POPRC-21 FINAL

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Summary of the 21st Meeting of the Persistent Organic Pollutants Review Committee (POPRC-21): 29 September – 3 October 2025

Persistent organic pollutants (POPs) are an especially dangerous set of chemicals. They are toxic, bioaccumulate, persist in the environment, and travel to remote areas. Before many POPs were identified and regulated, their long life and effectiveness made them useful industrial chemicals and pesticides. But once their negative effects on human health and the environment were understood, the need for regulation soon followed. As more chemicals are identified as POPs, more stockpiles and products are found to still contain these chemicals. This is why the Stockholm Convention on POPs manages their entire lifecycle: production, use, disposal, and the steps in between.

The POPs Review Committee (POPRC) provides scientific and technical advice to support this lifecycle approach. Originally, the POPRC's role was to identify new POPs using the Convention's criteria and to recommend whether the POP should be eliminated or restricted and whether any short-term, ongoing uses may be required. Over its 20-year history, Parties to the Convention entrusted the POPRC with additional work, including assessing the need for continued uses and addressing POPs in stockpiles, products, and waste.

At POPRC-21, several issues highlighted the growing challenges of eliminating POPs from increasingly complex global supply chains. With only one draft risk profile on the agenda, members and observers debated various aspects related to implementation, including the need for exemptions and revising indicative lists, as well as how best to collect information on complex chemical groups. In the end, POPRC members could not reach agreement and deferred the draft risk profile on polybrominated and mixed polybrominated/chlorinated dioxins and furans, with further intersessional work to focus on collecting information related to the link between the long-range environmental transport and adverse effects on human health.

POPRC-21 also adopted several decisions, including: recommending further intersessional work on the indicative lists of substances covered by several listings; information sharing with the Global Monitoring Plan Coordination Group; and improved data collection under Annex F to the Convention to better address growing concerns about POPs in stockpiles, products, articles in use, and waste. The Committee has adopted Terms of Reference (ToR) for the review of specific exemptions for perfluorooctane sulfonic acid (PFOS), its salts and perfluorooctane sulfonyl fluoride (PFOSF), and use of perfluorooctyl iodide (PFOI) for the production of perfluorooctyl bromide (PFOB). The POPRC will continue review of the ToR for conducting the review of the concentration limit and specific exemptions for medium-chain chlorinated paraffins (MCCPs) at POPRC-22 in 2026.

POPRC-21 convened from 29 September to 3 October 2025 at the headquarters of the Food and Agriculture Organization of the United Nations (FAO) in Rome, Italy. Attendees included 30 members and 109 observers from 56 entities.

There are 31 members of the Committee: Karina Miglioranza (Argentina), Artak Khachatryan (Armenia), Valentina Bertato (Belgium), Bertin Dossa Bossou (Benin), Joswa Aoudou (Cameroon), Andrew Beyak (Canada), Cecilia Andrea Aburto Schweitzer (Chile), Xuezhi Xiao (China), Boris Ávila Taborda (Colombia), Katarína Řiháčková (Czechia), Thabile Ndlovu (Eswatini), Timo Seppälä (Finland), Lamin Jaiteh (The Gambia), Caren Rauert (Germany), Suresh Lochan Amichand (Guyana), Amit Raj (India), Witta Kartika Restu (Indonesia), Kazuhide Kimbara

In this Issue

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(Japan), Rima Mustafa AlHindi (Jordan), John Mumbo (Kenya), Martien Janssen (Netherlands), Peter Dawson (New Zealand), Hassan Azhar (Maldives), Magdalena Frydrych (Poland), Doaa F.Y Abdallah (State of Palestine), Bondi Nyuma Gevao (Sierra Leone), Andreas Buser (Switzerland), Razaz Ibrahim Mohamed (Sudan), Victorine Pinas (Suriname), Chalongkwan Tangbanluekal (Thailand), and Nosiku Munyinda (Zambia).

A Brief History of the POPRC

During the 1960s and 1970s, the use of chemicals and pesticides in industry and agriculture increased dramatically. This upward trend continues today. A category of chemicals known as POPs attracted international attention due to a growing body of scientific evidence indicating that exposure to very low doses of POPs can lead to cancer, damage to the central and peripheral nervous systems, diseases of the immune system, reproductive disorders, and interference with infant and child development.

POPs are chemical substances that persist in the environment, bioaccumulate in living organisms, and adversely affect human health and the environment. POPs are capable of long-range environmental transport (LRET) to regions where they have never been used or produced and, consequently, pose threats to the global environment. Given these characteristics, the international community called for urgent global action to reduce and eliminate their release.

The UN Environment Programme's Governing Council launched negotiations on a legally binding instrument in February 1997. The Stockholm Convention was adopted in May 2001, entered into force on 17 May 2004, and currently has 186 parties. The Convention lists chemicals in three annexes: Annex A lists chemicals to be eliminated; Annex B lists chemicals to be restricted; and Annex C calls for minimizing unintentional production and release of listed chemicals. When adopted in 2001, 12 POPs were listed in these annexes, including:

- pesticides: aldrin, chlordane, DDT, dieldrin, endrin, heptachlor, mirex, and toxaphene;
- industrial chemicals: hexachlorobenzene and polychlorinated biphenyls (PCBs); and
- unintentionally produced POPs: dioxins and furans.

Role of the POPRC: The Stockholm Convention specifies a procedure for identifying and listing additional POPs. At the first meeting of the Conference of the Parties (COP), held in Punta del Este, Uruguay, in May 2005, the POPRC was established to consider additional substances nominated for listing under the Convention.

The Committee is comprised of 31 experts nominated by parties from the five UN regional groups and reviews nominated chemicals in three stages. The Committee first determines whether the substance fulfills the screening criteria detailed in Annex D of the Convention, relating to the chemical's persistence, bioaccumulation, potential for LRET, and adverse effects on human health and/or the environment. If a substance is deemed to fulfil these requirements, the Committee then drafts a risk profile according to Annex E to evaluate whether the substance is likely, as a result of its LRET, to lead to significant adverse human health and/or environmental effects and, therefore, warrants global action.

Finally, if the POPRC finds that global action is warranted, it develops a risk management evaluation according to Annex F, reflecting socioeconomic considerations associated with possible control measures. Based on this, the POPRC decides to recommend whether the COP should list the substance under Annexes A, B, and/or C to the Convention.

The POPRC has met annually since its establishment.

Chemicals Reviewed in the POPRC Process

To date, the COP has listed all 22 POPs recommended by the POPRC. For most parties, an amendment listing a new POP enters into force automatically within a set time frame after the COP adopts the decision. However, some parties can opt out of an amendment, and other parties submitted a notification when they ratified the Convention that they must opt in to each amendment.

POPRC-1 to 4: The first four meetings of the POPRC convened between 2005 and 2008. During this time, the POPRC recommended that the COP consider listing the following POPs under Annexes A, B, and/or C: alpha and beta hexachlorocyclohexane; chlordecone; commercial octabromodiphenyl ether (c-octaBDE); commercial pentabromodiphenyl ether (c-pentaBDE); hexabromobiphenyl (HBB); lindane; pentachlorobenzene (PeCB); and perfluorooctane sulfonic acid (PFOS), its salts, and PFOSF. At POPRC-2, the Committee also agreed to create a draft risk profile for short-chain chlorinated paraffins (SCCPs), an issue that would return to the POPRC's agenda several times before the Committee decided to recommend SCCPs for listing at its twelfth meeting. At POPRC-4, the Committee evaluated a proposal to list endosulfan under the Convention and agreed, by majority vote, that it met the Annex D screening criteria.

POPRC-5 to 9: These POPRC meetings convened between 2009 and 2013. During this time, the POPRC recommended that the COP consider listing the following POPs under Annexes A and/or C: hexabromocyclododecane (HBCD), with specific exemptions; chlorinated naphthalenes (CNs), and hexachlorobutadiene (HCBD). The POPRC agreed to recommend listing endosulfan by a majority vote at both the draft risk profile and risk management evaluation stages.

At these meetings, the commercial mixture of decabromodiphenyl ether (c-decaBDE) advanced to the draft risk profile stage. Pentachlorophenol (PCP), its salts and esters advanced to the draft risk management evaluation stage.

At POPRC-7, for the first time, the Committee considered POPs alternatives, with assessment of alternatives to: PFOS in open applications, DDT, and endosulfan.

POPRC-10 to 14: These POPRC meetings were convened between 2014 and 2018. During this time, the POPRC recommended that the COP consider listing the following POPs in Annexes A and/or C: dicofol; decaBDE; HCBD; SCCPs; perfluorooctanoic acid (PFOA), its salts, and PFOA-related compounds;

In 2018, the Committee adopted the risk profile for perfluorohexane sulfonic acid (PFHxS), its salts, and PFHxS-related compounds.

POPRC-15: At its 2019 meeting, the POPRC recommended listing PFHxS, its salts, and related compounds in Annex A of the Convention without specific exemptions. The Committee also concluded that proposals to list methoxychlor and Dechlorane Plus and its syn- and anti-isomers satisfied the Annex D screening criteria and should move forward to the draft risk profile stage.

POPRC-16: This meeting was held online during the COVID-19 pandemic in January 2021. Delegates agreed that UV-328 met the Annex D criteria, although questions remained about whether transport via plastics in the ocean and seabirds represented a viable mechanism for LRET. As a result of this question, the POPRC

agreed to prepare a guidance document on LRET. The POPRC also agreed that methoxychlor met Annex E criteria, but debate about the evidence base for adverse effects of Dechlorane Plus meant that the chemical remained at the Annex E stage.

POPRC-17: This meeting was held in a hybrid format, with in-person participation in Geneva in January 2022. The POPRC agreed to recommend listing methoxychlor in Annex A without specific exemptions. It also agreed that Dechlorane Plus and UV-328 warrant global action, due to the potential for adverse effects from their LRET. POPRC-17 also agreed that the following chemicals met the Annex D criteria: chlorpyrifos; chlorinated paraffins with carbon chain lengths in the range C14-17 and chlorination levels at or exceeding 45% chlorine by weight (MCCPs); and long-chain perfluoroalkyl carboxylic acids (LC-PFCAs).

POPRC-18: In September 2022, the POPRC considered three draft risk profiles, adopting the LC-PFCAs and MCCPs risk profiles and deferring consideration of chlorpyrifos, on which some members raised questions about the severity of adverse effects.

POPRC-19: POPRC-19 met in October 2023 and adopted the draft risk management evaluations for LC-PFCAs and MCCPs, but requested additional work related to specific exemptions for LC-PFCAs and the chemical identity of MCCPs. The draft risk profile for chlorpyrifos was adopted. Members began their consideration of POPs in stockpiles, articles-in-use, and products and also requested further intersessional work.

POPRC-20: POPRC-20 met in September 2024 and recommended that the COP consider listing the following three POPs: MCCPs, LC-PFCAs, and chlorpyrifos. It also agreed that polybrominated and polybrominated/chlorinated dioxins and furans meet Annex D criteria, and recommended further work on addressing POPs in stockpiles, products, articles in use, and waste.

POPRC-21 Report

On Monday, 29 September 2025, POPRC-21 Chair Peter Dawson (New Zealand) welcomed POPRC members, including 11 new experts, and outlined the technical agenda for the meeting with only one draft risk management profile and several other issues scheduled, including POPs in stockpiles, products and articles, and in wastes, and ways of improving data submission on the socioeconomic considerations.

Executive Secretary Rolph Payet welcomed participants, highlighting the important role of the POPRC as the science-policy interface for the Stockholm Convention. He underscored the role of science and knowledge for achieving SDGs, noting that pollution is a major driver of biodiversity loss recognized under the Kunming-Montreal Biodiversity Framework. Grateful for Chair Dawson's leadership, he recognized the important contributions of all stakeholders and welcomed new POPRC members.

The POPRC adopted its agenda (UNEP/POPS/POPRC.21/1), and agreed to the scenario note (INF/1) and schedule (INF/2) for the meeting.

On rotation of membership, the Secretariat informed that 15 experts were appointed as POPRC members by the COP, with relevant information presented in UNEP/POPS/POPRC.21/INF/3. Magdalena Frydrych (Poland) was appointed as a Vice-Chair and Rapporteur. Chair Dawson invited informal consultations on the new interim Chair.

Review of the Outcomes of Stockholm Convention COP-12 that are relevant to the work of the Committee

On Monday, the Secretariat introduced the outcomes of COP-12 (UNEP/POPS/POPRC.21/INF/4). They reported that the COP agreed to list the three chemicals recommended for listing by the POPRC in Annex A, along with additional specific exemptions beyond those recommended by the POPRC. They also reported that the COP amended the UV-328 listing to allow for a new specific exemption. Chair Dawson noted that it is the prerogative of the Parties to ask for additional specific exemptions, but also recalled the limited time that POPRC had to review the need for all the uses for the chemicals.

Jaiteh observed that the POPRC recommended exemptions from a scientific perspective and that the political considerations at the COP will differ. He urged POPRC members to inform their COP delegates of the information underpinning the POPRC's recommendations.

Mumbo asked if the POPRC would discuss the new exemption for UV-328. Chair Dawson explained that the COP did not give POPRC a mandate to consider the exemption, and Annex A was already amended to include it.

Seppälä observed that several countries came to the COP to get exemptions that were not considered by the POPRC because the countries only reviewed the uses of the POPs after the POPRC recommendation for listing was concluded, or because information was not forthcoming from some sectors, such as defense. He also observed that several industry sectors are not participating in the POPRC, and suggested discussing how to engage these groups.

Xiao recalled that most experts participated in the first week of the COP because the second week was reserved for the Rotterdam and Basel Conventions. He highlighted the challenges of gathering information on some applications from end-users, sometimes due to national policies.

Aoudou welcomed the COP's flexibility in taking into account proposals from many parties, noting that some exemptions presented at POPRC-20 were not taken into account by the Committee despite political, administrative, and scientific evidence.

Seppälä recalled a case where industry data was not included in the risk management evaluation, calling for a better process. Chair Dawson noted that data collection from industry and other stakeholders can be discussed in more detail under the relevant agenda item.

INTERNATIONAL POLLUTANTS ELIMINATION NETWORK (IPEN) stressed that many exemptions were not reviewed by the POPRC, were not justified, and were added "just in case," undermining the rigorous review process and credibility of the Convention.

An observer from SOUTH AFRICA noted that POPRC members should be the first to protect the integrity of the Convention, lamenting that at the COP, it looked like the work of the Committee was undone. Later echoed by Munyinda, she suggested that many exemptions were not justified, and called for more stringent requirements for exemptions including presenting of evidence that several alternatives were assessed.

The POPRC took note of the outcomes of COP-12.

Technical Work

Consideration of the draft risk profile for polybrominated dibenzo-p-dioxins and dibenzofurans (PBDD/Fs) and mixed polybrominated/chlorinated dibenzo-p-dioxins and dibenzofurans (PBCDD/Fs): The Secretariat presented the draft risk management profile (UNEP/POPS/POPRC.21/2) and additional information (INF/5 and INF/6). Chair of the intersessional working group Lamin Jaiteh and drafter Andreas Buser presented the draft risk profile. They noted the scope is polybrominated and mixed polybrominated/chlorinated dioxins and furans, which are unintentionally produced during a variety of industrial processes, including uncontrolled waste burning and recycling, production of polybrominated flame retardants, extrusion and forming of plastics. Outlining data on persistence, Buser stated that monobrominated dioxins and furans are unlikely to meet the criteria, tetra- to octa- definitely meet the persistence criteria, while di- and tri-halogenated dioxins and furans are likely meeting the criteria, but with a lower level of confidence. On bioaccumulation and adverse effects, Buser stressed it is one of the most toxic chemicals reviewed by the POPRC, noting that for many congeners data is not available so the read-across method was applied. Noting limited monitoring data, Buser stated that LRET criteria are met due to atmospheric LRET and transport through plastic debris.

Frydrych and Kimbara agreed that the chemical group could move to the next stage of review, and welcomed discussion on the scope and data from a scientific perspective.

Xiao characterized the information in the draft risk profile as "fragmented" and questioned whether there is enough information to draw conclusions for the whole group of substances. Bossou lamented the lack of information from Africa and the need for analytical standards for these chemicals. Munyinda noted the lack of available monitoring data, but supported moving to the next stage of review.

Xiao suggested that only tetra- to octa-PBDDs and PBCDDs seem to meet the persistence criteria. Seppälä recalled that the scope of the listing is a common challenge for the POPRC when considering large groups of chemicals. He acknowledged that there was limited data in some cases, because this is a large group that is unintentionally produced.

On adverse effects, Raj noted a lack of experimental and epidemiological studies. Janssen queried why the read-across method would underestimate toxicity. Xiao questioned the use of the read-across method, saying it could introduce uncertainties. Munyinda supported the read-across method due to the known risks posed by chlorinated dioxins and furans.

On LRET, Xiao said that the conclusion is based on indirect evidence, and it was unclear if the molecule has LRET potential other than being transported by migratory species. Janssen agreed that the molecules could reach remote regions but questioned their significance and noted the lack of information on natural sources, such as fires. Seppälä recalled that plastics as a transport mechanism was included in the LRET documents that the POPRC recently adopted.

An observer from the RUSSIAN FEDERATION rejected the use of modelling studies instead of experimental studies to identify hazards. They said the half-life reported was an estimate only and called for differentiating the congeners, especially regarding their persistence.

An observer from AUSTRIA suggested further elaboration for some congeners might be required. She said the read-across approach is acceptable since the draft risk profile includes evidence that the brominated substances share the same mode of action to bind to the molecular receptor as the chlorinated dioxins and furans.

IPEN reported that their research has detected these chemicals in food, and that dietary intake for young children may already exceed the tolerable weekly intake. She stressed Convention Article 8, which states that a lack of full scientific certainty should not prevent the proposal from proceeding to the next stage of review.

An observer from China stated further work is required to define and distinguish the various halogenated PBDDs, particularly because some have low toxicity. She expressed concern that the LRET information relies on modelling and said the risk to remote regions is not clear.

An observer from the US said there is sufficient information to conclude that the criteria are met for tetra-PBDDs and PBCDDs and above, suggesting a refinement in scope might be the best way forward.

Responding to the comments provided, Buser acknowledged that the data is fragmented because there is a lack of data for this very large group. He said that up to 4,200 congeners are theoretically possible, more than there is data available for, and stressed the precautionary principle and Convention Article 8 (Listing of chemicals in Annexes A, B and C). He noted that not all the congeners have the same toxicity but characterized those with high toxicity as some of the most toxic that POPRC has reviewed recently. He supported a suggestion to review the scope of the substances under review.

Chair Dawson noted comments on the lack of data covering the entire range of chemicals in the group, and on LRET and toxicity. He said there is clearly difficulty in monitoring some of these chemicals and with analysis, given the lack of analytical standards. But he also recalled that full scientific uncertainty should not impede moving to the next stage.

A contact group was established, chaired by Jaiteh, to review the draft risk profile and draft a decision.

On Friday, Jaiteh reported that members could not agree on whether criteria on LRET and adverse effects to human health were met and stated that the draft decision (CRP.7) and draft risk profile (CRP.8) are available for discussion. Chair Dawson noted brackets around the respective text, as well as proposed reference to scientific uncertainty, and invited comments.

Many members supported removing the brackets and moving the proposal to the next stage, citing similar characteristics to already listed dioxins and furans. Munyinda requested opponents to provide evidence that shows criteria are not met. Seppälä noted, later confirmed by Chair Dawson, that the Convention requires adverse effects to humans and/or environment, which means that either one is enough to move the chemical to the next stage of review.

Raj, Xiao, and Azhar objected, stating that the evidence provided is not convincing. Raj cited several studies that state "little is known about these substances," and "further research investigating health effects is warranted where there is evidence of exposure." Upon request from Chair Dawson, Raj clarified these studies were not included in the draft risk profile and were not discussed in the contact group. Dawson stated that in such case, these studies cannot be discussed in plenary as members hadn't reviewed them, and Frydrych lamented that all relevant research should be shared in

advance in the spirit of building trust and working together. Xiao noted the data in the draft risk profile is fragmented, and certain causal links are missing. He also highlighted that control methods for dioxins and furans already listed in the Stockholm Convention account for PBDD/Fs and PBCDD/Fs, and specific monitoring is very costly with limited added benefit.

Munyinda pointed that objecting members cannot provide information that disproves LRET and adverse effects to human health, stating that studies that are available are clear and lack of scientific certainty should not prevent the proposal from moving forward. Xiao stressed that "burden of proof" lies within the proponents of the chemical moving forward. Ndlovu and Frydrych lamented that in the contact group, all members agreed that some congeners do meet all criteria.

Munyinda queried what kind of additional information could be satisfactory for Raj and Xiao, who both preferred to defer considerations to next year, if the draft risk profile is indeed deferred. Raj pointed to the Convention, and Xiao stressed that he does not deny LRET and adverse effects to human health, he just finds the evidence is not strong enough. Particularly, he mentioned lack of studies on cancer in humans and the need to rule out local sources of emissions.

Chair Dawson suggested two options: either deferring this draft risk profile or adopting it with a note that more information will be collected on certain aspects with a potential to amend draft risk profile at a later stage.

Beyak, Ndlovu, Bertato, Munyinda, Frydrych, Miglioranza, Ávila Taborda, Kimbara, Seppälä, Buser, Říháčková, Khachatryan, Amichand, Pinas, and Aburto Schweitzer supported option two.

Raj queried how the POPRC can adopt something on which there is no consensus, and asked for clarifications on what would happen if no additional information is available later and the Committee had already adopted something incomplete. Xiao rejected the notion of having to pick an option, stressing that he is against voting and that all decisions should be adopted by consensus. He stated he cannot adopt the draft risk profile.

Raj noted the precedent of deferring the decision, as happened with chlorpyrifos. Chair Dawson confirmed that in the past the POPRC has deferred its consideration.

Chair Dawson asked the Secretariat to show a draft decision that would adopt the risk profile, decide to move to the Annex F stage, begin work on the draft risk management evaluation, and gather information from the intersessional working group that prepared the risk profile to explore the linkage between LRET and adverse effects and, if necessary, revise the risk profile.

Raj said that the contact group did not consider this decision text and asked for CRP.7 to be put on the screen. Beyak stated that the draft decision is in line with the discussions in plenary. Xiao supported deferring the POPRC's consideration because there was no consensus. Chair Dawson observed that most members would like to approve the draft risk profile.

Considering CRP.7, Chair Dawson outlined the two options it contains for adopting the risk profile or deferring consideration. Frydrych and Beyak underlined that there was enough data to adopt the draft risk profile.

Chair Dawson summarized the options discussed so far: to defer consideration and gather information; to defer the decision without collecting information; and to adopt the risk profile and collect information. Xiao rejected the idea of offering options because it could be perceived as a vote, stressing that deferring consideration is the usual option if no consensus is achieved.

Buser recalled that when a decision is deferred, it is because the Committee could not agree on one of the four POPs criteria and stated that this was not the case at this meeting because all agreed that the criteria were fulfilled, with the exception of one member who disagreed on human health.

Chair Dawson observed lack of consensus and suggested deferring the decision to the next meeting and establishing an intersessional working group to work further on the draft risk profile.

Buser suggested collecting more specific information on the link between LRET and adverse effects, and adverse effects on humans. This specification was adopted as part of the decision.

Final Decision: In its final decision (CRP.7), the POPRC decides to defer its decision on the draft risk profile on PBDD/Fs and PBCDD/Fs to POPRC-22. It also decides to establish an intersessional working group to review and update the draft risk profile, in particular the linkage between LRET and adverse effects to humans, and invites parties and observers to submit relevant information.

Evaluation of the continued need for perfluorooctane sulfonic acid (PFOS), its salts and perfluorooctane sulfonyl fluoride (PFOSF) for the various acceptable purposes and specific exemptions pursuant to paragraphs 5 and 6 of part III of Annex B to the Convention: The Secretariat introduced relevant documents (UNEP/POPS/POPRC.21/3 and INF/7), recalling the mandate for the POPRC to agree on Terms of Reference (ToR) for the continued evaluation, and to establish an intersessional working group to conduct agreed activities. Chair Dawson reminded parties that, except for an extension until June 2030 granted to the Republic of Korea by the COP, the exemption for fire-fighting foams is set to expire by the end of 2025, just like the exemption for metal plating. One of the few remaining acceptable purposes beyond 2025, according to Dawson, would be for leaf-cutting ants. He invited comments on the outline of the report, and on the format and process of information collection.

Bertato urged for a focus on the remaining acceptable use of PFOS, which is to produce PFOSF, because it is a major source of PFOS emissions. She called for updated data on production to assess trends and a decision on whether it warrants moving from acceptable use to a time-limited specific exemption.

Beyak suggested adding human biomonitoring to data collection methods. Munyinda, recalling the capacity needs of developing countries on monitoring in both humans and the environment, suggested adding language on capacity for monitoring in the environment and biological systems.

The INTERNATIONAL PANEL ON CHEMICAL POLLUTION reported that imports of PFOS/F to Brazil from China have been declining, with zero import in 2023 and 2024 indicating that stocks in China are depleted. An observer from CHINA confirmed that as of December 2023, China is not producing PFOS or PFOSF, and there is no export or import.

IPEN underscored the need to collect information on the broad set of alternatives and make sure the exemptions are fully justified. She also suggested shorter timelines for exemptions and allowed uses.

An observer from AUSTRIA suggested including a question on whether countries set unintentional trace contaminants in mixtures, products, and articles in the information collection form.

An observer from the UK queried the process of data collection and multiple rounds of input on draft ToRs. The Secretariat outlined the process, noting it follows the same pattern as for other chemicals, and observed that it prescribes two rounds of comments on ToRs from the intersessional working group. An observer from the UK suggested one round of review to streamline the process, stating that not much data was available, and, echoed by Buser, supported moving the substance from Annex B to Annex A.

Bertato supported streamlining rounds of comments and suggested that there will be more data on PFOS than on PFOA. Janssen, recognizing the need to simplify the process, noted the need to keep questions on production as there may be other parties that still produce PFOS and suggested more direct questions on alternatives. Seppälä stated that since very small quantities are used for processes like metal plating, even if production ceases, stockpiles can still last a long time.

Chair Dawson, noting several suggestions from the floor, asked the Secretariat to revise the documents and issue a conference room paper (CRP) to be discussed in plenary.

On Friday, the Secretariat presented CRP.3 with changes made to the proposed draft ToR in the pre-session document. Major changes included: in the steps related to rounds of review, two rounds of review were replaced by one open to both the intersessional working group and stakeholders; the outline of the report was removed; and the schedule modified accordingly.

POPRC agreed to ToR as outlined in the CRP.3, and adopted the decision as outlined in UNEP/POPS/POPRC.21/3.

***Final Decision*:** In its final decision (UNEP/POPS/POPRC.21/3), POPRC: agrees to the ToR for conducting evaluation of the continued need for PFOS and PFOSF for the various acceptable purposes and specific exemptions; decides to establish an intersessional working group; and invites Parties and observers to provide relevant information by 5 December 2025.

Review of the specific exemption for the use of perfluorooctyl iodide (PFOI) for the production of perfluorooctyl bromide (PFOB) for the purpose of producing pharmaceutical products pursuant to paragraph 3 of part X of Annex A to the Convention: On Tuesday, the Secretariat introduced the process to review the specific exemption for the use of PFOI for the purpose of producing pharmaceutical products (UNEP/POPS/POPRC.21/4) and the draft terms of reference (INF/8).

Chair Dawson noted that this is the first time the POPRC has reviewed this specific application.

CONFERENCE OF FLUOROCHEMICAL PRODUCT JAPAN (FCJ) outlined the process that uses PFOI as an intermediate to produce PFOB, noting that PFOI is unintentionally produced during telomerization. They stressed that, while alternative processes have been considered, there is no viable option with current technology, and emphasized that PFOB is not a PFOA-related substance or a POP.

INTERNATIONAL FEDERATION OF PHARMACEUTICAL MANUFACTURERS AND ASSOCIATIONS (IFPMA) underscored that inhalers are essential for patients with chronic obstructive pulmonary disease and asthma. They explained that around 15 tons of PFOB are used annually for aerosphere production as part of global inhaler production. They reported that, due to gaseous capture technology, less than 6g of PFOI is estimated to be released into the environment and less than 2ppb of PFOI is in the final inhaler device. They further reported on their PFOB replacement program, which is trialing alternative processes at scale in the global supply chain, and said that there should be more certainty by the next review of the PFOI exemption.

Chair Dawson welcomed the detailed technical information that enables POPRC to consider alternatives during the review of the continued need for specific exemptions.

Bossou drew attention to the need for capacity-building to monitor and manage medical wastes. He queried the length of the specific exemption and Chair Dawson said that the 2036 deadline is in the Convention as the latest date to end this exemption.

Bertato asked if the volumes reported were for the industry association only or all production and use. Ndlovu and an observer from SOUTH AFRICA asked if the final medication has PFOB or if it is only used for pore formation. Janssen asked if there have been studies of occupational exposure.

Chair Dawson summarized the questions for the industry, recalling that one site in Japan produces PFOI and another produces PFOB from PFOI. He asked how many companies use PFOB, in which countries, and if PFOB is present in the medicine.

An observer from JAPAN outlined the country's regulatory measures regarding PFOI, saying that PFOI production is only permitted for the production of PFOB for pharmaceutical purposes until 2036. An observer from the NETHERLANDS asked if Japan could explain how many permits have been granted for this use and when they will expire.

An observer from SOUTH AFRICA called for the industry to intensify efforts and research into safer alternatives. She also drew attention to concerns with metered dose inhalers in discussions under the Montreal Protocol on Substances that Deplete the Ozone Layer.

An observer from the US supported the proposed way forward, but suggested removing references to Annex D in the section on alternatives to avoid suggesting that a chemical has been assessed against the criteria.

IFPMA responded that the Association is aware of two companies that use PFOB, one using it to produce inhalers as described in the presentation, and another for cystic fibrosis related inhalers. They clarified that the first company has two spray drying sites, one in the US and one in Sweden, but it was unclear how many companies were involved in the cystic fibrosis inhalers. They said that PFOB is used as a processing aid, and specification tests show that a final inhaler has less than 0.001% residual PFOS in the entire can.

Kimara and Gevao queried the industry plans to reduce PFOI content in PFOB if they cannot identify a way to eliminate this use. FCJ offered to share information on how it could further reduce the PFOI content, saying that pharmaceutical companies are trying to reduce the PFOB content in the final product. IFPMA stated that the focus is on replacing PFOB in the production of porous particles, and that replacing the entire porous particle process is another option that would require additional clinical trials and approvals.

Members debated whether there is a need for an intersessional process for this specific exemption. Seppälä, Janssen, and Bertato supported a streamlined process or asking the Secretariat to gather information, observing that only one company is separating the PFOI during the telomerization process to produce PFOB and, therefore, Parties may have very little information to provide.

Munyinda said there may be more than one country manufacturing PFOI and said that companies may have more information than industry associations. Xiao observed uncertainties in production, saying that their outreach to experts did not suggest any production in China, but there was some information that could indicate otherwise. Chair Dawson observed that seven Parties have registered for this specific exemption. Seppälä and Janssen said the seven parties that registered would be importing, and not producing, the PFOI to produce PFOB. Bertato confirmed this is the case for the EU.

Seppälä stated that past practice shows that POPRC only hears from some industry groups and said there might be additional PFOI producers and pharmaceutical uses, and said intersessional work could gather this information.

Chair Dawson requested the Secretariat to revise the draft ToR for the intersessional process for members' consideration, along with the draft decision.

On Friday, the Secretariat presented revised ToR contained in CRP.4. The main changes included consolidation of rounds of review, removing the outline, and revised forms for collecting information.

POPRC agreed to the ToR and adopted draft decision as outlined in UNEP/POPS/POPRC.21/4.

Final Decision: In its final decision (UNEP/POPS/POPRC.21/4), POPRC: agrees to the ToR for conducting evaluation of the continued need for specific exemption for the use of PFOI to produce PFOB for the purpose of producing pharmaceutical products; decides to establish an intersessional working group; and invites Parties and observers to provide relevant information by 5 December 2025.

Review of MCCPs pursuant to paragraph 2 of part XIII of Annex A to the Convention, and of the specific exemptions for MCCPs pursuant to paragraph 12 of part XIII of Annex A: On Tuesday, the Secretariat introduced the process for the review (UNEP/POPS/POPORC.21/5) and draft ToR (INF/9). She recalled that the COP mandated two reviews, first, for the threshold for substances or mixtures at a concentration greater than 3% by weight, to be reviewed by COP-14 and, second, the specific exemptions to be reviewed at COP-15. Chair Dawson asked for views on whether information for the threshold review should begin at this time, noting that the COP could consider reducing the threshold.

On the timing of the threshold review, several supported waiting until 2027, to provide time for implementation experiences to inform the review and for new information to be generated.

On the information to be collected for the threshold review, several members questioned some of the information suggested in the draft. Xiao, Seppälä, and others recalled that the 3% threshold was set to facilitate ratification of the amendment. Xiao, Frydrych, and observers from the US and CHINA said that gathering information on the POPs properties of substances under the 3% threshold is redundant because POPRC and the COP already agreed that they meet the criteria.

Bertato and an observer from the EU said the most relevant information would be whether manufacturers can produce chlorinated paraffin feedstock with a lower concentration than the identified POP congeners. Kimbara said the key will be learning what parties and manufacturers have been able to achieve, since the threshold was set based on technical feasibility of production processes.

Mumbo, Azhar, Xiao, Raj, and an observer from SOUTH AFRICA stressed the need to consider developing countries' capacity to respond to these questions, especially given the complexity of the MCCP listing.

Raj said that the focus of the review should be to increase or extend exemptions rather than decrease the concentration threshold, given the many uses of MCCPs and high costs of research and development.

ALASKA COMMUNITY ACTION ON TOXICS stressed the review should begin immediately because learning from companies that have been able to use alternatives could facilitate the transition by other companies. They called for the threshold to be lowered to 0.1% for the sum of the congeners.

An observer from the UK noted the benefits of revising the ToR at this meeting to capture the views of outgoing members.

INTERNATIONAL COORDINATING COUNCIL FOR AEROSPACE INDUSTRIES ASSOCIATIONS (ICCAIA) relayed its experience in gathering information for the 82 CAS (Chemical Abstracts Service Registry) Numbers that it identified and the additional long-chain chlorinated paraffins (LCCPs) that could contain MCCPs. They called for a clear identification of what substances could contain MCCPs when requesting information.

EUROPEAN AUTOMOBILE MANUFACTURERS' ASSOCIATION (ACEA) concurred that it is challenging to obtain information from its supply chain, particularly for LCCPs, for which there is no legal requirement to track. They said this causes pushback from the global supply chain, complicating efforts to gather the necessary information.

On the ToR for review of specific exemptions, Munyinda and Mumbo expressed concerns over developing countries' capacity on compliance, monitoring, and regulatory measures, stressing the urgency to start the review process. Frydrych reflected on this request, noting that the review could start earlier but not too soon, suggesting 2028 instead of the current 2029 timeline.

Chair Dawson proposed establishing a contact group, chaired by Boris Ávila Taborda, with a mandate to revise the draft ToR and review the draft decision.

On Friday, the Secretariat presented revised ToR (CRP.5), and revised draft decision (CRP.2).

The draft ToR will be further considered at the POPRC-22, and will be referenced in the draft decision as a starting point of the discussions at the POPRC-22.

Final Decision: In its final decision (CRP.2), the POPRC takes note of the draft ToR for conducting the review of the concentration limit and specific exemptions for MCCPs, and decides to further consider the draft ToR at POPRC-22.

Indicative lists of substances covered by the listings of long-chain perfluorocarboxylic acids (LC-PFCAs), their salts and related compounds; perfluorooctanoic acid (PFOA), its salts and PFOA-related compounds; and perfluorohexane sulfonic acid (PFHxS), its salts and PFHxS-related compounds: The Secretariat presented relevant documents (UNEP/POPS/POPRC.21/6, INF/10, INF/11, INF/12, and INF/13), recalling the mandate for the POPRC to take note of the indicative lists and consider establishing an intersessional working group to continue the review. The Chair of the intersessional working group Thabile Ndlovu and drafter Sandi Moser (incoming member) presented main revisions, including explanatory notes on the chemical identity to

exclude PFOA from the listing of LC-PFCA, noting that the list is not exhaustive, reclassifying some substances, and referring to proposed additions to the indicative lists.

Xiao queried the role of indicative lists, whether they are part of the Convention and have to be adopted by the COP. He recalled COP negotiations on PFOA, noting that PFOS and its salts should not be mentioned as a related compound since it is excluded from PFOA listing. He also highlighted some duplication in the PFOA and LC-PFCA lists and stressed that this might create implementation uncertainty and potentially trigger non-compliance. Buser, citing the COP decision and later echoed by an observer from the US, responded that the list is indicative and is meant to guide the parties in the implementation. Chair Dawson clarified that the obligation stems from the definition of PFOA in the listing, and the indicative list is meant to support parties in the process of implementation.

On the PFOA precursors list, Buser suggested adding one of the precursors back to the list.

Mumbo queried whether it is possible to add uses to the list of substances, to ensure it can be used by policymakers, enforcers, and industry. Moser responded that the lists followed the established format, and Buser stated that adding uses to each congener would be an impossible task.

An observer from CHINA highlighted that PFOS and PFOSF were introduced as substances not covered by the PFOA listing, so the PFOA list should not include both substances that are and are not covered by the listing. They stated it is not needed to include precursors to PFOS based on its definition and called for reviewing lists for PFOA and LC-PFCAs to remove duplication. They stressed that uncertainty might create implementation confusion and lead to non-compliance.

An observer from SWEDEN welcomed the lists on PFOA and PXHxS, highlighting some duplications in the PFOA and LC-PFCA lists, and noted that per- or polyfluorinated aldehydes and ketones should not be regarded as LC-PFCAs.

PLASTICS EUROPE welcomed the addition of CAS Numbers to the list of LC-PFCAs. Stressing that analytical methods remain a challenge, he requested the POPRC to include standardized analytical methods to the indicative list. Buser, highlighting that it would be challenging, suggested compiling existing academic articles and databases.

Chair Dawson welcomed the comments and suggested establishing a contact group chaired by Thabile Ndlovu to discuss issues raised in plenary and revise the draft decision.

On Friday, the Secretariat informed that no CRP was prepared as the contact group agreed to the draft decision presented in UNEP/POPS/POPRC.21/6. Xiao stressed that the POPRC does not have the mandate to work on an indicative list of substances covered by the listing of PFOS/F, as this listing is very clearly defined in the Convention. He stressed that the legal status of such indicative lists in general is not clear and should potentially be further clarified by the COP. Janssen stated that the POPRC has the mandate to work on indicative lists, and Chair Dawson clarified that while there was no direct mandate, the PFOS/F list was prepared as part of the work on the indicative list of substances covered by the PFOA listing, since the PFOA listing in the Convention states it excludes PFOS/F.

The POPRC adopted the decision as amended by Xiao's proposal to remove text related to taking note of indicative list of substances covered by the listing of PFOS/F.

Final Decision: In its final decision (UNEP/POPS/POPRC.21/6), the POPRC:

- takes note of the indicative lists of substances covered by listings of LC-PFCAs, PFOAs, and PFHxS;
- invites Parties and others to submit to the Secretariat, by 31 March 2026, any new information or comments on these indicative lists; and
- decides to establish an intersessional working group to further review the indicative lists, taking into account any new information and comments received from Parties and others.

POPs in stockpiles, products and articles in use and in wastes: consideration of ways of enhancing the submission of information pursuant to Annex F to the Convention: On Wednesday, the Secretariat introduced the follow-up report on stockpiles, products and articles in use and in wastes, and consideration of ways of enhancing the submission of information specified in Annex F (UNEP/POPS/POPRC.21/7) and additional information (INF/14).

Chair Dawson clarified the aim of the discussion is to strengthen the POPRC's work on Annex F, which is based on information from Parties, observers, industries, and other stakeholders. He emphasized the importance of improved engagement with industry and for industry associations to effectively engage with their members throughout supply chains. Observing the complexities of supply chains, he noted the challenges Parties face in identifying the presence of a POP in their countries. He then invited comments on specific sub-items: information on uses and alternatives to chemicals proposed for listing; information on possible control measures, status of control and monitoring capacity; and information on waste and disposal implications.

Many members and observers noted the unique challenges that the complex chemical groups recently reviewed by the POPRC pose for the Committee's work. These challenges include the numerous applications of the groups, particularly the per- and polyfluoroalkyl substances (PFAS) groups and MCCPs, which require extensive outreach to industry associations and companies. Many members also highlighted that these chemical groups are used in industries with complex, globalized supply chains where information may be lost or unavailable to industry associations. Beyak expressed concern that these uncertainties in the supply chain limit the information available to POPRC, which in turn could lead to questions about the Committee's recommendations.

Seppälä and an observer from CANADA recalled the benefits of allowing for a two-year Annex F stage for some POPs to collect information and assess alternatives for some applications, noting that it would not be required in all cases.

Seppälä said it was ultimately the responsibility of parties to engage industry associations and companies, but acknowledged the challenge of gathering information from small and medium enterprises. Janssen questioned whether the Secretariat could assist with outreach, given the limited number of companies that produce these chemicals. An observer from the UK suggested a mandate to the Secretariat to conduct more proactive outreach and additional work for the Committee to identify which trade associations or industries may be interested in contributing to a candidate POP's review. An observer from SWEDEN drew attention to ongoing work under the Global Framework on Chemicals on improving transparency in supply chains.

Janssen, Rauert, Miglioranza, and observers from JAPAN and the UK suggested, based on their national experience, engaging industry early, at the Annex D or E stage.

Munyinda identified disclosure as a key barrier, particularly to know what products might contain POPs when they are imported. Munyinda, with Rauert, reported the benefits of working across government ministries to collect information and engage industry.

Xiao observed that it is easier to collect data after there is a legal requirement to regulate a substance or to disclose information about it, recalling the difficulties collecting information on MCCPs before the listing. He suggested that parties may ask for specific exemptions "just in case" because they are uncertain if they will need one.

Azhar, supported by observers from CANADA and the US, suggested revisiting and simplifying the form used to collect information during the Annex F stage. Azhar suggested adding guidance and examples and focusing on the core information required, while allowing for additional information to be provided. Janssen, supported by an observer from AUSTRIA, suggested gathering information on unintentional trace contamination.

An observer from the RUSSIAN FEDERATION suggested streamlining or removing the questions related to waste, while observers from CANADA and the UK observed the benefits of the information for the Basel Convention's work.

An observer from the US emphasized that the form should align with the Convention's requirements, including that "critical use" is left for parties to define, and that parties are not required to justify their need for a specific exemption. She urged a shift in mindset to be open to specific exemption proposals, saying that the goal is to "turn off the tap" in the long run, rather than minimizing small uses.

An observer from IRELAND relayed their recent experience with the semiconductor industry, which indicated it uses Dechlorane Plus and UV-328. They said the industry was aware of the ongoing reviews, but was notified late by a supplier outside of the EU.

An observer from SPAIN reported the annual meetings held with industry, academic, and NGO stakeholders, which build the trust needed to share information about chemicals and their uses.

An observer from JAPAN reported that they share information about POPRC reviews with their industries annually, and said that the Annex F review needs to gather sound information on the socioeconomic impacts to various sectors.

IPEN connected these discussions to the everyday experiences of people exposed to POPs, including exposures that last after the POPRC's work, and reminded of the need to consider the costs of safe waste management and health and other costs associated with ongoing use of POPs. They suggested: publicly available information systems, a requirement of what alternatives a party considered to justify a request for an exemption, and enhancing traceability in trade.

MEDTECH EUROPE reported its reliance on information and alternatives from upstream users, calling for: timelines for the substances under review and information required at each review stage; that POPRC use CAS Numbers; and one source of information on where and how countries implement Convention listings.

ICCAIA characterized the Annex F stage as "too short," recalling their internal review often first identifies many uses, but this number decreases through subsequent engagement with suppliers. They also called for a resource that compiles various national legislation in one place, and offered the FAO Lex database of regulations as an example.

JAPAN ELECTRIC MEASURING INSTRUMENT MANUFACTURERS' ASSOCIATION (JEMIMA) expressed support for the discussion about Annex F, given the challenges the industry faces with sharing information.

John Norman, International Council of Chemical Associations (ICCA), presented the Plastic Additives Database Initiative, which includes the additives in commerce and the risk assessment framework. He reported that, as of August 2025, the database has identified a total of 13,375 chemicals, and 4,549 chemicals are verified as plastic additives in commercial use today. He reported that data sources include the UN Environment Programme's (UNEP) Chemicals in Plastics report, government assessments and datasets, and licensed data obtained under specific agreements. Using UV-328 as an example, he demonstrated that some of the identified functions and polymers information originated from industry sources alone.

Chair Dawson recalled the debate on what is "an article in use," citing the example of a specific cable, or the entire airplane. Seppälä, echoed by Jaiteh, recalled difference in national approaches and complexity of discussions on definitions of stockpiles, waste, products, and articles. He called for a contact group to further discuss the matter. Ndlovu stressed the challenges with data on proposed chemicals, informing that inventories are often estimates based on the toolkits and assumptions. She pointed out that tracing POPs in products is challenging even for the industry.

Chair Dawson suggested a contact group, co-chaired by Artak Khachatryan and Nosiku Munyinda.

On Friday, the Secretariat presented the draft decision (CRP.6). Janssen welcomed the initiative, and Mumbo expressed concern that the focal points who will receive information requests might not be aware of the context of the POPRC discussions. An observer from the UK questioned whether requesting information on improvement of a form in another form is an efficient approach, and suggested developing new ways of engaging stakeholders involved in the Annex F process. Chair Dawson suggested this could be one of the early tasks for the proposed intersessional working group, and noted the Secretariat can already start working with industry stakeholder groups. ICCAIA stated that industry is happy to assist in improving response rate by distributing information collection forms through relevant organizations and networks like chambers of commerce. Seppälä noted that a revised information collection form should address the concerns raised.

The POPRC adopted draft decision.

Final Decision: In its final decision (CRP.6), POPRC invites Parties and observers to provide to the Secretariat, by 31 March 2026, information relevant to enhancing submissions relating to the considerations specified in Annex F to the Convention, with particular attention to information on:

- enhancing engagement with relevant stakeholders, including whom to involve and approaches to ensuring early and effective engagement;
- approaches used and challenges encountered in collecting information relevant to Annex F, including on uses and alternatives;
- the implications of listing for waste streams and their disposal, including technical feasibility, costs, and any relevant limit values; and

- challenges and experiences with identifying substances covered by the listings and with implementing related control measures.

The POPRC also invites Parties and observers to provide to the Secretariat, by 31 March 2026, information on the application of note (i) of part I of Annexes A and B relating to unintentional trace contaminants, and information on the application of note (ii) of part I of Annexes A and B, particularly in relation to articles in use.

The POPRC further decides to establish an intersessional working group to:

- develop a form for the collection of this information;
- analyze the submitted information and prepare a report for consideration by the POPRC-22 including on methods used previously by Parties and observers to gather information, and approaches taken to engage relevant stakeholders; and
- prepare a draft revised form for the collection of information specified in Annex F, including accompanying guidance and proposed steps for consultation with relevant stakeholders.

Global monitoring plan (GMP) for newly listed POPs: On Tuesday, the Secretariat introduced the GMP for newly listed POPs (UNEP/POPS/POPRC.21/8) and further information on monitoring challenges and opportunities (INF/15).

Vincent Madadi (Kenya) and Tom Harner (Canada), Co-Chairs of the GMP Global Coordination Group (GCG), highlighted the benefits of collaboration between POPRC and the GCG, particularly since POPRC identifies information on LRET, priority media, and monitoring gaps.

Seppälä observed that ongoing, exempted uses in the newly listed POPs complicate efforts to assess effectiveness through monitoring, suggesting this as an area for collaboration. He asked if passive sampling is possible for the new POPs. Harner responded that the passive samplers are capable of capturing the new POPs, but emphasized that the challenge lies in analysis, as the methods are time-consuming due to the complexity of the new POPs. As an example, he reported that a year was required to analyze the baseline for chlorinated paraffins.

Xiao highlighted that the GMP can, in part, retrospectively assess the POPRC's work to recommend new POPs to the COP, drawing a link to Article 8 (scientific uncertainty should not preclude further review) and suggesting that this article should be used "prudently."

Munyinda said participating in sampling studies builds capacity, particularly in analysis, and urged further biomonitoring work given the paucity of data on human health effects.

Gevao said cooperation could help identify the POPs that most require global action. Řiháčková highlighted the benefits of cooperation in identifying data sources and improving data availability.

Azhar suggested tailoring information to be better understood and used by policymakers and vulnerable groups.

On Wednesday, the Secretariat presented a document with a potential draft decision on the information that can be shared by the POPRC to the GCG.

Xiao queried if the GCG can also assist POPRC, particularly when it comes to data on chemicals proposed for listing to assist in the review of criteria like LRET. Raj queried at which particular stage of the POPRC's review will the GMP's input come, and Chair Dawson clarified that informal input can happen at any stage, but noted that the GMP only collects data for already listed POPs. Harner stated that attending POPRC is already useful, since it allows to see how regrettable substitutions happen and where there are still ongoing releases, like in case of PFOI.

Seppälä informed that for many chemicals of concern, including microplastics, time series data is not available as became apparent from the recent study on the Arctic. An observer from the RUSSIAN FEDERATION noted that microplastics are not a group of chemicals, and Chair Dawson clarified that when microplastics are mentioned, it refers to chemical additives.

Responding to questions and reflecting on comments, Harner further agreed that collaboration works in both directions. He confirmed that the work on data collection starts after the listing, noting that experts are familiar with databases and might be able to bring perspectives on dealing with other chemicals. He wondered if GCG can get feedback from POPRC on its report, recalling an idea to incorporate interpretation of observed trends. Gevao noted that the GMP does not do non-target screening, hence there will be no data on nominated POPs since the GMP only tracks listed chemicals. He suggested potential coordination on prioritizing chemicals for listing. Khachatryan noted that the GMP can be useful for upcoming POPs, as these are chemical groups with similar qualities, and passive samplers give the opportunity to catch all substances. He recognized that, while the data is there, identification will be a hefty task.

Many other members expressed ideas for GCG to support POPRC: Mumbo noted the GCG plays a role in standardized methods applied globally, and hence can help with access to data when the POPRC conducts its review, and suggested that the GCG reports annually to POPRC. Ndlovu noted the GCG can provide data on where releases on listed chemicals under POPRC review are still happening.

Seppälä welcomed participation of the GCG Co-Chairs in the meeting and suggested that POPRC members take part in the GCG meetings. Miglioranza supported coordination, noting information can be exchanged on the limitations of equipment for monitoring different POPs and new analytical metrics, among others.

Xiao questioned the process of potential information exchange, suggesting that instead of reporting, POPRC and GCG can just use publicly available information published on each other's websites. Chair Dawson highlighted there is relevant information available on the GMP website, including a data warehouse and a dashboard showing trends. Harner observed that the GCG and POPRC indeed can do more in referencing each other's work, but the processes are not exactly aligned so coordination would be beneficial.

Mumbo stressed the need to consider the capacity and needs of developing countries, suggesting including capacity-building and technical support. Ashar stressed the need to improve human biomonitoring, and Munyinda outlined the additional complexities of biomonitoring, including ethical considerations, and stated that more capacity is needed in Africa, especially for newly listed POPs with registered exemptions. These concerns were amplified by an observer from SOUTH AFRICA and Madadi, who pointed out that the GCG requested information from POPRC to update guidelines and support developing countries in monitoring industrial POPs. Bossou suggested collaboration with the World Health Organization (WHO) on the matter.

IPEN welcomed the proposal to enhance information sharing, highlighting some challenges with limited data on new POPs and their analytical complexity and lack of baselines in remote regions. They: supported addressing data gaps in Africa and West and Central

Asia; called for expanded monitoring scope to include traditional food of Indigenous Peoples; suggested improving methods to distinguish POPs from local sources and from LRET, as well as identifying hot spots.

An observer from the US noted that listing proposals and risk profiles are good sources of information, suggesting the nominating party provide this information to GCG.

An observer from NORWAY, echoed by Seppälä, noted limited budgets for monitoring and queried how to balance monitoring for old POPs for which clear downward trends are present, with new POPs that are costly to track. Miglioranza noted the importance of data on older POPs with exemptions to ensure there is still a downward trajectory. Janssen, noting a challenge of finding the right media or metrics, shared his experience in building a monitoring program for radionuclides, which reduced the frequency of sampling over time. Responding to Seppälä, Harner noted that GMP reduces sampling or reporting frequency, but sometimes sees levels increasing, like with PFOA and PFOS in the Arctic, or PCBs in some areas.

Munyinda observed that while GMP provides information for global decision-making, national capacities should be strengthened. Harner noted that a chapter on sustainability was added to the GMP, and there will be a transition to nationally driven data. Madadi highlighted that while developed countries have enough time series data to observe trends, there were only three rounds of biomonitoring in many developing countries, which is not enough to establish trends. He stressed the need for training and long-term planning in developing countries, especially for monitoring of new POPs, which was not done there before.

The POPRC tasked the Secretariat to prepare a revised text based on the plenary discussion and comments provided and submit it as a CRP. Xiao stressed that there should be no budget or workload increase for the POPRC.

On Friday, the Secretariat presented, and POPRC-21 adopted, the draft decision.

Final Decision: In its final decision (CRP.1), POPRC requests the Secretariat to compile for consideration by POPRC-22 a set of information to be shared with the GMP GCG, including:

- considerations relating to LRET and human biomonitoring of POPs;
- prioritization of core and supplementary media with respect to monitoring, taking into account analytical methods, exposure pathways, data access, cooperation with monitoring networks, and policy relevance;
- information on capacity and research gaps that may require targeted monitoring, model-based approaches, or consideration of potential regrettable substitutions;
- considerations relating to the approaches for grouping structurally related substances, as well as addressing mixtures, precursors, transformation products, cumulative threats, and effects-based monitoring;
- global monitoring strategies that address increasing data demands and resource constraints while leveraging synergies with broader environmental and health monitoring programmes; and
- other possible opportunities for information-sharing on issues of joint interest in the work of the POPRC and that of the GCG.

Workplan for the Intersessional Period between POPRC-21 and POPRC-22

On Friday, the Secretariat introduced the workplan, which includes five intersessional working groups to continue work on: the risk profile for PBBD/Fs and PCBBD/Fs, indicative lists, evaluation of specific exemptions and acceptable uses for PFOS/F, evaluation of specific exemption for PFOI to produce PFOB, and information submission forms and engagement under Annex F.

Venue and Dates of POPRC-22

The next meeting of the POPRC will be held from 2 to 5 October at FAO headquarters in Rome, Italy. It will convene back-to-back with the Rotterdam Convention's Chemical Review Committee.

Closure of the Meeting

On Friday evening, the POPRC adopted its report (UNEP/POPS/POPRC.21/L.1).

Abiola Olanipekun, Basel, Rotterdam and Stockholm Conventions Secretariat, on behalf of Executive Secretary Payet, observed the engaged discussions of experts from a range of scientific disciplines to help protect human health and the environment for generations to come. She thanked Chair Dawson for his wisdom, ingenuity, and ability to bring everyone on board with the Committee's decisions. She also thanked all the outgoing members of the Committee for their work to shape the history of the Stockholm Convention.

Chair Dawson thanked all the members, outgoing, returning, and incoming alike. Reflecting on his time since POPRC-5, he observed the increasing complexity of the Committee's work and commended the input of observers for providing new perspectives. He warmly thanked the POPRC community for their friendship and gaveled the meeting to a close at 9:07 pm.

A Brief Analysis of POPRC-21

Few treaties can boast the record of the Stockholm Convention on Persistent Organic Pollutants (POPs). The treaty has more than doubled the number of POPs that fall within its controls, either slating them for a ban or a restriction. Many of these newly listed POPs are groups of substances found in a huge range of products, from cars to clothes and plastics to inhalers.

Listing these complex chemical groups has involved complicated politics. At the last meeting of the Conference of the Parties (COP), parties asked for many additional specific exemptions, which allow limited-term continued use of the three nominated POPs, the pesticide chlorpyriphos and two groups of industrial chemicals, long-chain perfluorocarboxylic acids (LC-PFCAs) and medium-chain chlorinated paraffins (MCCPs). Most of these uses were either unknown to the POPs Review Committee (POPRC) at the time of its recommendation or were reviewed by the Committee and deemed unnecessary.

This experience, and the technical complexity of the recently listed POPs, has created additional demands for the POPRC's technical expertise. Traditionally, POPRC agendas were dominated by listing decisions. POPRC members would screen candidate POPs (Annex D), determine it is a POP (Annex E), and evaluate the risk management options (Annex F). POPRC-21 instead focused on work that would support implementing the decisions that resulted from its recommendations.

At this meeting, only one potential POP at the Annex E stage was up for discussion. The review was novel for POPRC because the substances are only unintentionally produced (a so-called UPOP). As such, data was scarce and members could not reach consensus. The core work of the Committee—reviewing potential POPs—proved surprisingly challenging. At the same time, the POPRC's newer work on helping regulators understand and implement COP decisions brought members together to discuss the numerous challenges.

This brief analysis examines how the POPRC tried to bring scientific expertise and the precautionary approach to the unique challenge of reviewing a potential UPOP and to the implementation challenges that arise when reducing risks from POPs in supply chains.

The UPOP Surprise

Polybrominated and mixed polybrominated/chlorinated dioxins and furans (PBDD/Fs and PBCDD/Fs) are unintentionally produced during many industrial processes that involve heating, including manufacturing and processing flame-resistant plastics and when recycling plastics containing direct precursors such as polybrominated diphenyl ethers (which are POPs). As one member observed, this draft risk profile involves "a unique set of circumstances" because they are not intentionally produced or traded. Most of the control measures for these dioxins and furans would be the same as chlorinated dioxins and furans, which are already listed UPOPs. As several stressed, the costs of action are low.

Because of these unique circumstances, several members expected the discussion to be fairly straightforward. However, those same conditions meant that less data was available. While no member thought the information presented in the draft risk profile was ideal, most considered it representative of the substances under review. After all, with no commercial interest in these chemicals, there is little incentive to study them. Given the uncertainties, during early contact group discussions, members agreed that tetra- to octa-PBDD/Fs and PBCDD/Fs met the criteria in Annex E.

Ultimately, for POPRC members Xuezhi Xiao and Amit Raj, the lack of data prevented them from adopting the profile, in particular because it lacked a risk quotient, or an estimate of the risk that the compounds would pose as a result of their long-range environmental transport (LRET). There were "missing links" to show that LRET caused harm. Long-time members recalled that demonstrating such links between LRET, exposure, and effects was nearly impossible and, therefore, the Convention calls for precaution and moving ahead even amid scientific uncertainty.

In the end, members requested more information on these missing links to help POPRC-22's review, but there were worries that this set the bar too high. One member could recall only one POP that had the information to conclusively draw the connection between LRET and adverse effects. Typically, POPRC evaluates the four criteria independently and then concludes that, since the chemical is persistent, toxic, bioaccumulates, and undergoes LRET, its effects will be experienced far from where it was produced and used. Therefore, global action is warranted. By asking for information on the causal links among the criteria, a participant worried it could signal that the Committee believes such information is necessary, which could impede future Annex E reviews.

With the preponderance of members agreeing that the burden of proof for Annex E criteria was met, many participants were left wondering why these unintentionally produced substances cause such dilemmas. Even Chair Peter Dawson had to admit he didn't foresee these challenges. Several members lamented that these substances were found in the remote areas of Sweden and Finland and wondered if plastics were the problem, especially as one member rejected the use of plastics as a mode of LRET. The draft risk profile indeed argued that one way these brominated compounds end up in remote areas is by migratory animals that ingest plastics, which is novel but was previously accepted by POPRC as a mode of LRET for UV-328 and Dechlorane Plus. Some participants thought the "real problem" lay in what was to come: one way to manage the risks posed by these polybrominated dioxins and furans is by regulating the use of brominated flame retardants in plastics. As one observer stated, "Everything plastic is difficult these days."

Thinking Upstream

POPs lurk throughout global supply chains. They could be present in materials used to make components that end up in final products and, later, in wastes. Much of POPRC's work at this meeting involved thinking upstream—from the automobile, up to its 9,000 components, and to the raw chemicals themselves. Thinking upstream meant considering how information flows through supply chains, and how to clarify the listing to improve the information available to regulators and industrial users.

In supply chains, there is a lack of information available to end users of chemicals. At the last COP, parties presented new information indicating that medium-chained chlorinated paraffins (MCCPs) are used in defense and other applications. The UV-328 listing was reopened to create a new specific exemption for use in sealants in the aerospace industry. Some POPRC members were concerned that UV-328's reopening could set a precedent. As one long-time member worried, "Maybe we didn't get Dechlorane Plus or MCCPs right because we just didn't have the information from users." POPRC participants from regulatory bodies shared recent requests from the semiconductor industry and medical device manufacturers, which have learned Dechlorane Plus is used in their supply chains.

At POPRC-21, representatives from the automotive, aerospace, and medical device sectors outlined their challenges in plenary sessions, contact groups, and side events. These industries are reliant on information from chemical and component producers, and many don't provide information until there is a legal requirement to do so. Information was not available to such end users, and therefore, not to the POPRC.

POPRC members considered how to obtain better information when assessing a POP's uses and the available alternatives for those uses at the risk management stage (Annex F). The approach relies on asking parties to collect information. Some members wondered if this is enough, and perhaps direct engagement with industry associations could be more beneficial. Others noted that tweaking the information collection form might not address the central problem: the end users may not be able to answer government requests for information. For some members, it was ultimately unclear if the problem is a lack of outreach to key industries or a lack of willingness by some industry groups to engage with a scientific process that could decide to ban their use of a POP.

Better and more robust information at the POPRC review stage could lead to more comprehensive listings and ultimately help with implementation process, ensuring more clarity and robustness of national regulatory approaches. At the same time, for already listed

complex chemical groups, "the Bible," as several members jokingly referred to the Stockholm Convention, does not provide enough detail and leaves uncertainty on the scope.

In addition to reviewing exemptions for use, POPRC is taking on more work related to the interpretation of listings for chemicals it had previously recommended. Particularly, POPRC-21 was tasked with reviewing three indicative lists of groups of per- and polyfluoroalkyl substances (PFAS) that the COP has listed. These indicative lists were the COP's creation, since in each case substances were too complex to capture in the text of the listing, and there were worries that new substances could be created in the future that could fall within the scope. The indicative lists serve an implementation purpose, helping regulators understand which substances fall within the scope of the listing. They also have a precautionary purpose, to create a "living list" indicating all theoretically possible substances, even if they are not yet possible to synthesize or commercialize. It's POPRC's role to maintain these evolving lists. Experts reviewed the three lists and noted the overlaps among them. While "huge," as one member put it, this list helps answer industries' call for a one-stop shop to find POPs in their supply chains, while also helping them avoid using a chemical in the design stage.

Continued Complexity

POPRC-21's deferral of the brominated dioxins and furans means that there will be no new POPs on the agenda for the next COP. The Stockholm Convention's implementation record has been built on a foundation of using science to identify and manage a growing list of POPs. For the first time since COP-4 in 2009, the COP will have to focus on implementing existing POPs listings without adding any others to the Convention's annexes.

This might not be the case for long. Rumors of nominations for new POPs were rife. While the EU stepped back from nominating siloxanes, there was a consultation on nominating bis(2-ethylhexyl) tetrabromophthalate, a widely used brominated flame retardant and plasticizer, which has been used as a replacement for other brominated POPs already banned by the Convention. The UPOP surprise might signal a difficult review for POPRC if this substance is nominated, as the Committee continues to balance scientific rigor and precaution in managing POPs present in products we use every day, including plastics.

Upcoming Meetings

Montreal Protocol MOP 37: The 37th Meeting of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer will discuss issues related to implementation, monitoring, and the phase-out of ozone-depleting chemicals and relevant greenhouse gases. **dates:** 3-7 November 2025 **location:** Nairobi, Kenya **www:** ozone.unep.org

Minamata Convention on Mercury COP-6: The 6th Conference of the Parties to the Minamata Convention on Mercury will meet to address issues such as trade control, waste management, and mercury use in cosmetics, dental fillings, artisanal and small-scale gold mining, and industrial processes. **dates:** 3-7 November 2025 **location:** Geneva, Switzerland **www:** minamataconvention.org

Annual General Meeting (AGM) of the Intergovernmental Forum on Mining, Minerals, Metals and Sustainable Development (IGF): The 21st AGM of the IGF will meet with the theme: Value Beyond Extraction: Rethinking Mining for a Resilient Future. **dates:** 3-5 November 2025 **location:** Geneva, Switzerland **www:** igfmining.org/annual-general-meeting

Open-ended Committee of Permanent Representatives (OECPR 7): OECPR 7 will convene to prepare potential resolutions ahead of the seventh session of the UN Environment Assembly (UNEA-7). **dates:** 1-5 December 2025 **location:** Nairobi, Kenya **www:** unep.org/environmentassembly/unea7/oecpr7

UNEA 7: The United Nations Environment Assembly (UNEA) is the highest decision-making body on environmental matters under the UN. It will meet under the theme Advancing Sustainable Solutions for a Resilient Planet. **dates:** 8-12 December 2025 **location:** Nairobi, Kenya **www:** unep.org/environmentassembly

ISP-CWP Plenary: The first session of the Plenary of the Intergovernmental Science-Policy Panel on Chemicals, Waste and Pollution will meet to begin its work. **dates:** 2-6 February 2026 **location:** Geneva, Switzerland **www:** unep.org/isp-cwp

CRC-22: The CRC will review notifications from Mozambique and Malaysia that were deferred by CRC-21, and other notifications. **dates:** 29 September - 2 October 2026 **location:** Rome, Italy **www:** pic.int

POPRC-22: The POPRC will review draft risk profile for PBDD/Fs and PBCDD/Fs. **dates:** 5-9 October 2026 **location:** Rome, Italy **www:** pops.int

Basel Convention COP18, Rotterdam Convention COP13, and Stockholm Convention COP13: The Basel, Rotterdam, and Stockholm COPs will meet to address proposed listings to the respective conventions' annexes, and issues of joint concern such as financial and technical assistance. **dates:** 19-30 April 2027 (tentative) **location**: Panama City, Panama (tentative) **www:** brsmeas.org

For additional upcoming events, see sdg.iisd.org

Glossary

COP	Conference of the Parties
FAO	Food and Agriculture Organization of the UN
GCG	GMP Global Coordination Group
GMP	Global Monitoring Plan
ICCAIA	International Coordinating Council for Aerospace Industry Associations
IPEN	International Pollutants Elimination Network
LC-PFCAs	Long-chain perfluorocarboxylic acids
LRET	Long-range environmental transport
MCCPs	Medium-chain chlorinated paraffins
PCBs	Polychlorinated biphenyls
PFHxS	Perfluorohexane sulfonic acid
PFOA	Perfluorooctanoic acid
PFOI	Perfluorooctyl iodide
PFOS	Perfluorooctane sulfonic acid
PFOSF	Perfluorooctane sulfonyl fluoride
POPs	Persistent organic pollutants
POPRC	POPs Review Committee
PBDD/Fs	Polybrominated dibenzo-p-dioxins and dibenzofurans
PBCDD/Fs	Mixed polybrominated/chlorinated dibenzo-p-dioxins and dibenzofurans
ToR	Terms of Reference