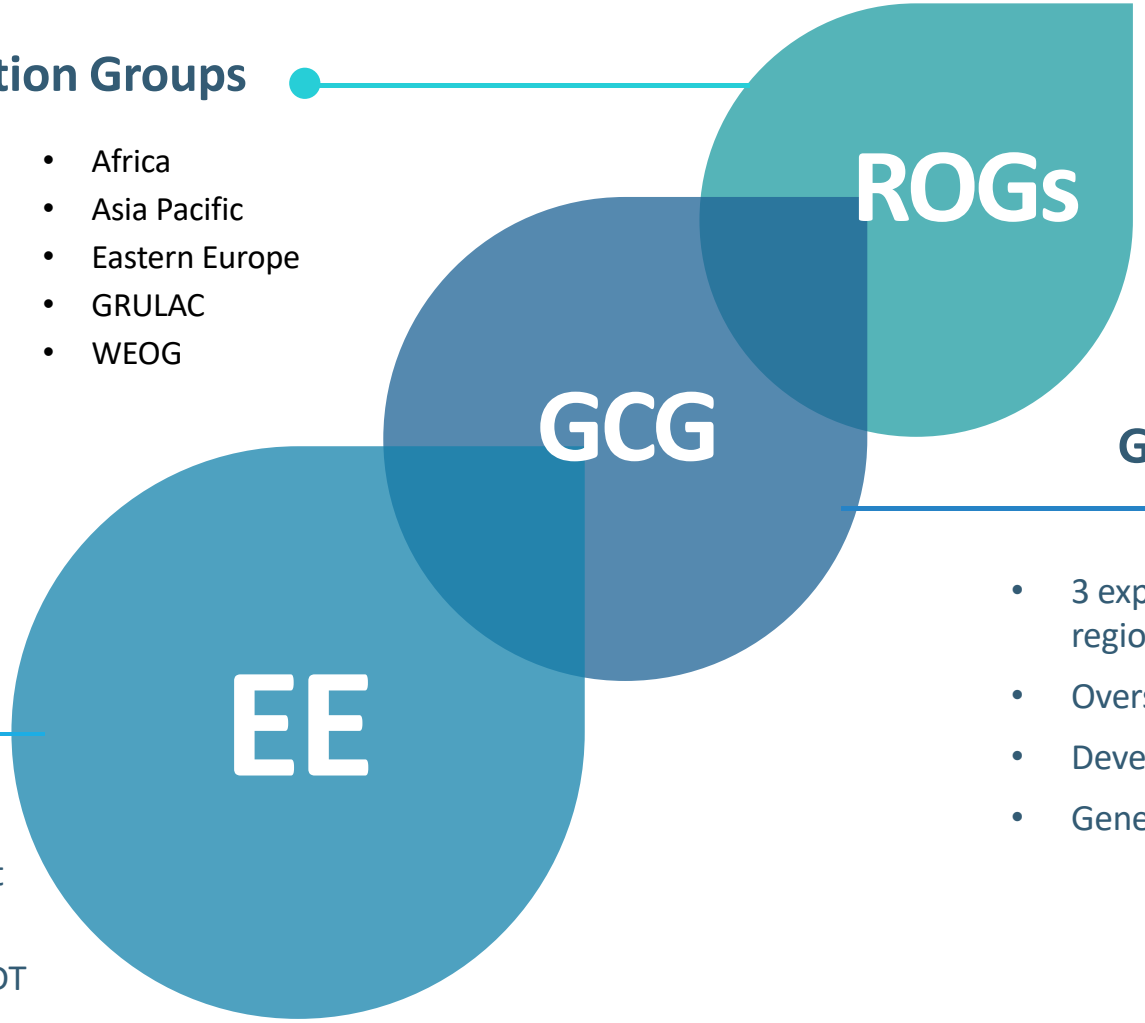
Article 16

Effectiveness evaluation and Global Monitoring Plan

Regional Organization Groups

- 6 experts per region, identified by each region through the Stockholm Convention COP Bureau (6x5=30)
- Coordinate regional monitoring activities
- Generate "**Regional Monitoring Reports**"

- Africa
- Asia Pacific
- Eastern Europe
- GRULAC
- WEOG



Global Coordination Group

- 3 experts per region, identified by each region from the ROGs (3x5=15)
- Oversee all the monitoring activities
- Develop/update GMP guidance
- Generate "**Global Monitoring Report**"

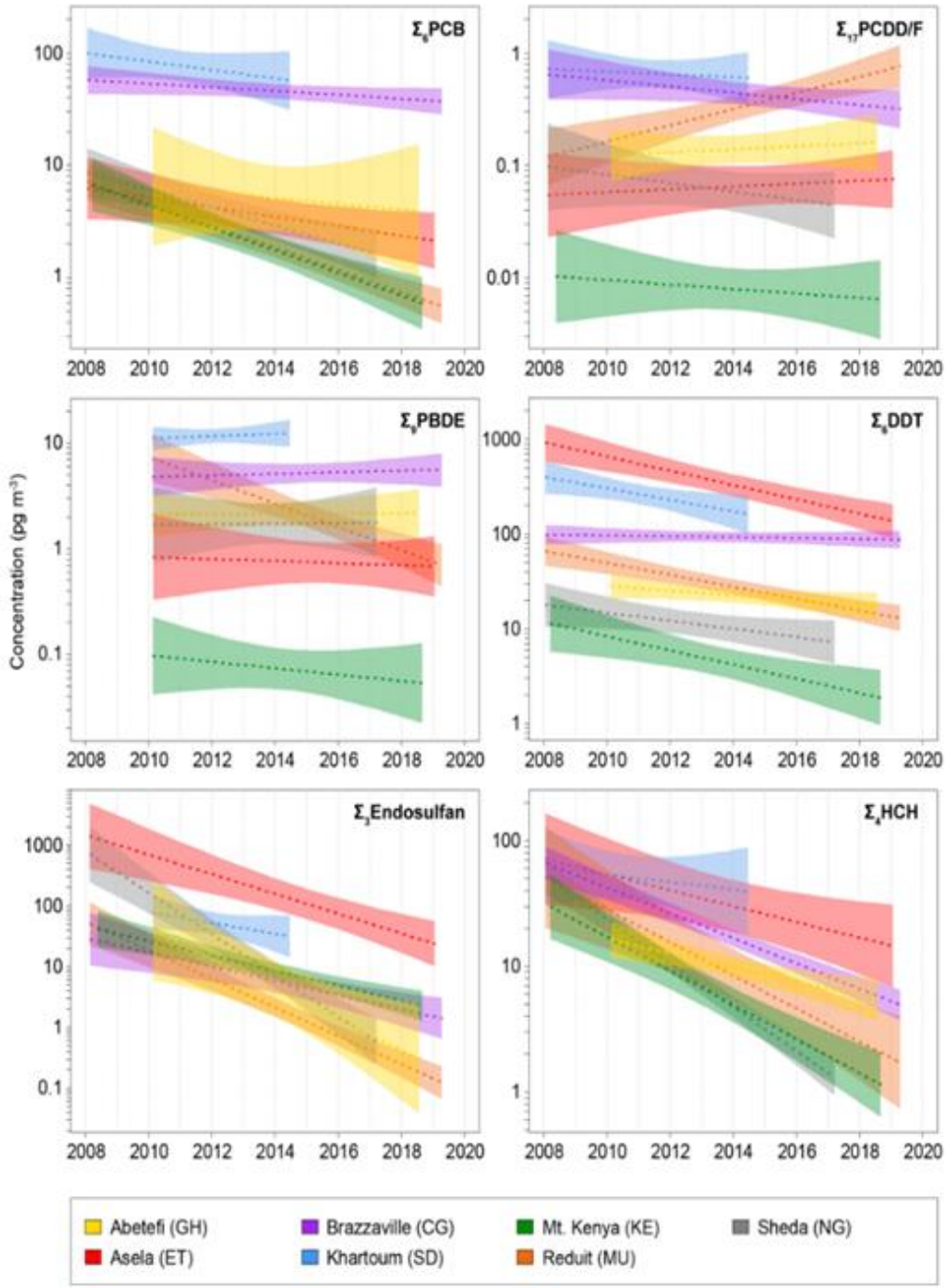
Effectiveness Evaluation committee

- 2 experts per region elected at the Stockholm COP (2x5=10), 1 expert from GMP GCG, 1 expert from Compliance, 2 experts identified by the Secretariat
- Generate "**Effectiveness Evaluation Report**", using information from: National reports, PCB report, DDT report, BAT/BEP experts' U-POPs release report, BDE report, PFOS report, **GMP report**, etc.

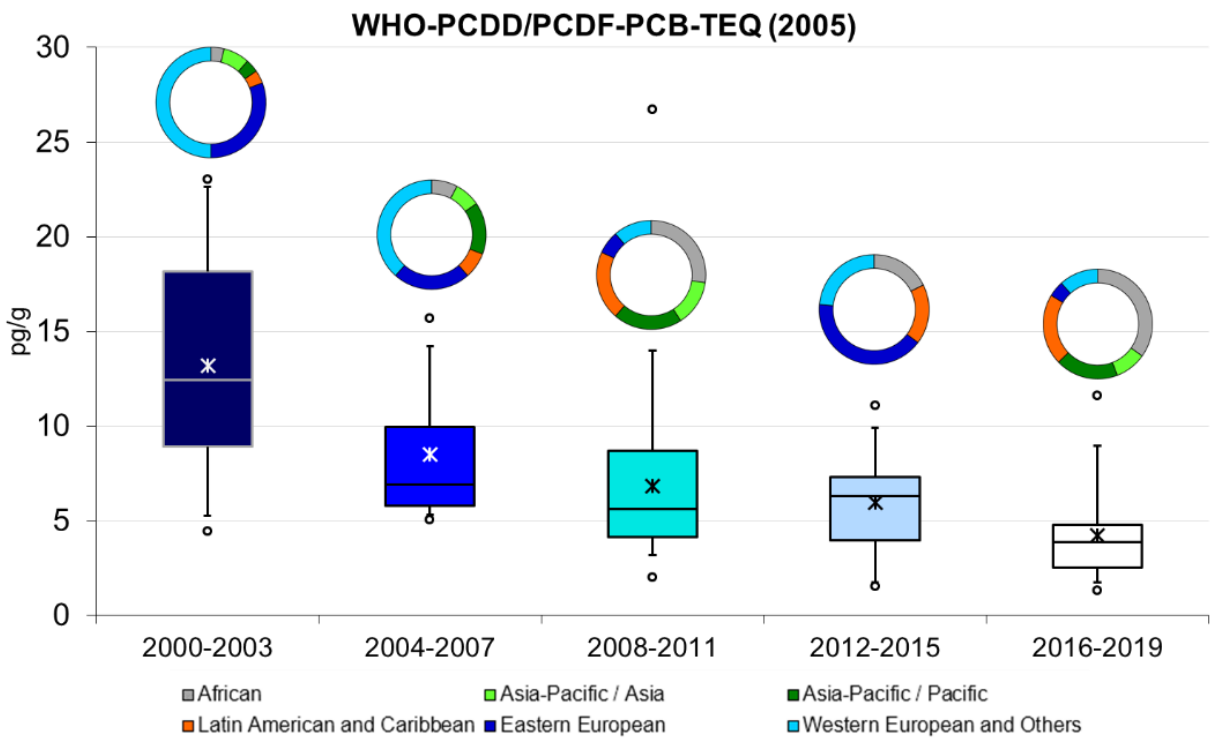
Air

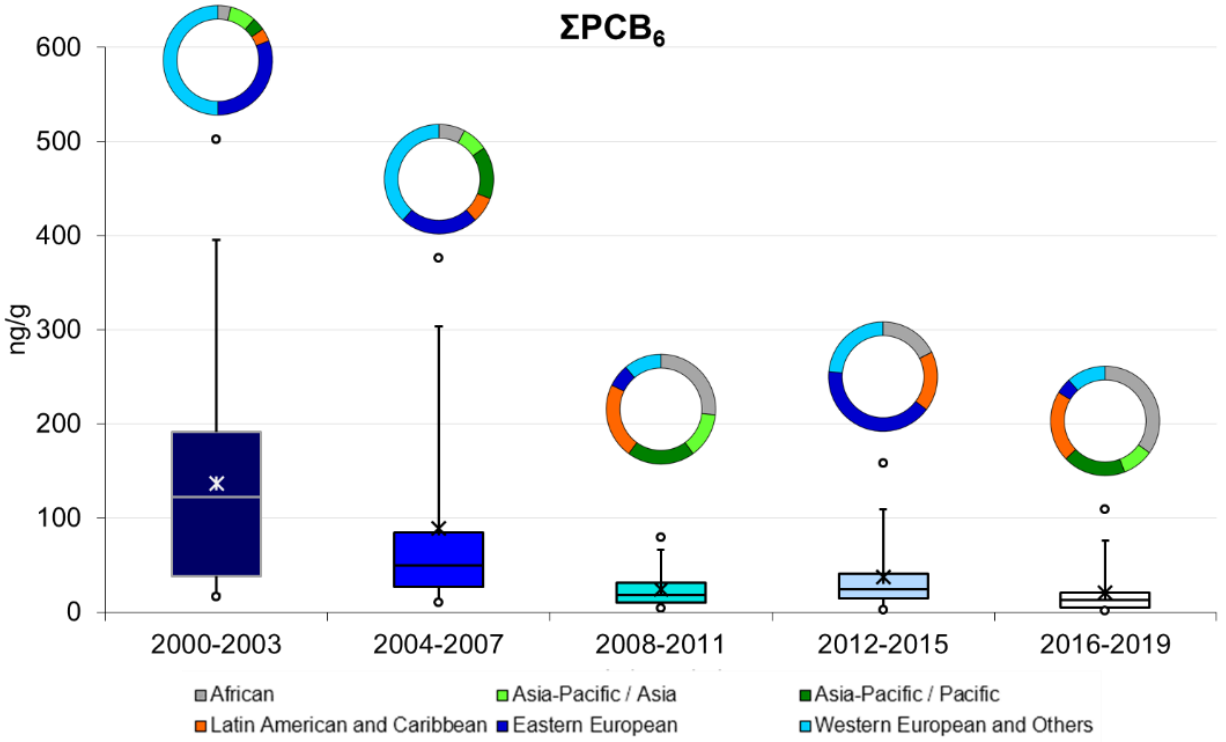
Temporal trends of air concentrations of POPs in the African region (2008–2020)

The figures indicate decreasing trend of air concentrations of PCB; dioxins and furans (PCDD/PCDF); polybrominated diphenyl ethers (PBDE); DDT; endosulfan; hexachlorocyclohexane (HCH).



Human tissues



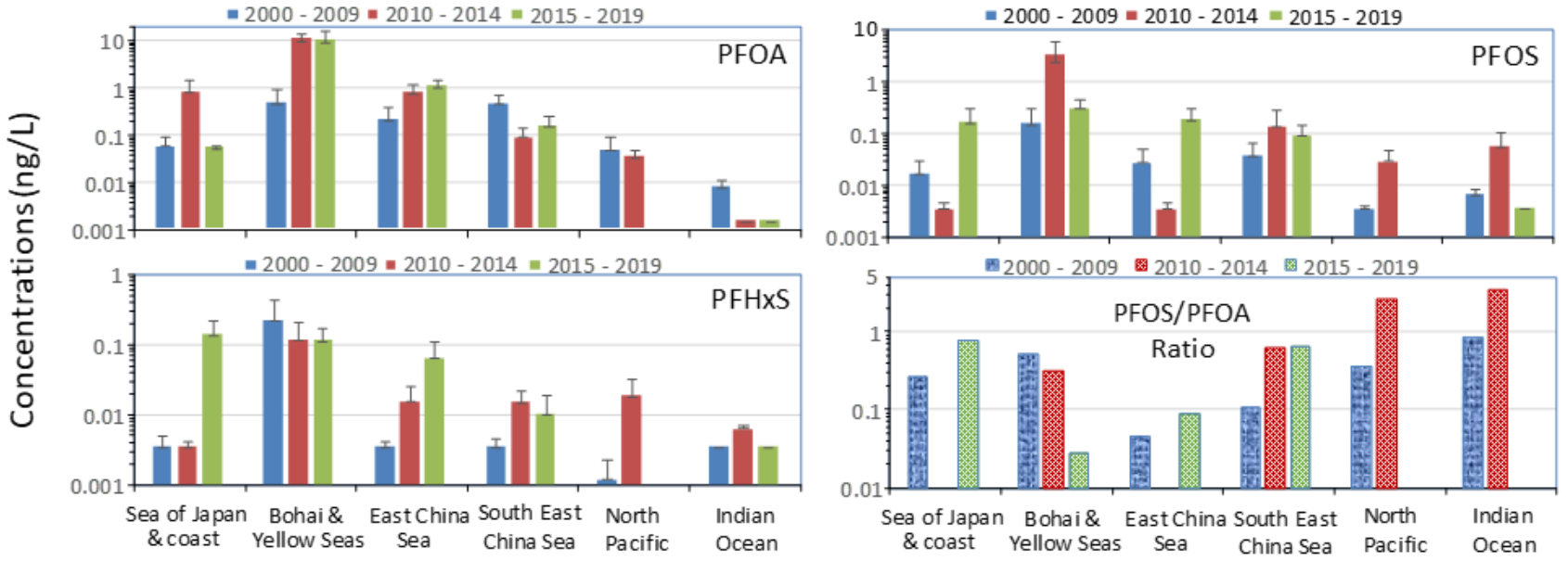


Median and range of WHO-PCDD/PCDF-TEQ concentrations (pg/g lipid) and indicator PCB (ΣPCB_6) concentrations (ng/g lipid) in human milk (2000–2019)

(Country results with aggregated data. Box plot: Minimum and maximum as circles; Whiskers: 5th and 95th percentile; Lower (25–50%) and upper (50–75%) quartiles separated by the line for the median as box and mean as asterisk.)

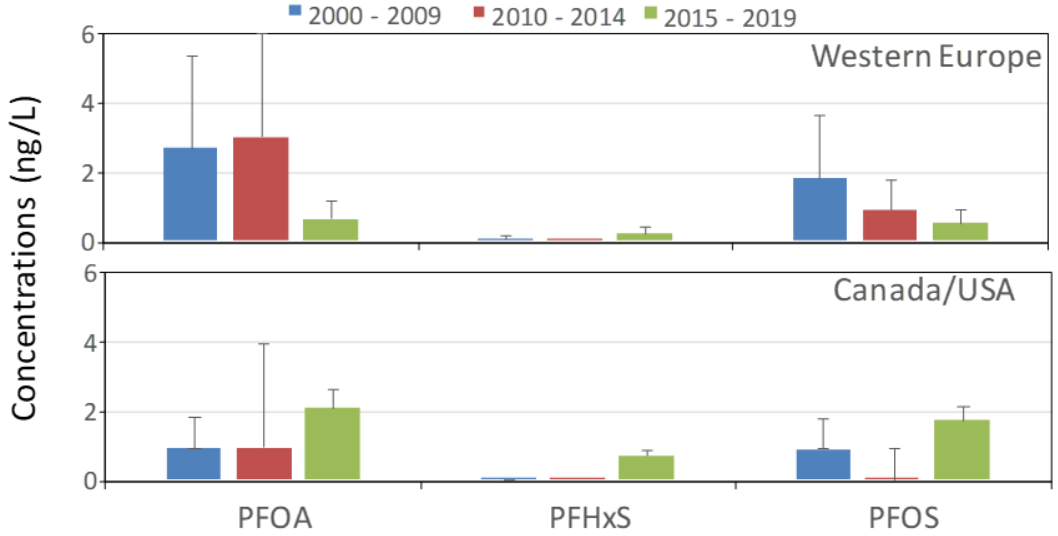
Water

Coastal Seas and Ocean



- River data is promising for trends assessment
- Need to improve detection limits especially for ocean data

Rivers/Lakes



Temporal trends (2000–2009, 2010–2014, 2015–2019) of PFOA, PFOS, PFHxS median concentrations (ng/L) and PFOS/PFOA ratios in coastal seas and ocean waters

GMP and EE timeline

Every 6 years

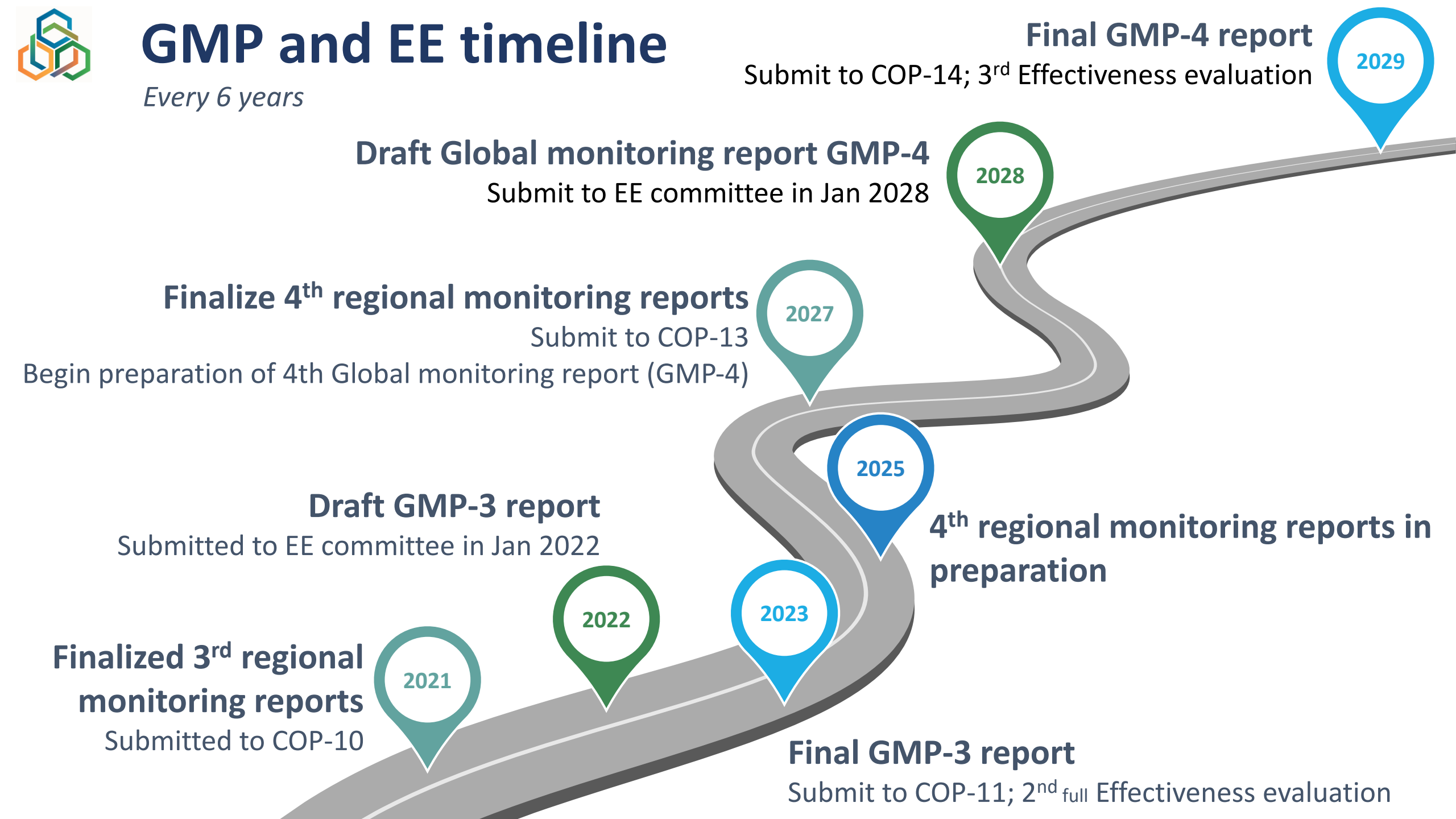
Finalized 3rd regional monitoring reports
Submitted to COP-10

Draft GMP-3 report
Submitted to EE committee in Jan 2022

Finalize 4th regional monitoring reports
Submit to COP-13
Begin preparation of 4th Global monitoring report (GMP-4)

Draft Global monitoring report GMP-4
Submit to EE committee in Jan 2028

Final GMP-4 report
Submit to COP-14; 3rd Effectiveness evaluation



Final GMP-3 report
Submit to COP-11; 2nd full Effectiveness evaluation

4th regional monitoring reports in preparation

Thank you!

Kei Ohno Woodall

Secretariat of the Basel, Rotterdam

and Stockholm conventions

11-13 chemin des Anémones

CH 1219 Châtelaine, Geneva

Tel.: +41 79 233 3218

Email: kei.ohno@un.org