

Webinar Report

Activity Options for Action Plans on the Reduction of UPOPs and Management of PFASs

20 January 2026



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Introduction

Effective National Implementation Plan (NIP) action plans are essential for managing and phasing out persistent organic pollutants (POPs) while avoiding regrettable alternatives and meeting core obligations under the Stockholm Convention, including Article 15 reporting. Action plans provide the basis for sound POPs management by guiding exposure reduction, informing regulatory controls, addressing national priorities identified in the NIP and supporting the preparation of elimination projects. They should also align with broader national chemicals and waste management priorities to ensure a coherent and integrated approach. For this reason, action plans need to be well-developed, technically robust, and reviewed by relevant ministries and stakeholder groups.

To support this objective, the Green Growth Knowledge Partnership (GGKP), under the GEF-funded and UNEP-led Global NIP Update project (GEF ID 10785), convened the second session of the action plans webinar series on 20 January 2026, focusing on reducing unintentional POPs (UPOPs) and managing per- and polyfluoroalkyl substances (PFAS) listed as POPs, in line with Stockholm Convention obligations. The event introduced the integrated approach for reducing and eliminating UPOPs, including the integrated pollution prevention and control approach of Best Available Technique (BAT) and Best Environmental Practice (BEP) for major Annex C Part II and III sources. It also provided an overview of activity options for managing and phasing out of POP-PFAS towards an overall control of all PFAS, considering synergies with the Global Framework on Chemicals (GFC) and related issues of concern.

CET 14:00	Welcome and opening remarks	Moderator: Janalezza Thuaud (GGKP, UNEP) Carla Valle-Klann (BRS Secretariat, UNEP)
14:05	Basic considerations on action plan development and integrated approach	Dr Roland Weber (POPs Environmental Consulting)
14:30	Action plan options for the 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 Crises	Dr Harald Schönberger (Stuttgart University)
15:45	Options for action plan activities to control, manage and phase out PFOS, PFOA, PFHxS and related compounds and synergies with the Global Framework on Chemicals (GFC)	Dr Roland Weber
16:15	Q&A session	All
16:30	Closing remarks	

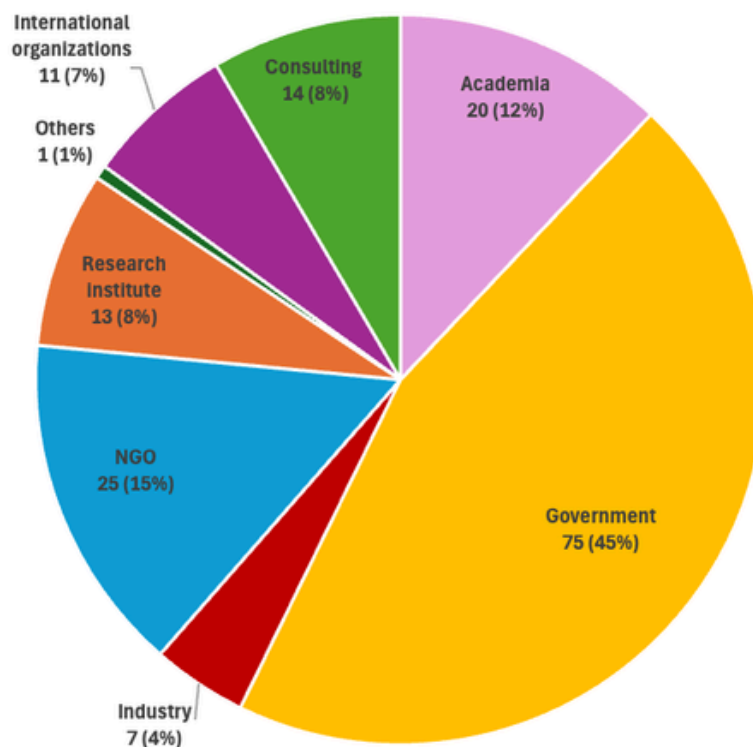
Registration and attendance

**Number of registrants: 281 / total attendance: 166
(Approx. 54% female, 45% male, 1% prefer not to answer)**

Participants by country

Country	Attendees	Country	Attendees	Country	Attendees
Nigeria	13	Kyrgyzstan	1	Greece	1
Peru	7	China	1	Bulgaria	1
Switzerland	6	Cameroon	1	Ethiopia	1
Myanmar	5	Saint Kitts and Nevis	1	Norway	1
Germany	5	Albania	1	Eswatini	1
Botswana	4	Burundi	1	Suriname	1
Brazil	4	Egypt	1	United States of America	1
United Republic of Tanzania	4	Lesotho	1	Mexico	1
Bangladesh	3	Liberia	1	Micronesia (Federated States of)	1
India	3	Morocco	1	Saudi Arabia	1
Kenya	3	Romania	1	Sierra Leone	1
Argentina	3	Saint Vincent and the Grenadines	1	Russian Federation	1
Bosnia and Herzegovina	3	Canada	1	Democratic Republic of the Congo	1
Tunisia	3	Mauritius	1	Austria	1
Costa Rica	3	Czech Republic	1	Republic of Moldova	1
Bahamas	3	Italy	1	Netherlands	1
France	2	Montenegro	1	Sweden	1
Ghana	2	Armenia	1	Spain	1
Indonesia	2	Gambia	1	Türkiye	1
Senegal	2	Japan	1	Chile	1
South Africa	2	Madagascar	1	Gabon	1
Thailand	2	Portugal	1	Kazakhstan	1
Uganda	2	Republic of the Congo	1	Mozambique	1
United Kingdom of Great Britain and Northern Ireland	2	Uruguay	1	Niger	1
Zimbabwe	2	Zambia	1	Slovakia	1
North Macedonia	2	Cambodia	1	Viet Nam	1
Dominican Republic	2	Jamaica	1	Colombia	1

Participants by sector



Key highlights

Building on the first session in the action plan webinar series held in December 2025, this second one focused on two complex and urgent areas under the Stockholm Convention: the reduction and elimination of UPOPs and the management of PFAS. The webinar introduced participants to the strategic importance of action plans in NIPs, emphasizing the need for cross-sectoral coordination and the integration of POPs management within broader chemical, waste and environmental governance frameworks.

The session opened with remarks from **Carla Valle-Klann**, Programme Management Officer at the BRS Secretariat/UNEP, who highlighted the critical importance of understanding and managing UPOPs. She emphasized the need for parties to identify, quantify and reduce these emissions using BAT/BEP approaches, given their formation in industrial processes and poorly controlled waste practices. Carla Valle-Klann also stressed the growing urgency of addressing PFAS pollution, noting their extensive use in consumer and industrial products, their long-range environmental transport and their persistence in ecosystems. Their widespread detection in water, soil, air, wildlife and even humans underscores the scale of global contamination and the pressing need for countries to strengthen monitoring, knowledge and elimination efforts.

Basic considerations on action plan development and integrated approach

Dr Roland Weber, POPs Environmental Consulting, highlighted that 37 substances listed as POPs/POPs groups under the Stockholm Convention represent only the tip of the iceberg. Assessments indicate that more than 570 chemicals likely meet POP criteria and that chemical production is projected to quadruple between 2020 and 2060. NIP action plans under the Stockholm Convention should provide a practical and strategic framework for managing and phasing out POPs and avoiding substitution by other chemicals with POP properties. Effective management involves controlling POPs across their entire life cycle from production and import to recycling and disposal, strengthening national coordination mechanisms and incorporating gender dimensions. Action plan activities can be identified early, during POP inventory development, and action plans may contain both POP-specific and cross-cutting activities—such as monitoring, contaminated site assessment, or awareness raising—designed to address shared challenges across chemical categories.

Recent studies conclude that “novel entities,” including plastic pollution and chemicals of concern like PFAS, have already crossed planetary boundaries and are directly linked to the triple planetary crisis of pollution, but also have interlinks with climate change and biodiversity loss. To effectively address these intersecting challenges, an integrated approach is essential. NIPs should not treat POPs in isolation but should align with broader frameworks such as the Basel, Rotterdam and Minamata Conventions, as well as general management of waste and industrial emissions, the GFC, general waste management and industrial emissions, and the Biodiversity and Climate Conventions.

Action plan options for the reduction and elimination of Unintentional POPs (Article 5) and considerations for an integrated approach

Dr Weber emphasized that effective action plans should integrate UPOPs reduction with broader national systems for chemical and waste management and industrial production, supporting both Convention obligations and national priorities. Strengthening regulatory frameworks — such as introducing release limit values or performance standards for UPOPs, applying surrogate parameters when analytical capacity is limited, and establishing unintentional trace contaminant (UTC) limits — was highlighted as essential for regulating emissions from major sources, including the production of organochlorine chemicals.

He stressed that regularly updating dioxin and other UPOPs inventories, reviewing strategies and integrating them with mercury and greenhouse gas inventories or the development of Pollution Release and Transfer Registers (PRTRs) are key to identifying priority sources and enabling targeted, evidence-based interventions. Open waste burning remains the dominant global source of dioxin and furan emissions in developing countries, also generating high levels of particulate matter, polycyclic aromatic hydrocarbons (PAHs) and black carbon with major public health and climate implications. Improving waste management systems, applying the waste hierarchy and advancing circular economy measures, therefore, provide strong co-benefits.

For industrial Annex C sources such as waste incineration, power generation, cement kilns and metal production, applying BAT and BEP delivers simultaneous reductions in UPOPs, heavy metals and other pollutants, creating synergies with agreements such as the Minamata Convention and supporting integrated pollution prevention and control. Dr. Weber also highlighted the need to address emissions from indoor cooking and heating in developing countries and to prevent UPOPs at source through safer substitutions such as solar. The release of dioxins and other UPOPs in the past 200 years has resulted in dioxin/UPOP contaminated sites that need to be controlled for food safety in particular, free range livestock including chicken/eggs.

From BAT/BEP for Unintentional POP reduction to integrated pollution prevention and control of pollutants to tackle the Triple Planetary Crises

Dr Harald Schönberger, Professor at the Institute for Sanitary Engineering, Water Quality and Solid Waste Management, University of Stuttgart, introduced BAT and BEP for reducing UPOPs, including dioxins, furans, polychlorinated biphenyls (PCBs) and hexachlorobenzene (HCB). He emphasized the importance of integrated pollution prevention and control, noting that UPOPs are often closely linked to particulate matter, heavy metals and other co-pollutants generated in high-temperature industrial processes. The European Union (EU)'s Integrated Pollution Prevention and Control (IPPC) system and the ongoing development of Best Available Techniques Reference Documents (BREFs) have provided a strong foundation for defining technically feasible and economically viable BAT across major industrial sectors. Developed by 38 technical working groups, BREFs outline abatement technologies, operational practices, monitoring protocols and BAT-associated emission levels, offering practical guidance for implementing BAT for Stockholm Convention industrial Annex C Part II and III sources and to meet the Stockholm Convention obligations in large industrial facilities.

Key highlights

Dr Schönberger highlighted the importance of sector-specific approaches by reviewing key industrial processes where UPOPs may be formed, including integrated steelworks, electric arc furnaces and cement kilns. These processes present distinct formation pathways — ranging from dioxins and PCBs in sinter plants to the volatilization of HCB in cement kilns when contaminated materials are introduced through the raw material pathway. He also illustrated that IPPC permits in the EU provide the regulatory framework through which BAT and BEP are implemented in practice, ensuring that all relevant pollutants are addressed coherently. The systematic application of BAT and BEP — supported by continuous monitoring, inspection and regulatory oversight — can significantly strengthen effective pollutant management.

Options for action plan activities to control, manage and phase out PFOS, PFOA, PFHxS and related compounds and synergies with the Global Framework on Chemicals (GFC)

With more than 10,000 PFAS on the global market and millions of PFAS structures documented, Dr Weber stressed that focusing solely on four groups of POP-PFAS listed under the Stockholm Convention reaches only a small fraction of the chemicals in use. Industry shifts to short-chain PFAS and PFAS ethers illustrate the need for broader, integrated approaches, especially given scientific evidence that PFAS pollution has already crossed planetary boundaries and that legacy contamination continues to drive exposure. Aligning NIP action plans for POP-PFAS with the GFC—which treats all PFAS as an “issue of concern” — offers a clearer pathway towards safer alternatives and helps avoid cycles of regrettable substitution.

He outlined comprehensive action plan elements that address PFAS across their full life cycle. This includes regulatory frameworks that cover PFAS across production, use, recycling and disposal, improvement of traceability in products, introduction of extended producer responsibility (EPR) and application of the polluter-pays principle (PPP). Robust inventories of PFAS uses, stockpiles and waste streams, especially in firefighting foams, treated textiles and carpets and vehicles, for prioritizing action and aligning PFAS management with circular-economy strategies.

Due to their high persistence and water solubility, contaminated sites inventories and management are critical for drinking water and food safety. He noted that PFAS waste presents major technical challenges, such as landfilling and low-temperature incineration, which result in further releases, and assessing available destruction capacities critically. Monitoring and awareness raising are equally important, including targeted monitoring of drinking water and priority sites such as airports, landfills, industrial areas and wastewater treatment plants.

Q1. For the emissions associated with power generation, are these to some extent linked to energy from waste or burning waste in incinerators for power production?

Dr. Roland Weber: These are emissions from real power plants and not from waste-to-energy. Waste-to-energy is quantified in the [UNEP Dioxin Toolkit](#) in the Source Group 1 Waste Incinerators. So, these emissions are largely from coal power plants (Source Group 3), which also can have relevant dioxin emission especially with coal containing elevated levels of chloride.

Q2. Could biochar be a potential solution to remove heavy metals, arsenic, other unintentional POPs and PFAS?

Dr. Roland Weber: Yes, biochar is an adsorbent for PFAS and heavy metals. Here is an open-access article on biochar and PFAS adsorption: <https://doi.org/10.1007/s42773-025-00436-4>. The problem is then what next is after you have a contaminated biochar. There is an interesting study from Norway on pyrolysis and PFAS degradation in an open-access article: <https://pubs.acs.org/doi/full/10.1021/acs.jafc.5c00651>

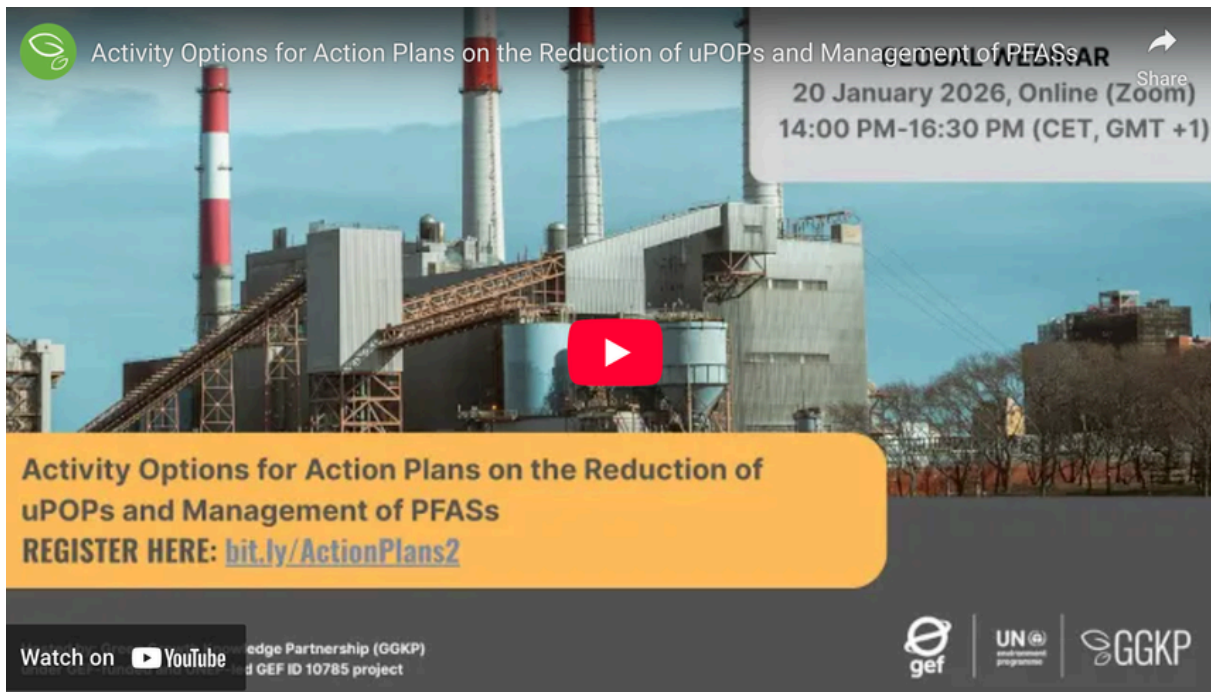
Q3. If PFOS is present at high concentrations in air, how can we reduce these concentrations, and what are the priorities for mitigating them?

Dr. Roland Weber: PFOS is not typically in the air. The key to controlling PFOS is the cessation of use and the management of waste. A PFOS and PFAS source in your country might be synthetic carpets, which should be assessed and managed appropriately, as well as remaining firefighting foams. Please refer to my action plan recommendation to possibly regulate PFAS as a group and follow, and possibly consider the European approach.

Q4. What are standard procedures for the safe handling, disposal or recycling of firefighting foam stocks and cylinders containing PFAS/PFOS?

Dr. Roland Weber: The PFAS foams are substituted and incinerated in hazardous waste incinerators (and possibly cement kilns). Cleaning the fixed installations is important so as not to contaminate the new firefighting foam.

- The concept note and video recording in **English** are available on the **Global NIP Update platform**: <https://www.greenpolicyplatform.org/webinar/activity-options-action-plans-reduction-upops-and-management-pfass>



The image is a YouTube video thumbnail. At the top left, there is a green circular logo with a white leaf-like shape. To its right, the title 'Activity Options for Action Plans on the Reduction of uPOPs and Management of PFASs' is displayed in white text. Further right, there is a 'Share' icon. Below the title, the date and time '20 January 2026, Online (Zoom) 14:00 PM-16:30 PM (CET, GMT +1)' are shown in white. The background of the thumbnail is a photograph of an industrial facility with several tall smokestacks and buildings. A red play button icon is centered over the image. At the bottom, there is a dark grey banner with white text: 'Activity Options for Action Plans on the Reduction of uPOPs and Management of PFASs' and 'REGISTER HERE: bit.ly/ActionPlans2'. In the bottom left corner, it says 'Watch on YouTube' with the YouTube logo. In the bottom right corner, there are logos for 'gef', 'UN' (United Nations), and 'GGKP' (Global Green Growth Partnership).

- **Pollution and health**

- UNEP (2019). Global Chemical Outlook II. <https://www.unep.org/resources/report/global-chemicals-outlook-ii-legacies-innovative-solutions>
- World Health Organization (WHO) (2021). The public health impact of chemicals: knowns and unknowns - data addendum for 2019. <https://www.who.int/publications/i/item/WHO-HEP-ECH-EHD-21.01>
- The Lancet Commission. Pollution and health. <http://www.thelancet.com/commissions/pollution-and-health>

- **Reduction of UPOPs by BAT/BEP towards an integrated approach**

- UNEP (2013). Toolkit for Identification and Quantification of Releases of Dioxins, Furans and Other Unintentional POPs under Article 5 of the Stockholm Convention on Persistent Organic Pollutants. <https://toolkit.pops.int>
- UNEP. 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. <https://chm.pops.int/Implementation/BATandBEP/ReleasesfromunintentionalPOPs/BATandBEPGuidance/tabid/9647/Default.aspx>
- European Commission. BAT reference documents. <https://bureau-industrial-transformation.jrc.ec.europa.eu/reference/>

- **Integrated approach of POPs management**

- SAICM Emerging Policy Issues and Other Issues of Concern. <https://www.saicm.org/Implementation/EmergingPolicyIssues/tabid/5524>
- RiskCycle. <http://www.wadef.com/projects/riskcycle/results.php>

- **Action plans in the recommended NIP structure**

- UNEP (2017). Guidance for Developing a National Implementation Plan for the Stockholm Convention on Persistent Organic Pollutants. Secretariat of the Basel, Rotterdam and Stockholm Conventions. <https://www.pops.int/Implementation/NationalImplementationPlans/GuidanceArchive/GuidanceforDevelopingNIP/tabid/3166/Default.aspx>
- GGKP (2025). Stockholm Convention Integrated Electronic Toolkit: NIP Harmonized Template and Online Submission. [Regional Workshop for Latin America and the Caribbean](#) / [Regional Workshop for Europe, Asia and Africa](#)

- **Regulatory framework for UPOPs**

- EU draft act for unintentional PCB. <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=intcom:Ares%282025%291300377>
- Lopes, H. & Proença, S. (2020). Insights into PCDD/Fs and PAHs in Biomass Boilers Envisaging Risks of Ash Use as Fertilizers. Applied Sciences. 10, 4951. <https://doi.org/10.3390/app10144951>
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- **Inventories for UPOPs**

- United Nations Institute for Training and Research (UNITAR). Pollution Release and Transfer Registers. <https://unitar.org/sustainable-development-goals/planet/our-portfolio/pollutant-release-and-transfer-registers>
- GGKP (2025). Embedding POPs Data Management: Information Systems at National and Regional Levels. <https://www.greenpolicyplatform.org/webinar/embedding-pops-data-management-information-systems-national-and-regional-levels>

- **Reduction and elimination of UPOPs release**

- WHO (2014). Safe management of wastes from health-care activities, 2nd ed. <https://www.who.int/publications/i/item/9789241548564>
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- International Energy Agency (IEA) (2023). A Vision for Clean Cooking Access for All. <https://www.iea.org/reports/a-vision-for-clean-cooking-access-for-all/>
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- **Control and reduction of open burning at landfills/dumps and backyards**
 - International Solid Waste Association (ISWA) Task Force on Closing Dumpsites (TFCD). <https://www.iswa.org/closing-the-worlds-biggest-dumpsites-task-force/?v=3a52f3c22ed6>
 - Ministry of Environment (2021). Guidelines for Safe Closure and Rehabilitation of Municipal Solid Waste Dumpsites in Sri Lanka. <https://wedocs.unep.org/items/bb4dc98f-c906-4f25-8ccb-6c22021775fb>
- **Unintentional PCBs in pigments**
 - Zhao, S. et al. (2019). Evidence for Major Contributions of Unintentionally Produced PCBs in the Air of China: Implications for the National Source Inventory. *Environmental Science & Technology* 2020 54 (4), 2163-2171. <https://pubs.acs.org/doi/10.1021/acs.est.9b06051>
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 - ChemFORWARD. Safe + Circular Inadvertent PCB (iPCB) Pigment Resource. <https://www.chemforward.org/ipcb-pigment-resource>
- **Reduction of UOPs from specific chemical production processes and substitution of chemicals**
 - US EPA (2025). FACT SHEET 2024 Final Risk Management Rule for Trichloroethylene under TSCA <https://www.epa.gov/system/files/documents/2024-12/tce-fact-sheet.pdf>
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- **Assessment and management of UPOP contaminated site**
 - Petrlik, J. et al. (2022). Monitoring dioxins and PCBs in eggs as sensitive indicators for environmental pollution and global contaminated sites and recommendations for reducing and controlling releases and exposure. *Emerging Contaminants* 8, 254–279. <https://doi.org/10.1016/j.emcon.2022.05.001>
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 - UNEP (2025). Guidance on best available techniques and best environmental practices for the management of sites contaminated with persistent organic pollutants. Secretariat of the Basel, Rotterdam and Stockholm Conventions. <https://chm.pops.int/Implementation/BATandBEP/POPscontaminatedsites/Guidance/tabid/9649/Default.aspx>

- **Synergies of addressing POP-PFAS and other PFASs**

- Lindstrom, A. B. et al. (2011). Polyfluorinated Compounds: Past, Present, and Future. *Environmental Science & Technology*. 45 (19), 7954-7961. <https://doi.org/10.1021/es2011622>
- PFAS Analytic Tools. US EPA. <https://echo.epa.gov/tools/data-downloads/national-pfas-datasets>
- Wang, Z. et al. (2021). A New OECD Definition for Per- and Polyfluoroalkyl Substances. *Environmental Science & Technology*. 55 (23), 15575-15578. <https://doi.org/10.1021/acs.est.1c06896>
- GGKP (2026). Activity Options for Action Plans on the Management and Elimination of PCBs and POP Pesticides. <https://www.greenpolicyplatform.org/webinar/activity-options-action-plans-management-and-elimination-pcbs-and-pop-pesticides>

- **Regulatory framework for listed POP-PFASs and other PFASs**

- The Madrid Statement on Poly- and Perfluoroalkyl Substances (PFASs). Green Science Policy Institute. <https://greensciencepolicy.org/our-work/science-policy/madrid-statement/>
- European Commission (2020). Chemicals Strategy of Sustainability. https://environment.ec.europa.eu/strategy/chemicals-strategy_en#ecl-inpage-238
- European Commission. Implementation of the Chemicals Strategy. https://environment.ec.europa.eu/strategy/chemicals-strategy/implementation_en

- **Assessment and selection of alternatives to POP-PFASs**

- ChemSec. Beyond PFAS: The Safer Alternatives. <https://chemsec.org/knowledge/beyond-pfas/>
- Zero Pollution of Persistent, Mobile Substances (ZeroPM). Alternative Assessment Database. <https://zeropm.eu/alternative-assessment-database/>
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- Stockholm Convention. Acceptable Purposes: PFOS, its salts and PFOSF. <https://www.pops.int/Implementation/Exemptions/AcceptablePurposes/AcceptablePurposesPFOSandPFOSF/tabid/794/Default.aspx>
- Stockholm Convention. Register of Specific Exemptions: Perfluorooctanoic acid (PFOA), its salts and PFOA-related compounds. <https://www.pops.int/Implementation/Exemptions/SpecificExemptions/PFOARoSE/tabid/8363/Default.aspx>

- **Application of BAT/BEP in needed exempted production/uses of PFAS**
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- **Useful links**
 - [Developing Integrated Action Plans for NIPs 3: Unintentional POPs \(UPOPs\)](#)
 - [Developing Integrated Action Plans for NIPs 4: Per- and Polyfluoroalkyl Substances \(PFASs\) and Synergies with the Global Framework on Chemicals](#)

If you have any questions or comments, please contact the GGKP team.

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