

Marii Summit on Microplastics
Madrid, 15–17 October 2025



**BASEL / ROTTERDAM / STOCKHOLM
C O N V E N T I O N S**

Microplastics and Chemicals in Plastics: Perspectives from the Basel, Rotterdam and Stockholm Conventions

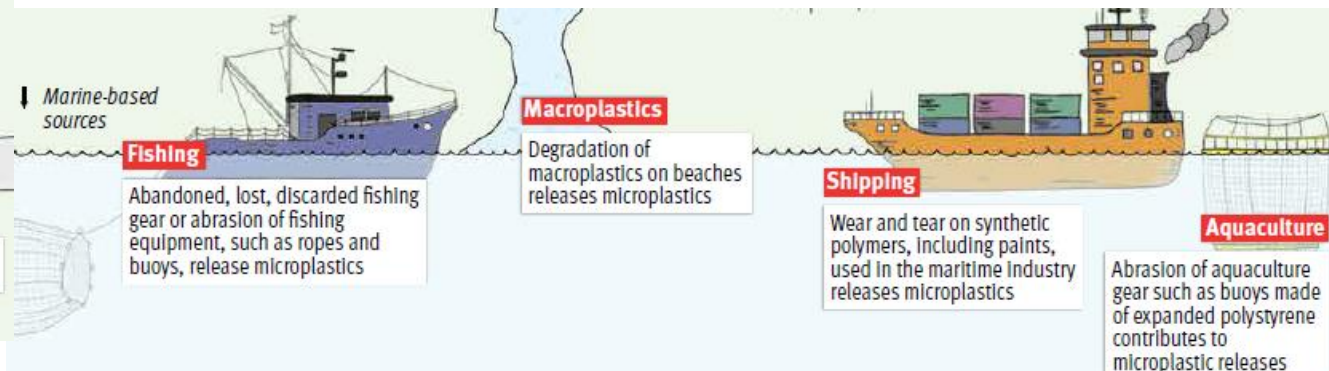
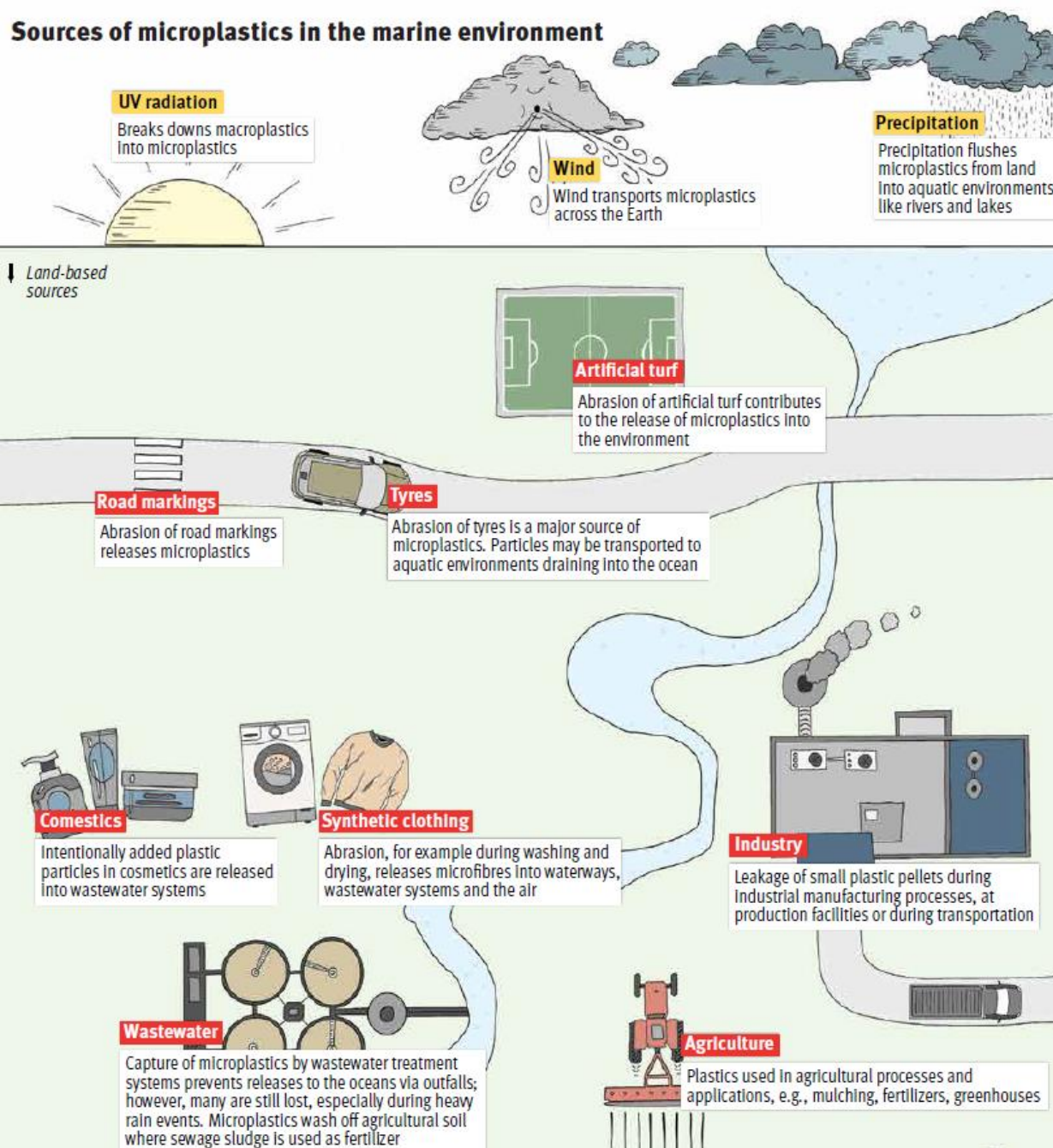
Kei Ohno Woodall

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Sources of microplastics in the marine environment



Intergovernmental Negotiating Committee on Plastic Pollution



UNEA-5 resolution 5/14 (March 2022): Member States agreed to develop a **new international legally binding instrument on plastic pollution, including in the marine environment**, with the ambition of completing its work **by the end of 2024**.



- **INC-1** Punta del Este, 28 Nov–2 Dec 2022
- **INC-2** Paris, France, 29 May–2 Jun 2023
- **INC-3** Nairobi, 13–19 Nov 2023
- **INC-4** Ottawa, 21–30 Apr 2024
- **INC-5.1** Busan, 25 Nov–1 Dec 2024
- **INC-5.2** Geneva, 5–14 (15) Aug 2025

UNEA-7 Nairobi, 8–12 Dec 2025

Provisions potentially relevant to microplastics in the draft text

- **Draft Article on Plastic Products**

- Will the article include references to plastic products that contain **intentionally added microplastics**?

- **Draft Article on Plastic Product Design**

- Will the article include measures to **improve plastic product design** in order to minimize releases and leakages of plastics, including microplastics, into the environment?

- **Draft Article on Releases and Leakages**

- Will the article require Parties to assess, prevent, reduce, and, where possible, eliminate **releases and leakages** of plastics, including microplastics, into the environment?

- **Draft Article on Plastic Waste Management**

- Will the provisions also aim to **prevent secondary microplastic generation** by avoiding mismanagement practices such as open dumping, burning, or ocean disposal?

Multilateral Environmental Agreements (MEAs)

Life cycle management of chemicals and waste

>> PLASTICS



- 191 Parties
- Environmentally sound management (ESM)
- Prevention and minimization of waste
- PIC procedure for the control of transboundary movements (TBM)



- 166 Parties
- 57 chemicals + review process to add more
- Prior Informed Consent (PIC) procedure for trade in chemicals



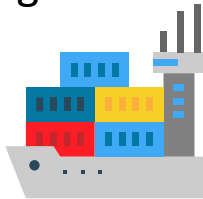
- 186 Parties
- 37 POPs + review process to add more
- Control production, use, import, export, waste, unintentional releases of POPs



Key elements under the Basel, Rotterdam and Stockholm conventions addressing plastic pollution including microplastics

Control of transboundary movements of plastic waste

The control of **TBM** involves PIC procedure to minimize unrecyclable waste movement while fostering international **trade** for recycling.



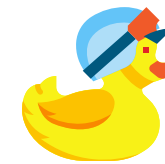
Minimization and environmentally sound management of plastic waste

The **ESM** of plastic waste prioritizes **prevention**, minimization, and adherence to the waste hierarchy.



Identification and control of chemicals associated with plastics

The mechanism to add new chemicals for control; ensure **traceability of chemicals in products**, articles, stockpiles, waste; reduce **unintentional releases** of toxic chemicals.



Basel Convention Plastic Waste Amendments

**BC-14/12:
Plastic Waste
Amendments**

Effective 1 Jan 2021

Annex II
Plastic waste,
including mixtures

Y48



Annex VIII
Hazardous plastic waste

A3210



Prior
Informed
Consent
(PIC)

Annex IX
Clean plastic waste for
recycling

B3011



Control transboundary movement (TBM) of waste



July 27, 2021

<https://storymaps.arcgis.com/stories/63f88d8da65841f3a13ba4018d26361d>



Promote environmentally sound management (ESM) of waste



Chemicals in plastics: Impacts across production, use, recycling & disposal stages

Marine Litter and Plastic Waste



Fact Sheet #5

For more information consult “Drowning in Plastics - Marine Litter and Plastic Waste Vital Graphics” from the BRS Secretariat and GRID-Arendal. Available from link <https://bit.ly/3GORz8E>

Plastic additives

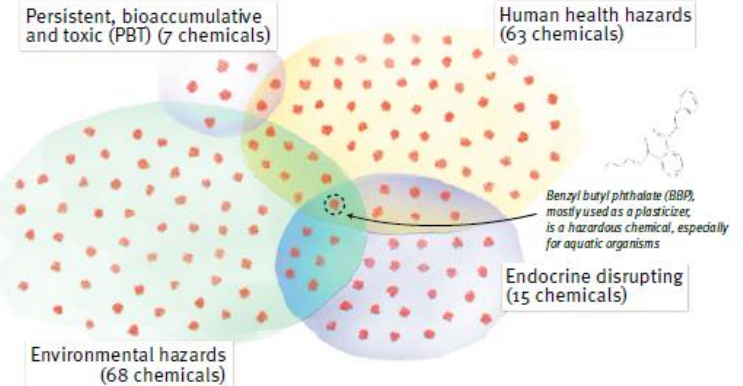
Every plastic item contains additives that determine the properties of the material and influence the cost of production (Stenmarck et al. 2017). Typical additives include stabilisers, fillers, plasticisers, colourants, as well as functional additives such as flame retardants and curing agents (Figure 1). Some plastic additives are hazardous to human health and the environment (Stenmarck et al. 2017).

Leakage and degradation

Plastics are composed of chains of polymer molecules. Additives are either weakly bound to the polymers or free in the polymer matrix. The weakly bound additives can leach out of the plastics during normal use, when in landfills, or following improper disposal in the environment (Wagner and

Hazardous chemicals in plastics

A 2018 study found that 3,377 chemicals are potentially associated and 906 chemicals are likely associated with plastic packaging. Out of these, 148 have been identified as most hazardous (Groh et al. 2018).



Source: Groh et al. (2018). Illustration by GRID-Arendal (2020).

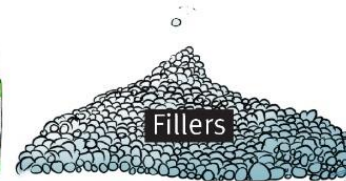
Five types of plastic additives



Functional additives include for example stabilizers, antistatic agents, flame retardants, plasticizers, lubricants, slip agents, curing agents, foaming agents, biocides, etc.



Colorant are substances such as dyes or pigments added to give color to plastic. Some of them are added to give a bright transparent color.



Fillers are added to change and improve physical properties of plastics. They can be minerals, metals, ceramics, bio-based, gases, liquids, or even other polymers.



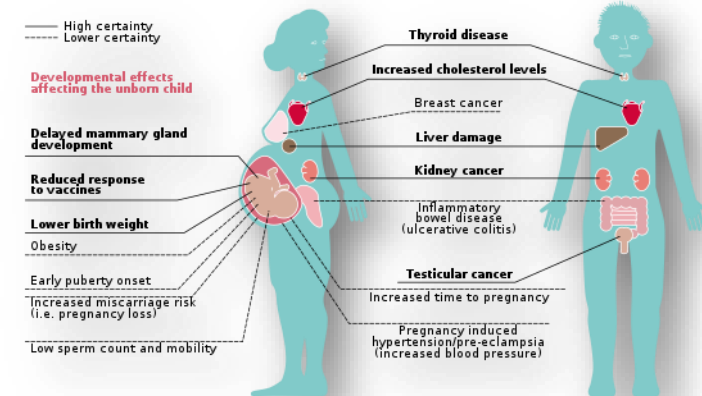
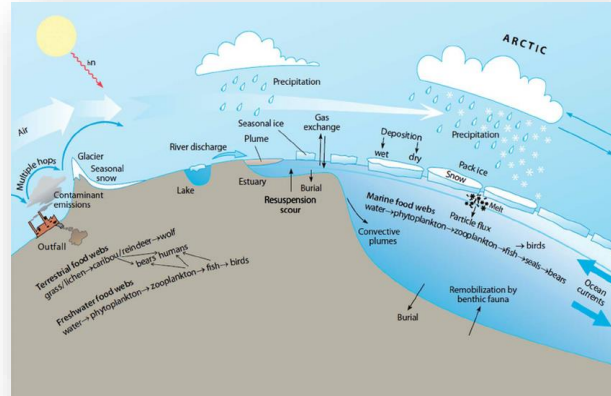
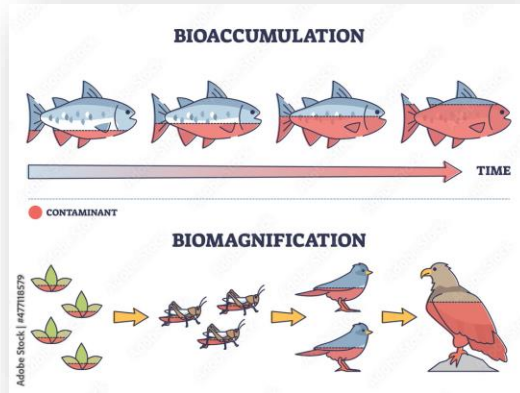
Reinforcement are used to reinforce or improve tensile strength, flexural strength and stiffness of the material. E.g. glass fibres, carbon fibres, etc.



NIAS are chemicals that arrive in products from processes such as reaction by-products or break down products

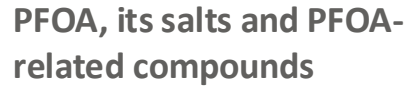
Sources: Hansen et al. (2013). Illustration by GRID-Arendal (2020).

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



19 plastic-related chemicals

Specific exemptions

Acceptable purposes



Annex B



Annex C

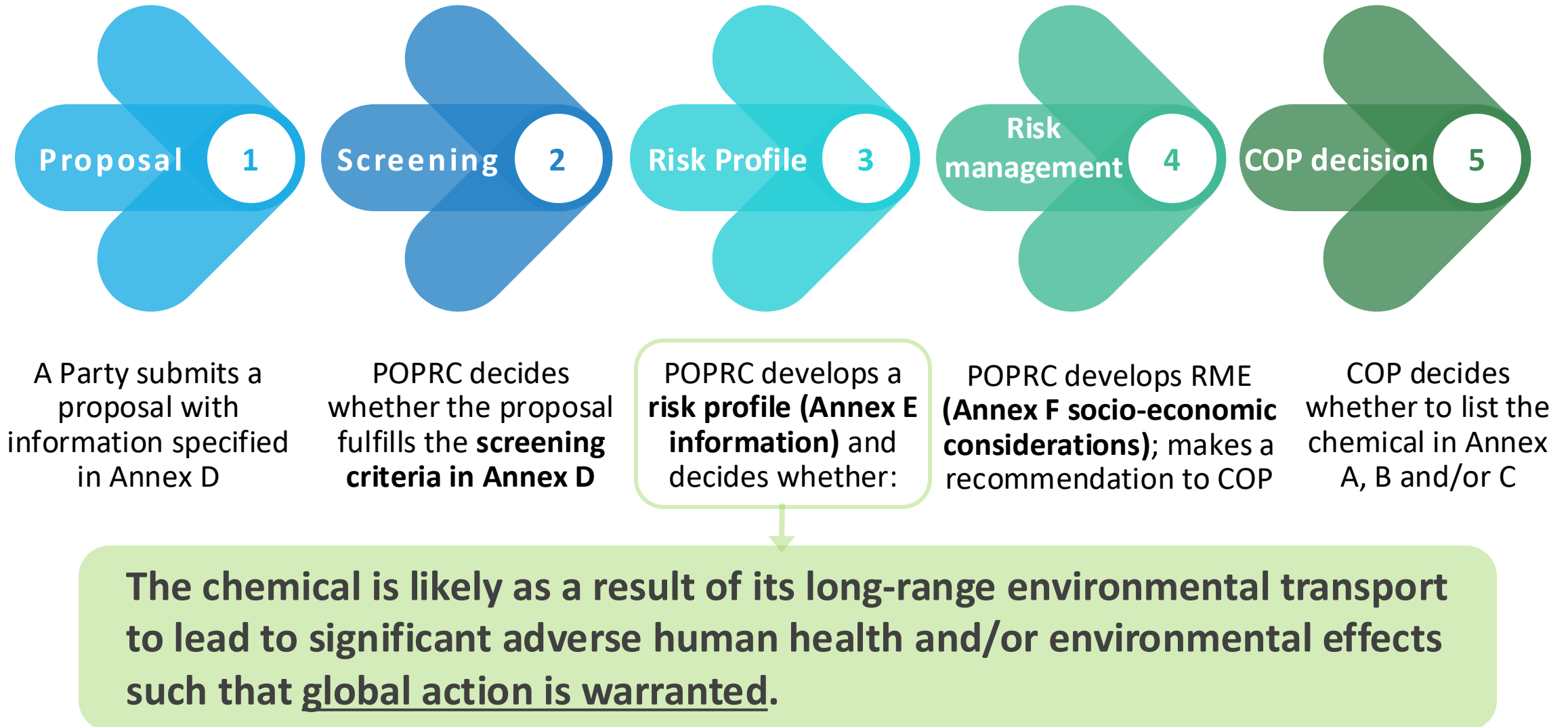
POPs Review Committee



BAT/BEP



Process for listing a new chemical under the Stockholm Convention

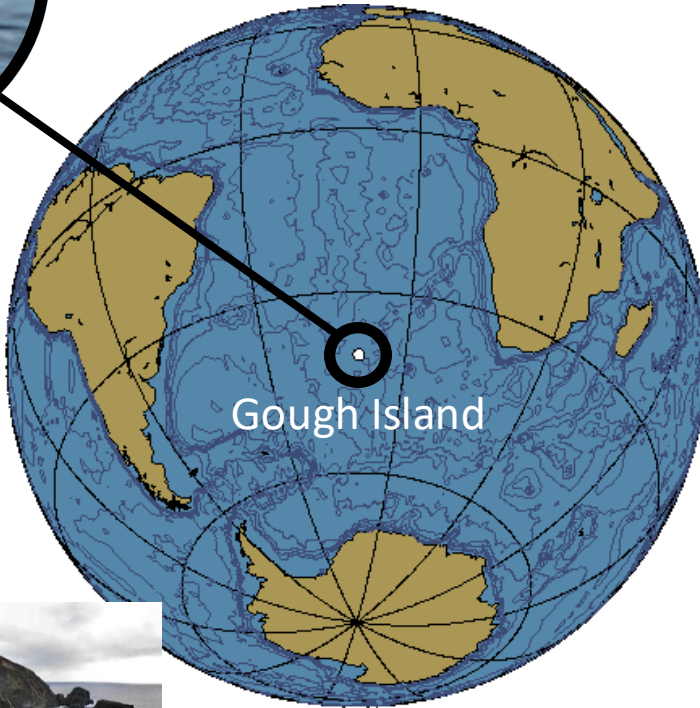


Long-range transport: monitoring in seabirds

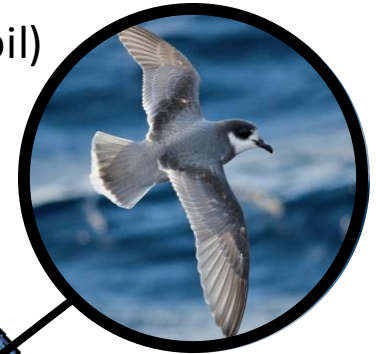


Great shearwater (preen gland oil)
4987–7055 ng/g lw
DF = 100%

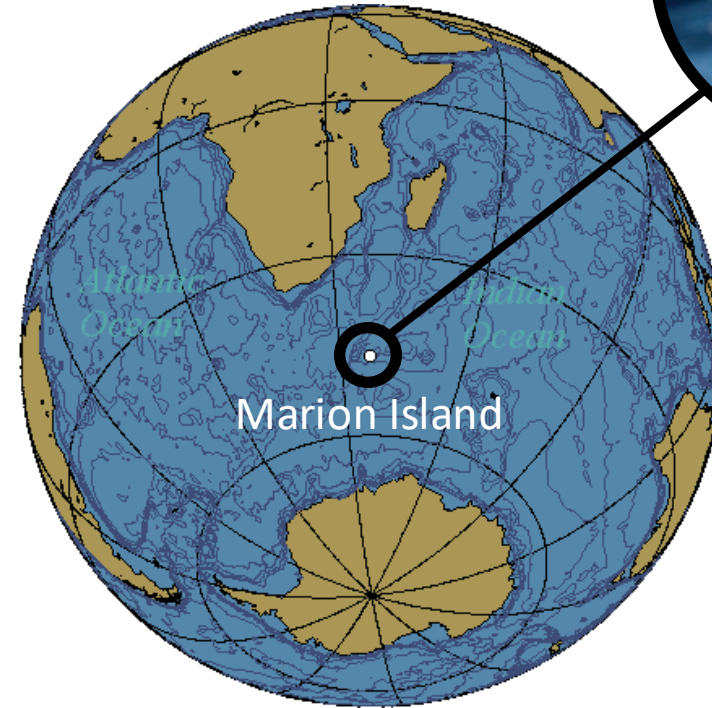
Remoteness Index*
RI $\approx$ 3
(Arctic: RI = 2.6 avg.)



km
0 1000 2000



Blue petrel (preen gland oil)
1047–3003 ng/g lw
DF = 100%



km
0 1000 2000

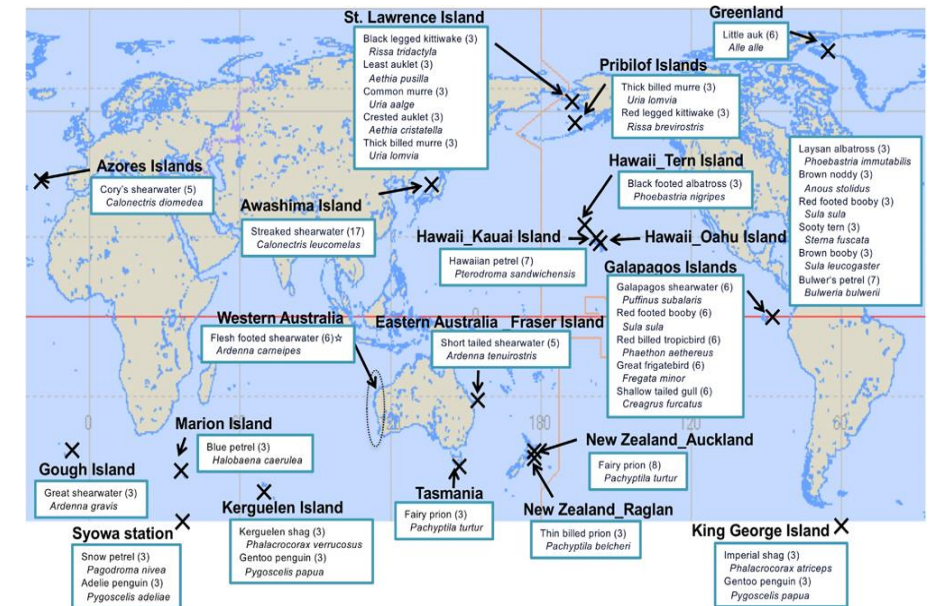
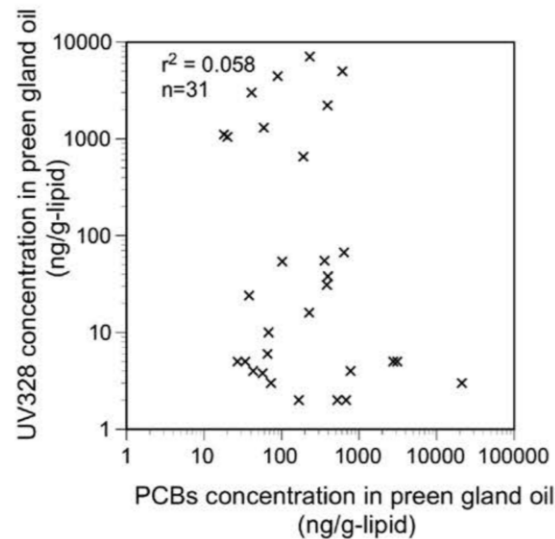
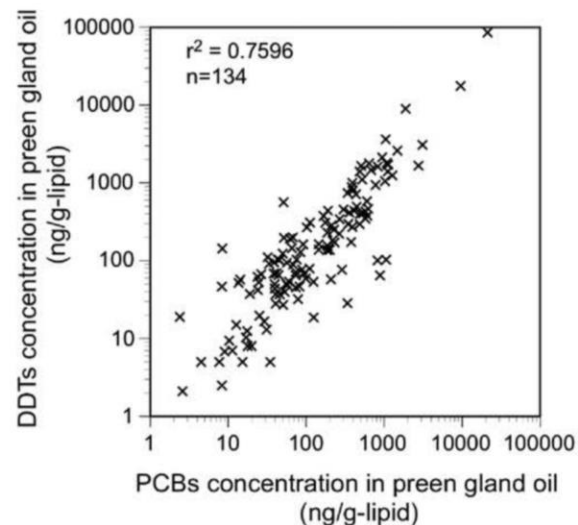


* Von Waldow *et al.*, 2010 – ECON emission scenario

Long-range oceanic transport via plastic debris

Yamashita et al., 2021 (doi:10.5985/emcr.20210009)

- Global monitoring of additives (e.g. UV-328) and legacy POPs in the preen gland oil of seabirds
- Source identification
 - No correlation with PCB concentrations in preen gland oil → different source pattern

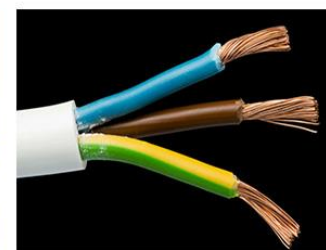


Concluding statement of the POPs Review Committee in 2022

UV-328 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. >> **UV-328 was added to Annex A to the Convention in 2023.**



Great shearwater and 194 plastic fragments found in its stomach (Photo: Peter G. Ryan)



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.



Thank you!



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