Global NIP Update Webinar –

POP action plan options for the National Implementation Plans: Unintentional POPs & PFAS (20. January 2026, 14:00 -16:30 CEST, GMT 2)

CET	Theme	Speaker
14:00	Moderator: Ms. Soomin Bae, Component 4, GGKP	
	Welcome and Opening Remarks	Ms. Soomin Bae
14:05	Some basic Considerations on Action Plan Development and Integrated Approach	Dr. Roland Weber; POPs Environmental Consulting
14:30	Action Plan options for reduction and elimination of unintentional POPs (Article 5) and considerations for an integrated approach	
15:15	From BAT/BEP for Unintentional POP Reduction to Integrated Pollution Prevention and Control of Pollutants to Tackle the Triple Planetary Crisis	Prof. Harald Schönberger
15:45	Options for Action Plan Activities to Control, Manage and Phase out of POP-PFAS and Synergy with GFC Issue of Concern for all PFAS	Dr. Roland Weber
16:15	Q&A session	All
16:30	Closing remarks	

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Global NIP Update Webinar “Activity Options for Action Plans for Stockholm Convention NIPs: Unintentional POPs and POP-PFASs”, 20. January 2026, 14:00 -16:30 CET, UTC+1

Some Basic Considerations on Action Plan Development and Integrated Approach

Dr. Roland Weber
POPs Environmental Consulting,
73527 Schwäbisch Gmünd, Germany
https://www.researchgate.net/profile/Roland-Weber-2

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37 POPs listed in the Stockholm Convention (2025)

Chemical	Pesticides	Industrial chemicals	Unintentional production	Annex
DDT	+			B
Aldrin, Dieldrin, Endrin, Chlordane, Chlordecone, Toxaphene	+			A
Alpha-, Beta-, Gamma-HCH,	+		By-product of lindane	A
Endosulfan, Heptachlor, Mirex, PCP,	+			A
Dicofol, Methoxychlor, Chlorpyrifos	+			A
	+	+		A
Commercial PentaBDE		+		A
Commercial OctaBDE (Hexa/HeptaBDE)		+		A
Commercial DecaBDE		+		A
Hexabromobiphenyl (HBB)		+		A
Hexabromocyclododecane (HBCD)		+		A
PFOS, its salts and PFOSF	+	+		B
PFOA and related compounds		+		A
PFHxS and related compounds		+		A
Long-chain PFCAs (C9-C21)		+		A
SCCPs, MCCPs, Dechlorane Plus		+		A
UV-328		+		A
PCB, PeCBz, HCB, PCN, HCBD	+	+	+	A/C
PCDD, PCDF			+	C

Many are **chlorinated** compounds including **most pesticides and all unintentional POPs**.

7 unintentional POPs listed in Annex C. Most are also listed in Annex A as industrial POPs (like PCBs and PCNs).

4 PFAS groups used in wide range of uses.

5 are **brominated** flame retardants.

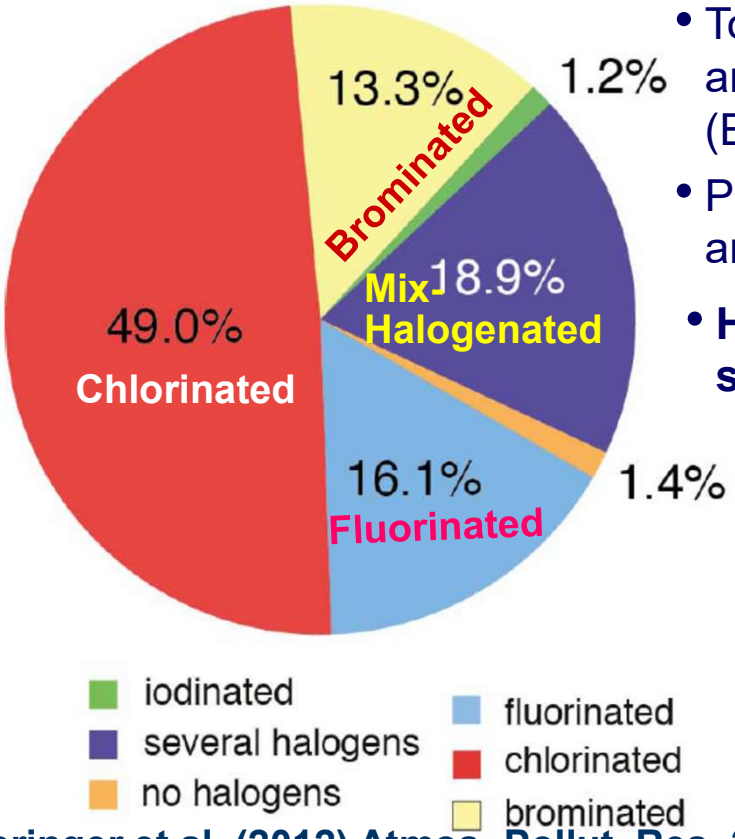
3 chlorinated FRs (Dechlorane Plus & MCCP/SCCPs)

First **non-halogenated POP** (**UV-328**; plastic UV stabilizer).

How many potential POPs are in use?

Approximately 100,000 chemicals have been scientifically evaluated in a study according to the Annex D POP criteria of the Stockholm Convention, with following results:

574 potential POPs



- Today many chemicals in use have POPs-like/PBT properties and many of them are used in consumer goods often in plastics (EEE, cars, buildings, furniture, textiles, synthetic carpets).
- PBTs in products pose a risk for human health, the environment and the recycling/recovery flows.
- **Here, chlorinated, brominated and fluorinated persistent toxic substances need to be assessed and managed systematically.**

UN environment programme Global Framework on Chemicals

The 37 POPs listed – are only the tip off the ice-berg!

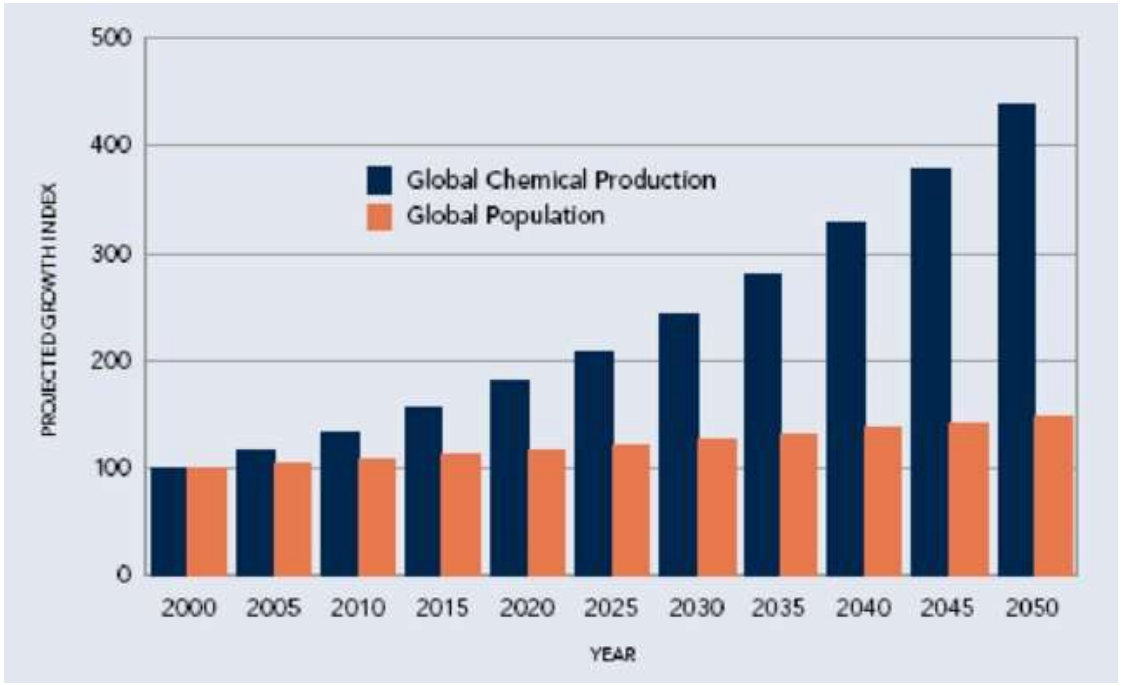
STOCKHOLM CONVENTION

Scheringer et al. (2012) Atmos. Pollut. Res. 3, 383–391.

- >**350'000** chemicals produced (Wang et al. 2020)
- Many are in daily products (>13,000 in plastics) (UNEP 2023)
- >100 million chemicals registered (CAS)

Wang et al. (2020) ES&T 54(5), 2575-2584.

OECD report projects that **overall chemical production** is expected to **quadruple between 2020 and 2060**



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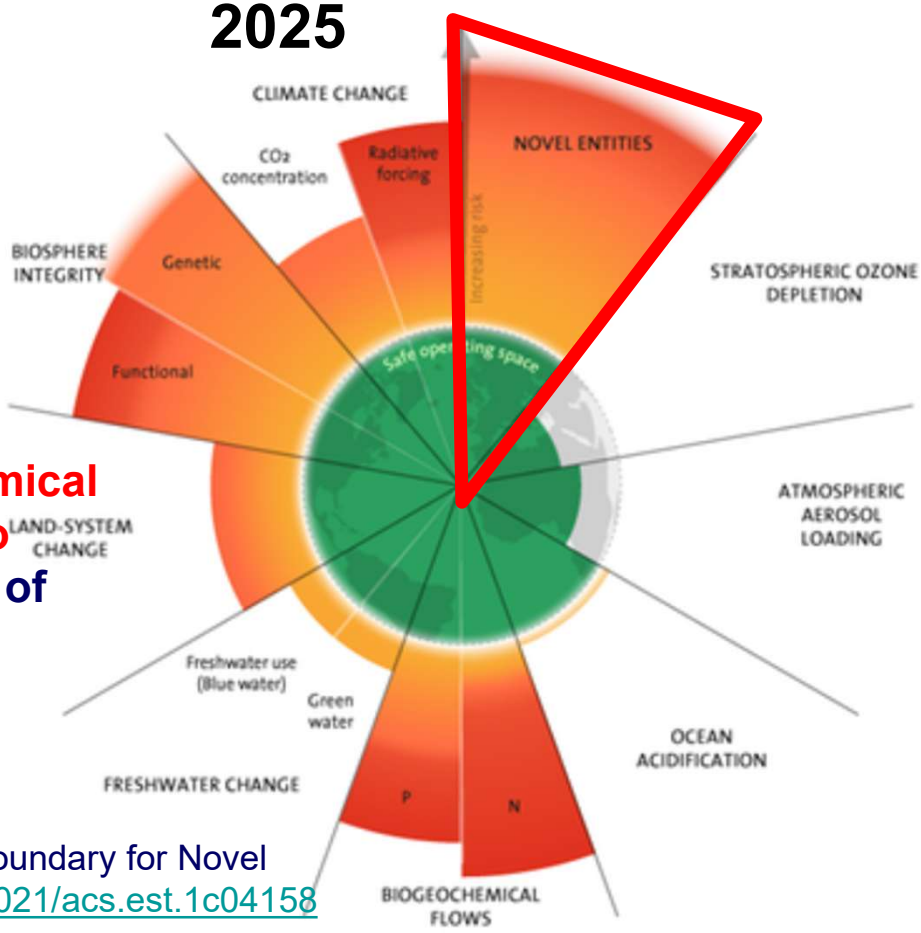
Global Framework on Chemicals

European Commission Study for the strategy for a non-toxic environment of the 7th EAP, Sub-study g: Early Warning Systems for emerging chemical risks Technical Report08/2017

“Novel Entities” chemicals & plastic crossed Planetary Boundaries

- The planetary boundaries **– which define the environmental limits within which humanity can safely operate –** have been evaluated for 9 critical anthropogenic pressure on the Earth System and 7 have crossed by 2025 (e.g. climate, biodiversity, phosphorus, nitrogen; Rockström et al. 2009). http://www.ecologyandsociety.org/vol14/iss2/art32/

- **Studies concluded that “Novel entities” including chemical of concern (e.g. PFAS) and plastics pollution have also crossed planetary boundaries by far and are therefore of high concern for humanity and a risk for several eco-system services** (Persson et al. 2022; Cousins et al. 2022).



Persson et al. (2022) Outside the Safe Operating Space of the Planetary Boundary for Novel Entities. Environ. Sci. Technol. 2022, 56, 3, 1510–1521. https://doi.org/10.1021/acs.est.1c04158

Cousins IT, Johansson JH, Salter ME, Sha B, Scheringer M. (2022) Outside the safe operating space of a new planetary boundary for PFAS. ES&T. 56(16), 11172-11179. https://doi.org/10.1021/acs.est.2c02765

Rockström et al. (2009) Ecology & Society 14(2):32; Update: Richardson et al. (2023): https://www.science.org/doi/10.1126/sciadv.adh2458

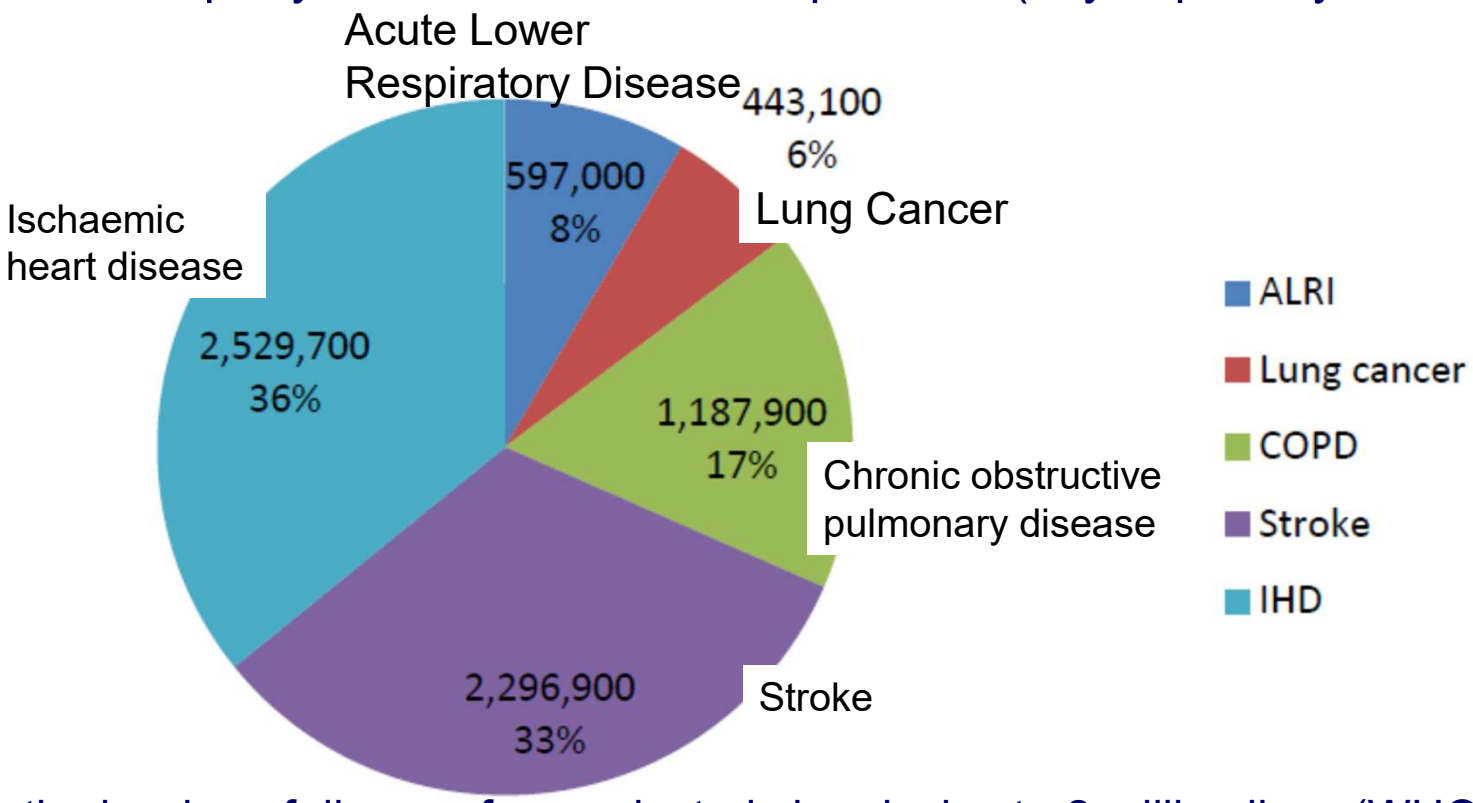
United Nations: The World faces a Triple Planetary Crisis

- The United Nations highlight, that humanity faces a Triple Planetary Crisis of climate change, nature & biodiversity loss, and chemical pollution & waste (Antonio Guterres).
- There are interlinkages of chemicals/waste and other drivers of the Triple Planetary Crisis.
- **Strong links of chemicals & waste to climate change** (e.g. **open burning of waste**, or management of plastic foams containing POPs and **F-gases with high GWP**).
- Chemicals including POPs & HHPs are also a **relevant cause for biodiversity loss,** e.g., reduced reproduction of predators at the top of the food chain (killer whale population collapse; eagle eggshell thinning). Groh et al (2022) ES&T. 56(2):707-710.
- "*The "toxic trail" of economic growth – pollution and waste - results every year in the premature deaths of millions of people across the world*." Inger Andersen director of UNEP

https://unfccc.int/news/what-is-the-triple-planetary-crisis
https://www.unep.org/news-and-stories/story/campaign-against-plastic-pollution-world-making-tentative-progress

Pollution is a major source of death and diseases

WHO: 8 million deaths per year are attributable to pollution (key impact by ambient air & indoor air).



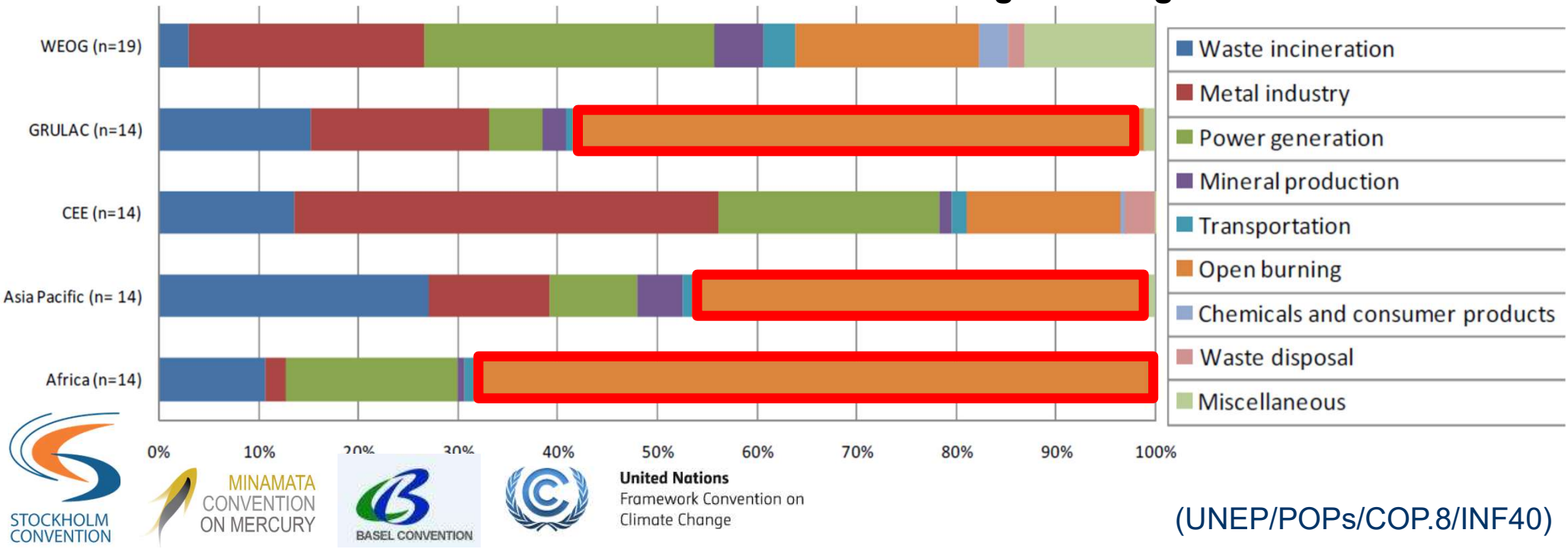
WHO estimates the burden of disease from selected chemicals at >2 million lives (WHO 2021). The lives of many more are negatively impacted (Global Chemical Outlook II 2019)

WHO. (2021). The public health impact of chemicals: Knowns and unknowns. Data addendum for 2019.
Similarly The Lancet Commission http://www.thelancet.com/commissions/pollution-and-health

Integrated approach: Unintentional POPs and air pollution reduction

- **Open burning and industrial** emissions are major sources for air pollution. **Open burning (plastic waste as major fuel) is the major contributor to PCDD/PCDF global emission to air and is the top source of UPOP release in Africa, Asia Pacific** & GRULAC, **followed by waste incineration**, the metallurgical industry, and heat and power generation.
- This result also in release of small particles ($PM_{2.5/10}$), heavy metals, PAHs and black carbon (SLCP).

Sources contribution to PCDD/PCDF releases to air according to UN region



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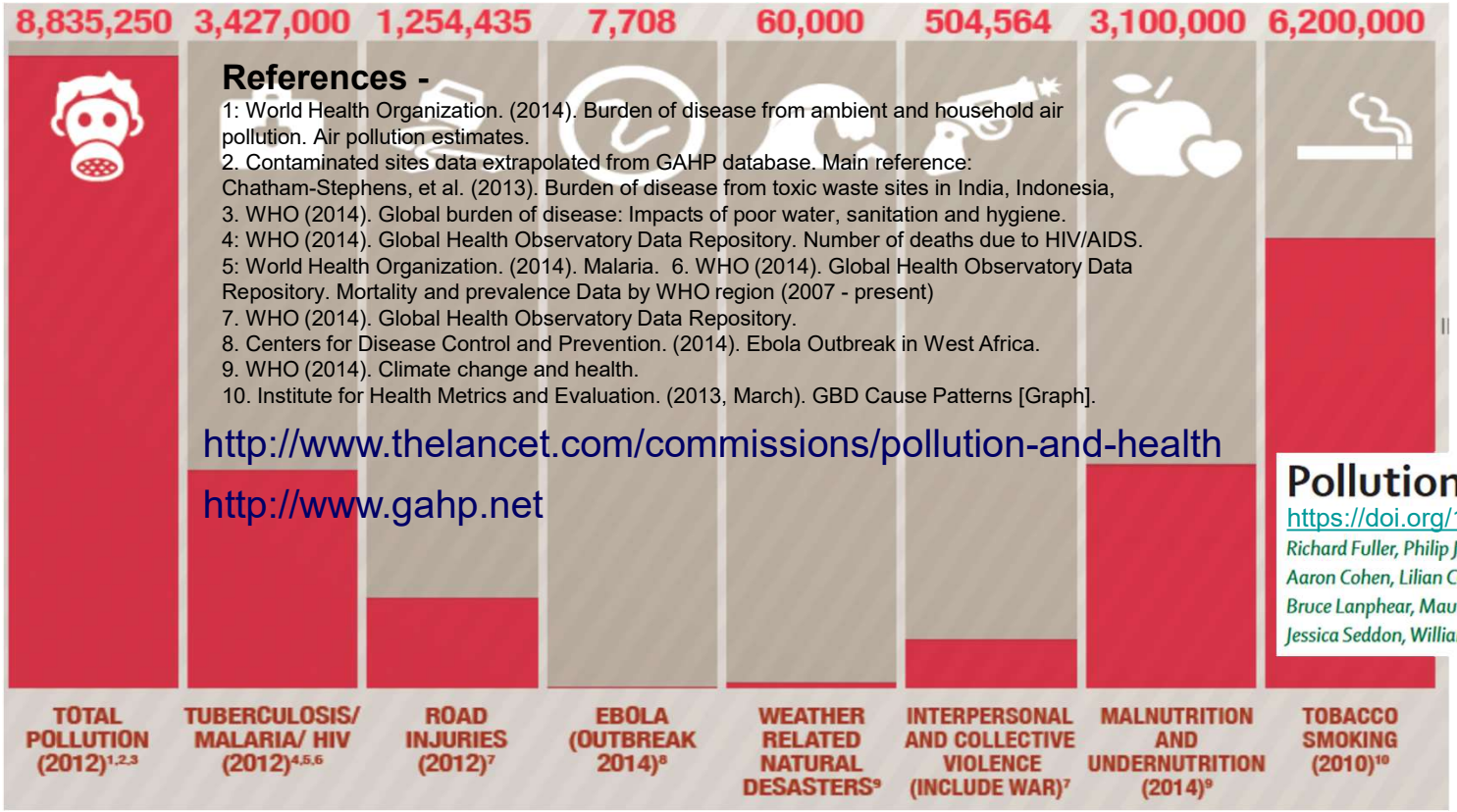
BASEL CONVENTION

United Nations Framework Convention on Climate Change

(UNEP/POPs/COP.8/INF40)

Compilation of Lancet Commission on Pollution and Health and Global Alliance on Health & Pollution

- **Lancet Commission** and GAHP compiled information on exposure to pollution (air, soil and water): Approx. 9 million premature deaths (one in seven) were considered pollution-related.
- In addition to air pollution, **also contaminated sites have a crucial impact on global health**.



References -

1: World Health Organization. (2014). Burden of disease from ambient and household air pollution. Air pollution estimates.
2. Contaminated sites data extrapolated from GAHP database. Main reference: Chatham-Stephens, et al. (2013). Burden of disease from toxic waste sites in India, Indonesia,
3. WHO (2014). Global burden of disease: Impacts of poor water, sanitation and hygiene.
4: WHO (2014). Global Health Observatory Data Repository. Number of deaths due to HIV/AIDS.
5: World Health Organization. (2014). Malaria. 6. WHO (2014). Global Health Observatory Data Repository. Mortality and prevalence Data by WHO region (2007 - present)
7. WHO (2014). Global Health Observatory Data Repository.
8. Centers for Disease Control and Prevention. (2014). Ebola Outbreak in West Africa.
9. WHO (2014). Climate change and health.
10. Institute for Health Metrics and Evaluation. (2013, March). GBD Cause Patterns [Graph].

http://www.thelancet.com/commissions/pollution-and-health

http://www.gahp.net

THE LANCET
Planetary Health

Pollution and health: a progress update

https://doi.org/10.1016/S2542-5196(22)00090-0

Richard Fuller, Philip J Landrigan, Kalpana Balakrishnan, Glynda Bathan, Stephan Bose-O'Reilly, Aaron Cohen, Lilian Corra, Maureen Cropper, Greg Ferraro, Jill Hanna, David Hanrahan, Howard I Bruce Lanphear, Maureen Lichtveld, Keith Martin, Adetoun Mustapha, Ernesto Sanchez-Triana, Jessica Seddon, William Suk, Martha María Téllez-Rojo, Chonghuai Yan

Lancet Planet Health 2022; 6: e535–47

Integrated pollution reduction by linking measures of POPs action plan with wider national waste & chemical management and BAT/BEP

1) Sources for ambient air pollution (UPOPs, $PM_{2.5/10}$, PAH, Hg, GHG):

- Open burning of waste (mainly plastic waste as fuel) and biomass
- Industrial emissions (power plants; incinerator, metal industries, cement plants, etc.)
- House heating and cooking
- Emissions from transport

Most of these sources/emissions can be addressed by BAT/BEP and by waste management and are all assessed by the UPOP inventory.

2) Source of indoor pollution:

- **Major sources: cooking/heating with fire, and chemicals in products & buildings**.
- These sources can be addressed by BAT/BEP and by substitution of chemicals of concern!

3) Contaminated sites: Mainly result from waste disposal & industrial releases (POPs, heavy metals, PAH, others). **Lack of BAT/BEP and waste management.**

⇒ **Integrated approach of addressing (U)POPs, heavy metals, PM, PAH, black carbon** within a larger frame of managing waste and chemicals and reducing (industrial) releases.

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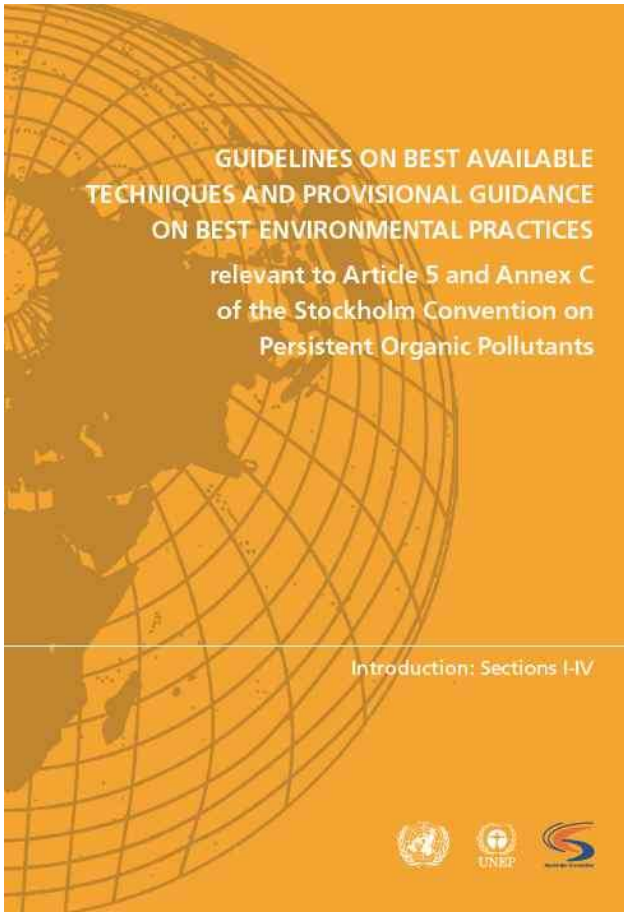
Reduction of UPOPs by BAT/BEP towards an integrated approach

- The control of release of dioxins/UPOPs from emission sources listed in Annex C and implementation of Best Available Technique (BAT) and Best Environmental Practice (BEP) is another key area.
- A wide range of industrial facilities emit dioxins/UPOPs (e.g. incinerators, metal industries, mineral production, boilers; see Annex C Part II and III and UNEP Dioxin Toolikit https://toolkit.pops.int/).
- However the action plan for UPOPs cannot be the main driver for BAT/BEP in large industries and the SC cannot be the main source of funding for BAT/BEP in large industrial sectors. But it can be a important impulse for emission control in these major sources towards an integrated pollution prevention and control of industries.



Stockholm Convention BAT/BEP Guideline:
Guidance principles and cross-cutting considerations

The Stockholm Convention BAT/BEP Guideline stresses in the "general principles and cross-cutting considerations" (Section III.B):

- **Cleaner Production**
- **Integrated Pollution Prevention and Control**
- **Waste hierarchy**
- Sustainable Development and Sustainable Consumption and Production
- Precautionary Approach
- Use of science, technology and indigenous knowledge to inform environmental decisions
- Life Cycle Assessment (including env. inventories and energy)
- Internalising environmental costs and polluter pays principle.

https://chm.pops.int/Implementation/BATandBEP/ReleasesfromunintentionalPOPs/BATandBEPGuidance/tabid/9647/Default.aspx

The Integrated Pollution Prevention and Control (IPPC) approach of releases from industries is considered in the BAT Reference document (BREF) of the . http://eippcb.jrc.ec.europa.eu/reference/

Dioxin and PCB contamination of meat/milk around a primary steel and sinter plant in the EU

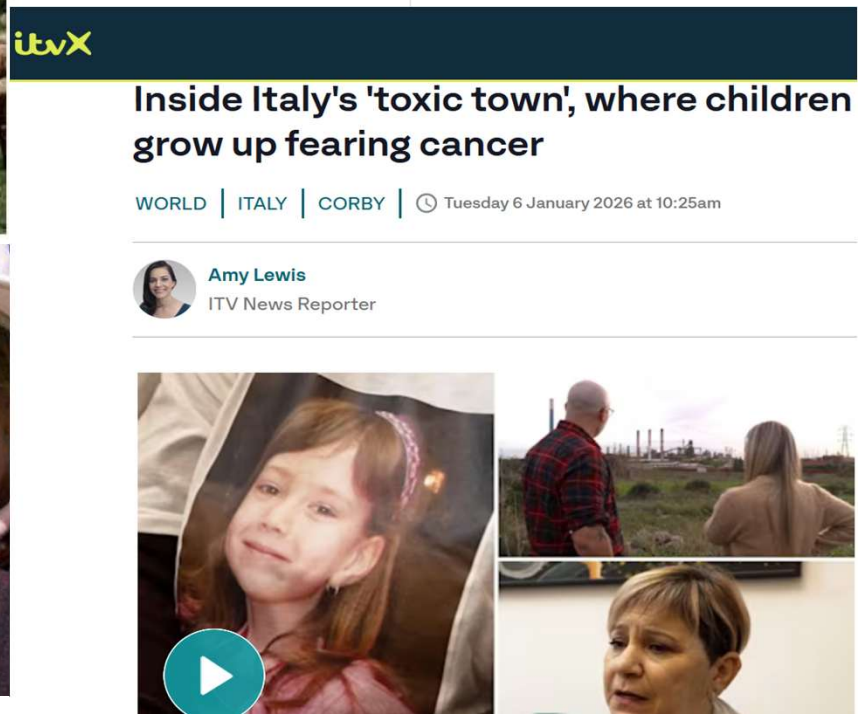
L'Ilva di Taranto ci avvelena e io perdo le pecore

Around steel plant in Italy PCDD/F & PCB contaminated meat & milk (sheep/goat).

http://city.corriere.it/interviste.shtml

(Diletti et al, Giua et al; Org. Hal Compounds 71; 2009)

- **1600 sheeps and goats needed to be slaughtered**
- **2012: 20 km restriction zone for cattle.**



- **Higher cancer rates in the area. What is the impact of dioxin/PCB and the role of other pollutants.**

Care needs to be taken that reduction measures do not focus only on dioxins/UPOPs but that other pollutants & emissions are considered and reduced together.

Necessity of integrated pollution prevention & control

Air Emissions of a primary steel plant (non-BAT; EU E-PRTR data) (10-12 Mio t steel/a)

	Release to air/year)
PCDD/PCDF	99.6 g TEQ
PCB	0.13 tonnes
Benzene	237 tonnes
PAH	33.6 tonnes
Lead & compounds	79.2 tonnes
Chromium	3.87 tonnes
Mercury	1.5 tonnes
Cadmium & compounds	0.4 tonnes
Nickel	0.6 tonnes
PM10	5380 tonnes
HCN	3.94 tonnes
SOx	40,800 tonnes
NOx	28,100 tonnes
HF	568 tonnes
Carbon dioxide	11,300,000 tonnes
Carbon monoxide	569,000 tonnes
Ammonia	33.5 tonnes

This emissions of the plant were reduced in the last decade. However recent publications and documentary still reported on the increased death rates and cancer rates in this area also in children.

Article

Taranto's Long Shadow? Cancer Mortality Is Higher for People Living Closer to One of the Most Polluted City of Italy

Roberto Cazzolla Gatti [1,*] and Alena Velichevskaya [2]

https://doi.org/10.3390/su14052662

Environment International

Volume 132, November 2019, 105030

Industrial air pollution and mortality in the Taranto area, Southern Italy: A difference-in-differences approach

https://doi.org/10.1016/j.envint.2019.105030

Simona Leogrande [a] ✉, Ester Rita Alessandrini [b] ✉, Massimo Stafoggia [b]

Inside Italy's 'toxic town', where children grow up fearing cancer

https://www.itv.com/news/2026-01-06/inside-italys-toxic-town-where-children-grow-up-fearing-cancer

Amy Lewis

ITV News Reporter

Review Article http://dx.doi.org/10.1155/2013/753719

Environment and Health in Contaminated Sites: The Case of Taranto, Italy

Emissions to water of a primary steel plant (non-BAT; EU E-PRTR data) (10-12 Mio t steel/a)

	Release to water (per year)
PAH	3.32 tonnes
Phenols	12.8 tonnes
Arsenic	0.88 tonnes
Copper	14.9 tonnes
Lead and compounds	0.91 tonnes
Chromium	10.9 tonnes
Mercury	0.46 tonnes
Cadmium and compounds	0.37 tonnes
Nickel	8.32 tonnes
Zinc	33.8 tonnes
Cyanides (as CN)	41.6 tonnes
Phosphourous	16.1 tonnes
TOC (as COD/3)	1250 tonnes
Total nitrogen	2140 tonnes

The steel plant also released high levels of heavy metals, PAHs and cyanides into the water.

Integrated approach for POPs management: Linking NIP activities with national priority activities on general chemicals and waste management

NIP Update Guidance stresses: "***The development, review, and updating of a NIP should build on existing work and assessments….". Therefore:***

- **POPs should not be addressed on their own but should be linked/integrated with general chemicals and waste/plastic management.** This may include, National Profiles, national GHS implementation plans/strategies, **national chemical and waste management plans**.
- **Synergies** of **Basel, Rotterdam and Stockholm Convention** and **Minamata Convention**.
- **Synergies** to release reduction of **heavy metals** (e.g. **mercury, lead, cadmium, arsenic) & PM**.
- **Synergies with greenhouse gas (GHG) reduction** (e.g. reduction **open burning**, **BAT/BEP**).
- **Linking to issues of concern of the Global Framework on Chemicals (GFC) and synergies.**
- **Linking to the management of major plastic use and waste sectors.**
- Linkage to SDGs & Sust. Production & Consump.

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United Nations Framework Convention on Climate Change

Convention on Biological Diversity

MONTREAL PROTOCOL

UN environment programme

Global Framework on Chemicals

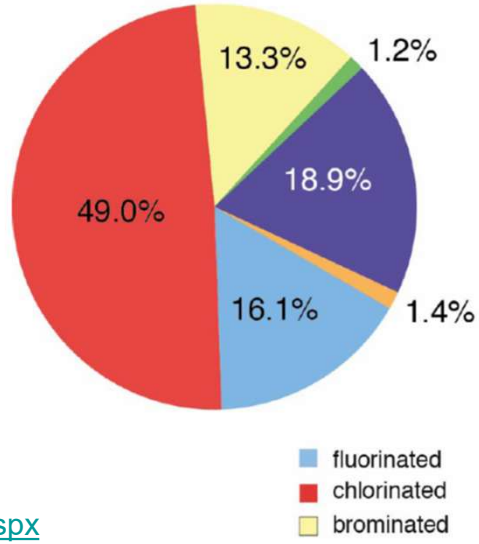
Integrated approach of POPs management: Stockholm Convention and synergies with the Global Framework on Chemicals (GFC/SAICM)

There are close links between POPs and GFC (former SAICM) **"issues of concern":**

- Highly Hazardous Pesticides (HHPs) (GGKP Webinar https://www.youtube.com/watch?v=Ar6TYGXRTVg&t=1413s)
- **Perfluorinated and polyfluorinated (as precursors) alkylated substances (PFAS) and the transition to safer alternatives.**
- **Chemicals in products**
- Hazardous substance within the life cycle of electrical and electronic products.
- Endocrine-disrupting chemicals
- Environmentally persistent pharmaceutical pollutants
- Lead in paints
- Nanotechnology and manufactured nanomaterials

UN environment programme Global Framework on Chemicals

saicm



Here the specific POPs issue can/should be addressed within the larger frame of managing a wider group of POPs-like and other hazardous substances with a science-based approach.

http://www.saicm.org/Implementation/EmergingPolicyIssues/tabid/5524/language/en-US/Default.aspx

Thank you for your attention ! Questions?

More Information https://www.thegef.org/; https://en.wikipedia.org/wiki/Triple_planetary_crisis

Basel Convention: www.basel.int

Rotterdam Convention: www.pic.int

Stockholm Convention: http://chm.pops.int/;

Montreal Protocol/Vienna Convention: http://ozone.unep.org

GFC: https://www.chemicalsframework.org/ **FAO:** www.fao.org **WHO** www.who.int/

Climate Convention https://unfccc.int/ **Biodiversity Convention:** https://www.cbd.int/

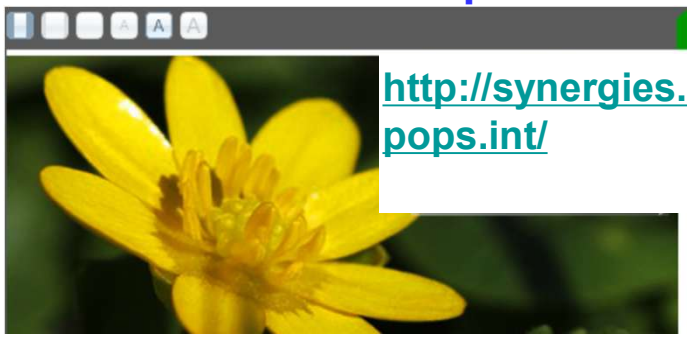
OECD/IOMC: http://www.oecd.org/chemicalsafety/

Science:; https://www.ipcc.ch/; https://www.ipbes.net/; www.unep.org/oewg-spp-chemicals-waste-pollution

Industry: http://www.suschem.org/; https://icca-chem.org/; https://cefic.org/

NGO: www.ipcp.ch; www.ipen.org; www.ciel.org/; www.ban.org; www.chemsec.org; www.wecf.org

Better-world-links: http://www.betterworldlinks.org/



http://synergies.pops.int/

United Nations Framework Convention on Climate Change