



Basel Convention Coordinating Centre  
Stockholm Convention Regional Centre

URUGUAY

# NARRATIVE REPORT

# CHEMICALS IN PLASTIC FORUM

6-7 March 2024, Santiago, Chile

## Organized by:

Ministry of the Environment of Chile, the Secretariat of the Basel, Rotterdam and Stockholm Conventions and the Basel Convention Coordinating Centre, Stockholm Convention Regional Centre, for Latin America and the Caribbean, hosted by Uruguay.



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## SUMMARY



The "**Forum on Chemicals in Plastics**" was held in Santiago, Chile on March 6- 7, 2024 in hybrid format, in Spanish and simultaneous interpretation into English.

Plastics contain thousands of chemicals, including harmful substances such as carcinogens and endocrine disruptors, some of which are persistent organic pollutants. These chemicals may pose significant risks to both human health and the environment.

To tackle plastic pollution, Member States are in the process of developing an international legally-binding instrument, as outlined by UNEA resolution 5/14. This effort could reduce the complexity of plastic products, enhance transparency and traceability, and promote the use of sustainable, nontoxic materials based on rigorous risk assessments and science-based safety criteria.

In collaboration, UNEP and BRS Secretariat have compiled crucial information regarding chemicals of concern, their health impacts, governance issues, and design considerations and has published a technical report on "**Chemicals in Plastics**". The BRS Secretariat has released a report titled "Global governance of plastics and associated chemicals", which highlights the necessity of addressing the entire life cycle of plastics, mitigating chemical hazards, and closing governance gaps.

Regulating chemicals in plastics and ensuring transparency throughout the plastic life cycle are concerns shared by many Member States. This technical workshop considered key elements for globally harmonized approach and requirements to ensure chemical transparency and traceability throughout life cycle of plastics. The benefits of such requirements for international trade, human health, workers' rights, and equitable jurisdiction were considered. Additionally, information on possible approaches for prioritizing certain chemicals or groups of chemicals and establishing mechanisms for communicating chemical information across the supply chain, drawing upon existing mechanisms and scientific knowledge were discussed.



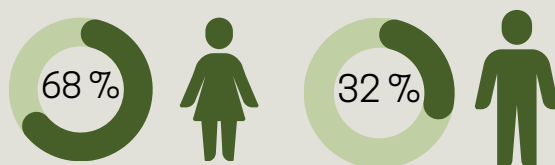
Furthermore, PCB, one of the 12 initial POPs listed under the Stockholm Convention, is set to reach its elimination of use target by the year 2025, with the aim of effectively managing all PCB waste in an environmentally sound manner by 2028. The workshop facilitated sharing of information regarding the latest efforts related to PCB elimination and fostered discussions on the effective implementation of the relevant requirements for environmentally sound management of PCB.

The workshop brought together stakeholders with a role in chemicals management in Chile, as well as representatives with technical background from selected countries in the Latin American sub-region nominated by the Official Contact Points of those countries, within the available resources.

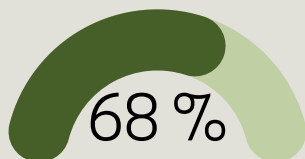
### 108 participants



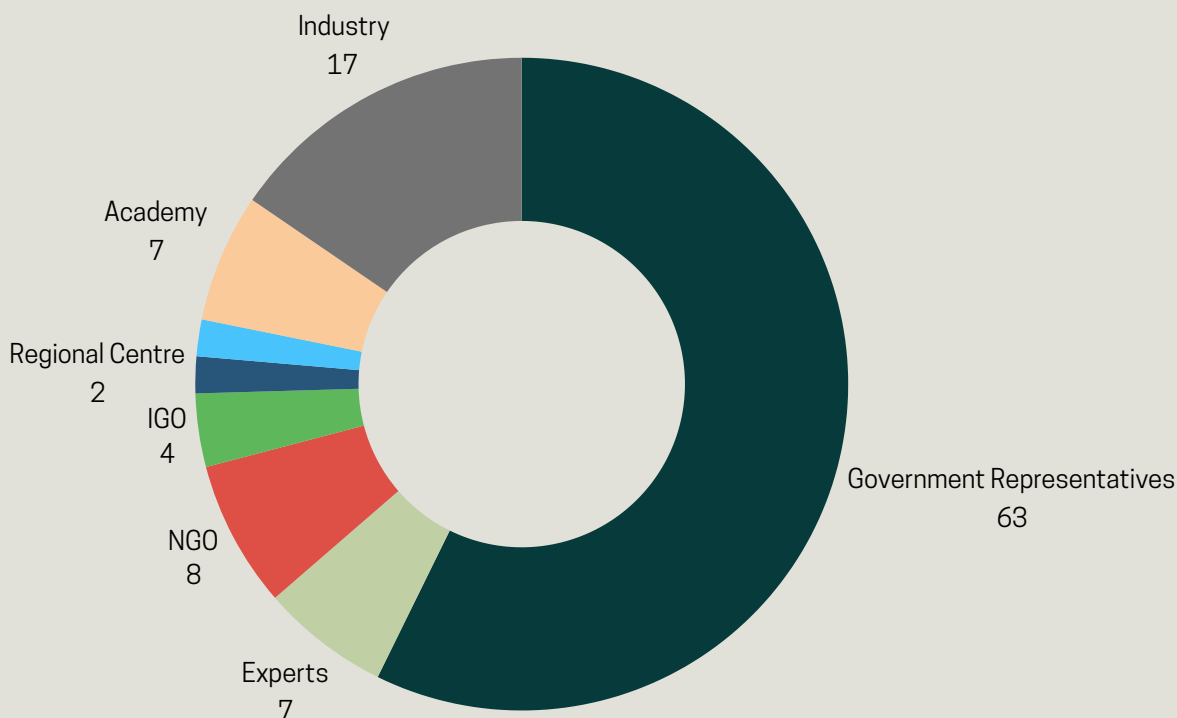
### Participation by gender



### Participation on-line



### Participation by sector



The workshop was organized by the Secretariat of the Basel, Rotterdam and Stockholm Convention and the Ministry of Environment of Chile, with the support of the Basel Convention Coordinating Center, Stockholm Convention Regional Center, for Latin America and the Caribbean (BCCC-SCRC) of Uruguay.



The meeting was attended both face-to-face and online by 108 delegates representing 27 countries, NGOs, experts, IGOs, academia and the Secretariat of the Basel, Rotterdam and Stockholm Conventions (BRS Secretariat). 68% of the participants followed the forum remotely.



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The overarching objective of this workshop was to increase the awareness and understanding of policy makers in Chile and the countries in the Latin American sub-region on issues related to chemicals in plastics, with particular focus on those covered under the BRS Conventions, and how they could potentially relate this knowledge to the new instrument under consideration. Specifically, the workshop was focused on the following aspects:

- **Enhance transparency and traceability:** The workshop shared information on the existing mechanisms, including under BRS Conventions, and considered key elements for globally harmonized approach and requirements to further ensure chemical transparency and traceability throughout life cycle of plastics. This included a goal to establish mechanisms that ensure clear information about the chemicals used in plastics, their potential risks, and their movement throughout the supply chain.
- **Prioritize chemicals and communication mechanisms:** The workshop shared information on the existing approaches, including under BRS Conventions, and considered key elements for prioritizing certain chemicals or groups of chemicals in plastics. Additionally, the workshop aimed to consider effective mechanisms for communicating chemical information across the supply chain, building on existing initiatives and scientific knowledge.
- **Persistent organic pollutants:** Furthermore, the workshop enhanced understanding of all persistent organic pollutants listed under the Stockholm Convention, with a specific focus on industrial chemicals, including PCB, which has an elimination of use target by 2025 and a waste management target by 2028.





The workshop was opened with the participation of **Ms. Constance Nalegach Romero**, Head of the International Affairs Office of the Ministry of Environment, **Ms. Kei Ohno**, Senior Program Officer of the Secretariat of the Basel, Rotterdam and Stockholm Conventions, and **Ms. Gabriela Medina**, Director of the BCCC-SCRC Uruguay, who welcomed the participants.

This was followed by a round of presentations by the participants who attended the Forum in person to introduce themselves.

As a summary of the opening ceremony, the importance of the opportunity for exchange between the different parties involved in the issue was highlighted, as well as the idea to provide new tools for the negotiations on the future plastics treaty.

**Ms. Nalegach** indicated the need to establish a technical dialogue, share experiences, and strengthen capacities. In the GRULAC region there is the 'Escazú agreement', it is focused on guaranteeing informed participation to make better decisions, as a way to protect the environment and also all human rights, **there is no human right that does not depend on a healthy environment.**



**Ms. Kei Ohno Woodall**  
Programme Officer, BRS Secretariat

To start the workshop, it was made a presentation in charge of the BRS Secretariat to give an update on recent decisions of the BRS COP related to chemicals in plastics.

Key elements under the BRS Conventions relevant to the new international legally binding instrument on plastic pollution were presented, among which can be highlighted the Control of transboundary movements, the environmentally sound management of plastic waste and the identification and control of plastic additives. Also, the Basel Convention Plastic Waste Amendments that became effective in January 2021 were mentioned. The importance of consulting the information that is available in the technical guideline on environmentally sound management of plastic waste adopted in May 2023 (Basel Convention COP 16) was highlighted.

Regarding the Rotterdam Convention the PIC procedure was explained and the Decision guidance documents with information about risk evaluation, alternatives and waste management was mentioned.

The decision-making flow for listing a chemical in Annex A, B and/or C to the Stockholm Convention was presented jointly with the 34 COPs listed because 17 of these COPs are related to chemicals in plastics, but also there are many other chemicals with POPs-like characteristics that are not yet listed in Annex A, B or C, or are currently under review or scientists do not have enough information to determine if the chemical should be included for listing.

To finish **Ms. Kei Ohno** mentioned the BRS technical assistance and support to different projects, initiatives and work to develop technical guidelines on Plastic Waste and the Plastic Waste Inventory Toolkit for example. Also, the BRS Secretariat supports the work of the Plastic Waste Partnership.

Ms. Gabriela Medina, Director of the BCCC-SCRC Uruguay mentioned that in the framework of the Project GEF Global Monitoring Program (GMP) Phase II a training was organized in Spain for the countries participating in the project for the determination of POPs adsorbed in plastic pellets for recycling. The results are about to be published but she already anticipated that unfortunately POPs were found in the recycled plastic pellets. She also emphasized the importance of taking these data into account and to count with plastic data generated within the region.



The participant from Costa Rica asked a question about the procedure for the listing of new POPs in relation to chlorpyrifos, since this substance is being considered for inclusion in Annex A. Ms. Kei Ohno responded that chlorpyrifos is indeed a pesticide and is one of the 3 chemicals that is under review by the Persistent Organic Pollutants Review Committee (POPRC) and they concluded last October that chlorpyrifos is indeed a POP that has negative effects on human health and the environment, so now it is in the risk assessment part that, it is the last stage, the economic impact for the countries is being studied, if there are alternatives, how waste would be managed and this will be discussed at the next September 2024 meeting of the POPRC. The POPRC members will then make a recommendation to the COP on which annex include it. Chlorpyrifos is also being reviewed by the chemicals committee to also be included in Annex 3 of Rotterdam Convention, so it could be included in both Conventions.

Panama took the floor to comment and consult on the possibility of having an annex of chemical additives in plastics of concern being considered within the framework of the new binding instrument. Panama remarked that Stockholm and Rotterdam Conventions have already made many analysis and advances and concrete actions have been seen in that sense. Having said that, Panama asked how could the synergy between BRS Conventions and the new plastics treaty be considered? How it could be managed if this new additive control annex enter into force? In terms of responsibilities, as it could cover only non-POPs substances or include all substances including POPs that are not yet considered under the Stockholm convention. Ms Kei Ohno responded that this will be one of the topics to be discussed since those 17 POPs that she mentioned could be excluded from the new treaty because they are already covered under the Stockholm Convention or included due to the countries parties to the new treaty could be different but that still needs to be addressed. In this sense, Mr. Agustin Harte from the BRS Secretariat also pointed out that listing a new compound under the Stockholm Convention requires a process that takes at least 4 years, so for this new binding treaty we must not only take into account which chemicals are going to be listed but also how the listing process is going to be like. It is unknown if a list of substances, that are already known, will be included in the new treaty to be regulated, or if a more technical and scientific scope for discussion and then a political decision-making body will be established.

One participant from Chile asked about if there is any agreement at the international level on these chemical registries. Ms. Kei Ohno responded that at the international level there are the Global Harmonized System (GHS), the Pollutant Release and Transfer Register (PRTR) or the Protocol on Pollutant Release and Transfer Registration. At the regional level there is Reach of the European Union that applies to the legislation of many countries, but it is not sure if something like this exists at the regional level for Latin America and the Caribbean, but within the framework of these conventions on chemical substances we have the option of prohibiting some specific chemicals by the Stockholm Convention for example due to their toxicity and long- distance transport.



Another important thing to consider, is the control measures that could be adopted for plastic additives, so these additives are not necessarily prohibited but at least a registry is established for them, so this new treaty could be an opportunity to have a registry on international chemical substances.

Trinidad & Tobago took the floor to know an opinion on the best way to proceed to list chemicals in this new treaty based on the experience of the Stockholm and Rotterdam conventions. Ms. Kei Ohno responded that in the case of the Stockholm Convention the implications are quite serious because the use, production and export is prohibited with some exemptions of 5 or 10 years, but comes a point when the chemical substance is prohibited and since the chemicals is controled, these 4- 5 years control process is strictly required. The chemicals listed have a scientific basis, but the decision has to be made at the political level, because it has a socioeconomic impact for a substance included in the list. In the Stockholm Convention all the substances that have been proposed so far have been included in the list, some substances took a long time, up to 10 years for chlorinated paraffins but others around 4 years, so it has been an ongoing process. Under the Stockholm Convention it is possible to vote for a chemical inclusion on the list, only Parties can vote, but other agreements are not so demanding and only request an exchange of information and there is no prohibition of the chemical, although there is an impact on international trade. The Rotterdam Convention is a different situation, it has not been so positive, and this is a learning process that the INC for the new treaty has to consider, since it is important to find a better way for listing and that the opinions of the expert committees are considered at political level. Rotterdam Convention is an example of what did not work, there are quite a few chemicals that, although they were recommended by the scientific committee, the COP did not agree and remained stuck there and a solution could not be found.

To continue, a round of presentations was made by the participants and Ms. Kei Ohno mentioned that she sent to the assistants a form to collect information on experiences and challenges encountered in the development and implementation of appropriate strategies for the identification of persistent organic pollutants in products and articles in use and in stocks and residues, as well as other relevant information to be completed.





**Mr. Martin Wagner and Ms. Laura Monclus Anglada of the Norwegian University of Science and Technology (NTNU)**

To continue, **Mr. Martin Wagner and Ms. Laura Monclus Anglada of the Norwegian University of Science and Technology (NTNU)** presented online the “State-of-the-science Report on plastic chemicals, identifying and addressing chemicals and polymers of concern” developed under the project PlastChem. This initiative created a high-quality, comprehensive state-of-the-science report synthesizing the evidence about chemicals in plastics, to inform in an evidence-based manner to policy maker for a better protection of public health and the environment.

Mr. Wagner indicated that the objective of the report was to gather scientific knowledge to identify the chemicals in the polymers of concern. He also commented that there is much scientific evidence that shows that chemicals present in plastics are released into the products and many people are exposed to these risks.

Ms. Monclus explained the work methodology and indicated that the key activities of the project included consolidating data on over 16.000 plastic chemicals from various sources, compiling hazard and other information, and identifying and prioritizing plastic chemicals and polymers of concern. The evidence will be compiled in the public available PlastChem database. A unique feature of the project is its focus on a groups of chemicals, linking chemicals of concern to plastics, and integrating leachate toxicity to cover unknown chemicals and their joint effects. This comprehensive analysis will help with prioritizing chemicals and polymers of concern, which is critical for a circular economy.

The PlastChem report shows that there are more chemicals in plastics than previously known, with more than 16.000 chemicals included in the new PlastChem database that accompanies the report. Extra information was also added about the groups of substances in plastics, their annual production level and their global, regional or national regulation status. Of the 16.000 substances surveyed, information on annual production was obtained for about 6.000 substances, and of them, around 4.000 substances are of high production. The worrying thing here is the lack of information for some 10.000 chemicals, which is translated into a clear lack of transparency in the market.

Only 6% of the substances in the database are regulated under any multilateral environmental agreements with global regulation, such as the Stockholm Convention, Minamata Convention, Basel Convention and Montreal Protocol.



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Mr. Wagner explained that the substances were divided into coloured lists according to color given their level of concern, where red corresponds to substances that are not yet regulated, orange to those that are less hazardous, yellow to those that need to be monitored because they are under evaluation and the white list to those that are not hazardous. Guidelines were presented to prioritize the chemicals on the red list and for policy makers to focus on these 15 priority groups. Also commented that it is necessary to have the technical capacity to be able to enforce compliance, scientific capacity to redesign plastic materials and products and for this, the most important thing, is to be able to have political capacity to support the above.

#### **Other key findings of the report are:**

- There are at least 4.200 chemicals in plastics (26%) that are chemicals of concern due to their high risk to human health and the environment. In fact, according to an analysis made by the BRS Secretariat, only 128 of these substances are regulated globally. The reason is that there are so many chemicals and no country has sufficient capacity to deal with the thousands of chemicals contained in plastics.
- More than 400 chemicals of concern may be present in all major types of plastics, including food packaging. In addition, all plastics tested have been found to be capable of releasing hazardous chemicals,
- Finally, to make plastics safer, new approaches are needed to regulate chemicals in plastics, including the identification of chemical groups of concern containing hazardous chemicals.

Mr. Timo Seppala took the floor and indicated that he found the focus on the possibility of being able to regulate each of these chemicals very interesting, since it is not a very simple task as has been demonstrated for some of the substances included in the Stockholm Convention. He thought it was very important been able to identify the substances with a high level of exposure, as that is key to prioritize and set a target. He asked to the presenters how they defined exposure potential, whether they were simply based on the presence of the chemical in the plastic or how they did it. Mr. Wagner responded that retrieving information on exposure to 16.000 substances is an impossible task in a reasonable period of time, as it requires analytical methodology that must be validated and then sampled in the different matrices. That is why they decided to use exposure potential as a criterion, and it is true that since there has been information on these substances, for example there is market information and scientific studies that have detected their presence in plastics and have shown how they are released from plastic, human health and the environment are exposed in a worrying way. Some studies have even shown that about 90% of the substances are released from plastics, they are not retained in the material, so there is enough evidence to say that they have a potential for exposure.



Ms. Yoani Gonzalez from the Ministry of Health of Panama commented that there is a great challenge in the region since the production of plastics must be controlled, in order that these types of problematic substances are not used, but since GRULAC Countries are mainly importing countries, they depend of the manufacturing countries. It would be good to have an elimination schedule like the Montreal Protocol, where developed countries first begin to study what options they have for substitution, but this implies that countries will continue to be exposed to these substances, so we have the challenge that the only way to manage these chemicals adequately is when the products become waste. Ms. Gonzalez asked what could be done while the manufacturers are looking for substitutes and how we could improve the capacity to avoid these plastics enter. Ms. Monclus responded that this is one of the main problems, and one of the things to highlight is that work which is being done to ensure that the binding treaty on plastics, that is currently being negotiated, can include these chemicals in plastics, and that mechanisms are established to evaluate which groups of substances are hazardous and therefore must be regulated. Here, we have a series of needs, the first is there should be transparency, and should be knowledge on which chemical are used in which plastic products, since currently this information is not transparent from the industry side, and this is very important in order to begin to regulate. Then, it is necessary for importing countries to lobby in the treaty to try to get this regulated globally, and also to continue with these studies and demonstrate which plastic products are dangerous.



**Ms. Jane Muncke**  
**Managing Director and Chief Scientific Officer**  
**Food Packaging Forum**

To continue, **Ms. Jane Muncke** from the foundation of **Food Packaging Forum** presented about Chemicals in food contact plastics and Health impacts. She mentioned that food packaging is necessary because it helps logistics, transportation, supply around the world and consumption. Plastics are omnipresent in packaging, there are different polymers, they are present in paper, cardboard, and other multilayer packaging and most packaging have a plastic layer in direct contact with foodstuff, we then have many chemicals in plastics that are in direct contact with food. Also, she explained that plastic functionalizes different packaging materials and the chemicals in packaging matter to us because under certain conditions they migrate from packaging to food, which has been verified through studies in the last 50-60 years. This migration is favored by high temperatures, contact for long periods of time, if the food has a fat content greater than 25%, or if small portions are used, because the smaller is the container, the greater is the migration of these chemicals into the food. There are regulations, even an amendment by the US Food and Drug Administration (FDA) in 1958 to a Law that gave power to study chemicals that are transferred or migrated to food from packaging, it was mentioned since it was already expected to be a component that will affect the Human health.

MERCOSUR also has its own regulations regarding this issue, and which was updated in 2022.

She mentioned that it is important to assess whether people are exposed to chemicals in packaging plastics and to ask whether this exposure is of concern. For example, bisphenol A, which is used to make polycarbonate plastics for metal coatings, among other things, has been used for a long time and continues to be used today. The European Food Safety Authority concluded last year, following a scientific analysis, that bisphenol A in food is a health risk. Also in the same vein, the U.S. Government Accountability Office in 2022 conducted evaluations of plastic packaging and concluded that food processing and packaging may include or introduce non-food substances into food and some of these chemicals may pose a health risk.

Ms. Muncke explained that people are very exposed to these chemicals from food packaging, there is scientific evidence that at least 2.985 chemicals from plastics have been detected in people, including carcinogens, mutagens that can be toxic to reproduction, also Endocrine-disrupting chemicals (EDCs). For many of these chemicals there is not information and it is not known whether their presence poses a health risk or not, but it is known that some of them are related to non-communicable diseases. She commented on a US scientific study on breast cancer and related carcinogens, and it was found that there are at least 921 chemicals, of which 189 were found in food packaging or processing and evidence of migration was found in 121 of these chemicals. About 140 are also present in plastic food packaging. Eight out of ten women are prone to breast cancer, which is a good opportunity for regulatory agencies to prevent this disease due to the presence of chemicals.

She also mentioned that the World Health Organization (WHO) recently released a report on an increase in the prevalence of chronic non-communicable diseases and although they cannot only be linked to the presence of chemicals in plastics, there is a possibility for regulators to reduce the incidence of these diseases that they are increasingly prevalent. Modern science has to be used to define what safe exposure levels would be established. For example, when it looks at levels at which adverse health impacts are seen, impacts on female fertility, the brain, and the immune system are seen, so exposure levels are not safe when other data are considered.

Ms. Muncke also indicated that another study was recently published in the US that concluded that exposure to phthalates was linked to premature births, and this is very worrying because premature babies face a list of risks of suffering from chronic diseases, they grow and there is also a study in the US that shows that chemicals in plastics are related to health costs in the amount of around 250.000 million of US dollars, and this is a cost that society pays, so humans are facing a challenge in financial terms as well.

The expert left as a final idea that a treaty that protects health will address plastic chemicals and polymers including micro and nanoplastics, the life cycle of plastics should be included since people are affected throughout it and it is necessary to implement modern science for a future-proof path forward.



It is also necessary to address conflicts of interest appropriately, which is why she mentioned a recent publication that leaves recommendations to consider in this regard, and commented that there are precedents for managing these conflicts at the United Nations level, for example the tobacco control framework and the WHO cancer control agency.

Ms. Muncke emphasized that it would be important to avoid diseases due to exposure to these chemicals in plastics, to carry out tests on these chemicals to evaluate their impact and the prevalence of chronic diseases, and to give an overview on how this could be done, a recent publication made by her group addresses it. She also mentioned some useful resources that can be consulted, such as the Geneva Environmental Network, this network publishes articles related to plastics and health and the Coalition of Scientists for an effective plastics treaty. It is also available for any questions, and she explained that on the Food Packaging Forum website can be consulted data sheets and a lot of specific information about the materials that come into contact with food, whether plastic or alternatives.



**Ms. Victoria Gómez**  
Universidad Mayor de Chile

To conclude the first morning, **Ms. Victoria Gómez** presented on behalf of the **Universidad Mayor de Chile**. She is a member of the research group of the **Scientific Partnership on Plastic Pollution in Chile (SPLASH)**, which focuses on persistent organic compound pollution in different environments, water, sediment and air matrices and also works with marine plastic debris and microplastics in coastal areas. This group also collaborates with the Recetox Center in the Czech Republic.

As mentioned in previous presentations, she indicated that there are more than 16.000 chemicals in plastics, of which there are many that are hazardous to health and others that may be potentially hazardous.

Among the chemicals that can be found in plastics there are additives and substances that can be absorbed by plastics and reach the environment. Within additives there are several categories, among them are functional additives that influence specific properties of plastics, such as resistance to ultraviolet light, heat, microbes, durability, etc. There are also the additives used as colorants, as give more volume to plastics, or as a way to reinforce them and give them characteristics such as elasticity.

Also Ms. Gomez explained that many of these additives can have mutagenic and carcinogenic properties, have reproductive toxicity, be endocrine disruptors, can also be ecotoxic in organisms in the aquatic environment and may contain POPs (flame retardants or PFAS).

With respect to flame retardants, specifically polybrominated diphenyl ethers (PBDEs), they are a class of additives used to reduce the flammability of plastics. They are widely used in construction materials as insulation, also in plastic textiles and technological products. These contaminants can be neurotoxic, endocrine disruptors and carcinogens.

There are also PFAS whose main characteristic is to repel water and grease and are present in a large number of everyday products such as cosmetics, food packaging, etc.

As a member of a research group, she mentioned an article they published in 2020, a study on POPs present in plastics that were found on 6 different beaches in Concepcion Bay. Sampling and quantification of macroplastics were carried out, the abundance was seen on each of the beaches, the polymers were identified and clasified by color, size and shape. The analysis were carried out at the Recetox Research Center, and very high concentrations of PBDEs were found, high values were also found for PCBs and high concentrations of DDT. PFAS were later analyzed in these same samples and very high concentrations were found, especially on Coliumo beach, an artisanal fishing area.

She also mentioned that this same study was carried out in San Vicente Bay, but in this case only microplastics were found on the beaches. When performing the analysis, high concentrations of PBDEs were found.

Then a sampling of macroplastics was carried out in other areas of the Bio Bio region, on the Arauco, Blanca and Maule beaches. Very high concentrations of PBDEs were also found and much higher than the concentrations of PCBs.

She mentioned that PBDEs are listed under the Stockholm Convention in the annex that prohibits their manufacture, so many countries replaced them with novel flame retardants, for example BTBPE and DP. For this reason and seeing that the PBDEs gave such high concentrations, another study was carried out to analyze the novel flame retardants and it was published just now and it was also found that their concentrations were very high, especially HBB y DP.

From the BRS Secretariat, Mr. Harte took the floor to ask about the study on microplastics carried out, specifically if they tried to identify the type of polymer or the origin of the microplastics since the levels of polybrominated plastics found were high. Ms Gomez replied that a physical characterization was carried out and also a characterization of the sources of these microplastics and most of them were found to belong to fishing gear, buoys, bottles and foam plastics.

A participant from Chile asked what type of POPs they found had been absorbed and in what geographical direction, to which the expert responded that organochlorine pesticides such as DDT and HCB, HCH, PCBs and PBDEs were found from Coliumo Bay to the San Vicente Bay.



Another participant from Chile asked if the analysis were performed on the plastic or on the migration from the water column and if the concentration of PBDEs found was higher than what the plastic would have if used as an additive, and Ms. Gomez explained that the tests were performed on the plastics and that indeed the concentrations are higher than what they should be if used as an additive, which makes them think that they are also adsorbed from the environment.

Ms. Ohno asked if they had any methodology to be able to differentiate if a chemical substance was additionally adsorbed or if it was already present in the plastic. Ms. Gomez answered no, because when the chemical substances were extracted for analysis, it takes everything present in the plastic, and the comparison is made through bibliography to know what concentrations some additives may have depending on the type of plastic.

Mr. Harte from the BRS Secretariat explained that would be important to be able to characterize the origin of these microplastics, because it is likely that some of these substances have not been incorporated into the plastics but rather have been adhered from the environment. It is expected that the levels found in plastics are higher than those in the environment due to the characteristics of these substances, since they are lipophilic. He also emphasized that the levels found of DDT and PCBs, which are chemicals that have not been used for a long time and therefore we are talking about legacies of contamination that are in the environment and are a marker when appear in plastics.

Mr. Seppala commented that it is very interesting to analyse these dynamics of substitutions, once a substance is prohibited, others appear to replace them, and this is important from the point of view of the Stockholm Convention, since many times the alternatives are worse and are found later in higher concentrations and this is worrying. And he ask if there is an analysis of PFAS in water that explains the concentrations of these chemicals in plastics, to see if these results are telling us about the quality of the water. And he added that it would be good to also carry out the analysis on fish to see the issue of water quality, but he understands that it is difficult. Ms. Gomez responded that PFAS in water has not yet been analysed because the procedure is complicated, due to the sample could be contaminated very easily.



**Dr. Roland Weber**  
Expert

To start the last part of the first day it was made a presentation in charge of the expert Mr. Roland Weber about the challenge for clean plastic cycles for a circular economy. Also, the objective of the presentation was to learn about PBDEs and emphasize the need for urgent control of chlorinated paraffins and many more challenges ahead.



Mr. Weber explained that increased production, consumption and linear economy resulted in a plastic waste nightmare that spans global borders and confronts us with the challenge of marine and land-based plastic pollution that can be seen on coasts and harbours around the world. Considering the plastic waste crisis and resource limitation, there is a need to migrate to a more circular economy, as highlighted by various organizations such as the UN, GEF and the EU. He mentioned that in moving to a circular economy, POPs and other hazardous chemicals need to be controlled and phased out.

The expert remarked that many of the POPs listed in the Stockholm Convention are plastic additives or were otherwise used in polymers. He noted that in the PFAS list can be seen they are used in side-chain fluoropolymers, brominated flame retardants, chlorinated FRs (DP and PCCC) and plasticizer SCCP in PVC/rubber. Some of them had large production volumes: DecaBDE, HBCD and SCCP received an exemption to continue to be produced and used, and are still produced or have been produced until recently (HBCD). In addition, a non-halogenated plastic UV stabilizer (UV-328) was included in the POPs list in 2023 and the Persistent Organic Pollutants Review Committee (POPRC) recommended the inclusion of MCCP and LC-PFAA.

On learning the challenges with PBDEs he commented that they have been widely used as additive flame retardants since the 1970s in plastics, synthetic fibers, electronics, vehicles and buildings, to reduce the flammability. They are produced in three different grades of bromination, pentabromodiphenyl ether (c-PentaBDE), octabromodiphenyl ether (c-OctaBDE) and decabromodiphenyl ether (c-DecaBDE). It is estimated that about two million tons have been commercially produced so far and DecaBDE is still being produced. The long lifetime in construction will make this sector more relevant for PBDE management in the future. Some PBDE-containing products and other POP-BFRs (brominated flame retardants) can have a long lifetime, so they can reach recycling cycles of decades and, in construction, a century, and if these POPs in polymers are recycled, their impact will be even greater.

Mr. Weber also pointed out that for PBDEs have to be considered that they can degrade into brominated dioxins, they are excellent PBDD/Fs precursors and therefore plastics containing PBDEs also contain PBDD/F which need to be considered for risk assessment. He also mentioned that according to a study carried out in Nigeria it was estimate that 1.9 million tons of PBDEs have resulted in aproximated 1.000 tons of PBDD/Fs. Also, according to a study carried out even baking DecaBDE containing fish result in formation of PBDFs and increase in Dioxin Concentration of Toxic Equivalents (TEQ).

The expert explained that for the PBDE listed in 2009 (tetra- to heptaBDE) the Stockholm Convention included an exemption for recycling of tetra- to heptaBDE containing polymers. But when DecaBDE was listed in the SC in 2017, no exemption for recycling has been requested. Therefore decaBDE containing plastic should not be recycled and needs a phase out.



When you look at the life cycle of PBDEs it shows that one of the main routes of exposure is food ingestion, but it is not the only one, there are other sources such as electronics, furniture, textiles, appliances in cars and also recycled plastics. Mr. Weber mentioned a 2009 study conducted on blood PBDE levels in Wisconsin/U.S. The blood PBDE levels of individuals in the Wisconsin cohort show two orders of magnitude (100-fold) differences between individuals. Individuals with elevated PBDE levels were directly exposed to pillows, vehicles and furniture treated with PentaBDE. Therefore, he indicated that caution should be exercised with these additives included in plastics.

Regarding recycling, what has been learned the most in the last 20 years is that PBDEs come back with the recycling of products. The expert commented on a study that was conducted in 2009 in Chinaby Chen on plastic toys in which all of them contained some type of PBDE, and a similar study was conducted in 2022 by Kajiwara and it could also be found that many plastic toys in Japan and Asia contained PBDEs. In Toronto, a study was also conducted on kitchen utensils and many of them were also found to contain PBDEs. Another study was done in Europe on coffee cups which also have around 1.000 ppm PBDEs. So, it seems with respect to PBDEs that the plastic recycling stream is largely uncontrolled. There is a need for better life cycle management and control and overall improvement of this situation, especially to not recycle these plastics for sensitive uses. Global measures must be taken to control these additives in plastics. Despite this, recycling is very important, and if proper separation is done, plastics containing POPs and PBDEs can be separated. For example, on WEEE 60% of the plastics can be recycled and reused in other electronic devices, and the remaining 40% can be incinerated to eliminate the POPs.

Mr. Weber explained that for the management of WEEE plastic, limits were established that decide on the recyclability of certain plastic fractions. Regarding the limit values of PBDEs to establish their recyclability, there are currently 3 provisional Basel limits. The limit defined by the EU RoHS Directive (2002/95/EC) for PBDEs (and PBB) is 1.000 mg/kg. The Basel Convention is setting low POP limits and has a provisional limit of 50 mg/kg and 1.000 mg/kg and recently Switzerland suggested a low POP content of 500 mg/kg.

The expert highlighted that PBDEs in plastic are a challenge for recycling. Technologies for the separation of plastics containing PBDE have been developed and as early as 2018 can separate WEEE plastics below ~150 mg/kg PBDE. But if a low POP content of 50 mg/kg is adopted, then recycling of plastic from e-waste would not be feasible even for industrialized countries with BAT separation.



The expert also commented a recent study of PBDEs & PBDD/F in Consumer Products Made of Recycled Plastic from 7 African Countries found that toys contained between 180-315 ppm of PBDEs, simultaneously contained around 800 pg dioxin equivalents and up to 1.000 pg TEQ/g of PBDD/Fs. Which shows that even at low ppm levels they should not be presented in toys or other products with a sensitive exposure. Whereby a limit of 500 ppm for PBDEs in recycled products translates to high levels of PBDD/Fs.

To continue Mr. Weber told about the Chlorinated paraffines (CPs) because they are the POPs that have been produced the most and are also used mainly in plastics as additives. According to their chain length, CPs are subdivided into short-chain CPs (SCCPs, C10-C13), medium-chain CPs (MCCPs, C14-C17) and long-chain CPs (LCCPs, C18-C30). Chlorinated paraffins are produced with different chlorination degree varying from 30% to 70% (w/w). The variation option in chain length and chlorination degree make them versatile and approximately 200 commercial CP formulations are in use.

The Stockholm Convention listed SCCPs with a chlorine content greater 48% as POPs. Also, CP mixtures with  $\geq 1\%$  of SCCPs are considered SCCPs/POPs. MCCPs with chlorine content  $\geq 45\%$  will be proposed for listing at SC COP12 in 2025.

He also explained that the Stockholm Convention establishes exemptions for SCCPs included flexible PVC, additives in rubber transmission belts, fat liquoring in leather, lubricant additives, metal processing, waterproofing and fire-retardant paints and adhesives. This exemption expired 12/2023, hence assessment of current use and assessment of alternatives and substitution are needed. Currently only Vietnam has registered exemption for the use of 15.000t SCCP but other countries likely do not know that they are using large amount of SCCP/MCCPs or get imported. Even some producers might not be aware that they are producing SCCPs or CPs and MCCPs will at least be produced/used until 2030.

Mr. Weber highlighted that talking about human exposure, we can see that chlorinated paraffins in human milk already exceed the levels of PCBs by 10 times if we compare these kind of pollutants. They are less toxic than PCBs and that is why from a toxicological point of view, the presence of PCBs in human milk is considered more important, but there is a lack of analysis of other measurement points of the toxic components that SCCPs may have at an immunological and neurological level and development. So hopefully there will be more information about this in the future. Another important aspect to consider is that the level of production of CPs worldwide has been significantly increased in the last 20 years and as of 2010 the annual production was more than 1 million tons per year, which means that the production of chlorinated paraffins per year is equivalent to the production of PCBs at a historical level and today the annual production capacity is above two tons. The short chain chlorine paraffins that have been produced so far are around 400.000 t/y and the short chain mixtures are around 900.000 t/y. China and India are the main producers worldwide. In GRULAC region there is no clear information on production, but it is known that Brazil stopped it in 1994, but large quantities are imported, either of medium or short chain paraffins.



Also, the expert shared a study case to determine the main uses of SCCPs in China, for which 124 product samples from markets were analyzed and it was found that the largest amount is used in soft PVC products such as shower curtains, different types of cables, shoes, rubber and polyurethane foam used in significant quantities in construction. It is estimated that these short and medium chain paraffins are used 60% as additives for PVC, 15% in rubber as an additive as well and 10% as adhesives or sealants in polymers. A similar study was carried out in India, but the information obtained is being confirmed.

Also, a study was also recently carried out in Europe on these retardant foams and what was concluded is that several of these sprays contain up to 50% of medium chain chlorinated paraffins and the same was found in China, although there it was a mixture of chlorinated paraffins, short and medium chain. Furthermore, these spray foams were analyzed after about 20 years of use, and the concentration of chlorinated paraffins and other retardants is more or less half of the new ones. Which shows that these types of additives evaporate into the environment, both indoors and outdoors.

Another study was carried out after using kitchen ovens in Germany and concluded that 56% of them had levels of chlorinated paraffins inside and in very high concentrations, this is due to the plastic cables used in the oven and that evaporate and there is a second study in this regard that shows that chlorinated paraffins are transferred to the utensils used in the oven. In addition, PBDEs have been found in these ovens but at lower levels.

Mr. Weber mentioned a study in Sweden that analyzed 12 types of blenders and concluded that there were 8 types that released short and medium chain chlorinated paraffins into the food, and this was even maintained throughout their use for 5 or 10 times and was since they are not only in plastics but in the metal structure as a lubricant.

If the evolution of imports over time in Brazil is analyzed, can be seen that there has been a large increase of imports. The large part of these PVC plasticizers imported come from China to South America. When the different codes of the harmonization system are checked, it shows that more than 20.000 tons of PVC plasticizer arrived into Brazil in the last 20 years. Also speaking of chlorinated rubber, import levels are increasing and exceed 30.000 tons in the last 20 years.

In the case of Nigeria, the same evaluation was carried out, but it went one step further because the impact of short and medium chain paraffins over 30 years was incorporated, and it shows that 37.000 tons of short chain paraffins arrived and in the case of the middle chain there are almost 60.000 tons through China's plastic products.

One last study that he mentioned analyzes SCCPs in consumer products in the European Union. They have an alert system for those products that exceed the regulatory limit of 1.500 mg/kg. They analyzed different products such as toys like plastic doll, bouncy toy, stickers for children, rubber knife, toilet seat for children and sports equipment and found high levels of SCCPs, very above the regulatory limit.

Recent study estimated the global historic and current in use of SCCPs, MCCPs and LCCPs and estimated that 33 Mt have been produced and 13 Mt are still in use with more than 8 Mt in use in China, but this is only the CP amount, the total impacted material amount is likely 20 to 100 times higher. 13 million tonnes of CPs in likely 200 Mt impacted PVC, rubber & PUR products. Additional 1 Mt CP mixtures containing SCCP/MCCPs are still produced/y mainly in China and India as additives, which translates to 10 Mt PVC, PUR foam and rubber as plasticizer and flame retardant. Considering average of 10% additive content they result in approximately 10 Mt of POPs containing polymers/y newly produced.

Regarding PBDEs containing polymer waste it has approximately 10 Mt of e-waste plastic/y. Similarly plastic/polymer in EoL Vehicle containing certain amount of PBDEs, HBCD, UV-328, SCCPs and PFOA generate plastic waste in the scale of 10 to 20 Mt/y. Plastic in buildings and construction is approximately the amount of EEE and transport sector combined. These are huge POPs containing plastic volumes which need global management not to further litter the world with plastic and POPs, and halogen containing plastic is a challenge for waste destruction. Mr. Weber highlighted that the GEF project HBCD phase out China/Turkey and GEF project WEEE plastic Ghana & Ivory Coast, could become a role model for developing countries and bring a solution to this problem.

To finish the expert hopes that main key findings from UNEP study on chemicals in plastics contribute to Plastic Treaty Process and he believes that the substitution of hazardous additives in plastics is part of solution, POPs and other hazardous additives should be substituted by sustainable chemicals, starting with priority uses: e.g. toys and food contact materials.

An online participant asked what analytical method was used in the study to determine the additives in plastics. Mr. Weber replied that normally a GC-MS is used to determine PBDEs, and for HexaBDE and DecaBDE LC-MS is used. Also, the BRS Secretariat developed a guide to monitor POPs in products and this includes examples of extractions and analysis including the total methodology of instrumental analysis and it is published on the secretariat's website. Also explained that laboratories that are analysing PBDEs in the environment, both in soil and in air, must consider that they may have compounds at a significant percentage level and care must be taken to ensure that they do not contaminate their equipment or laboratory, so sometimes it is important to use a separate room for these analysis.

Mr. Seppala mentioned that some of the studies he saw mentioned are from 2009 and 2012 but that currently we still do not have much information and we continue to review data that is old. Also noted that in some of the studies mentioned some chemicals appear five years after their prohibition in some products that are sold legally on the market, which reflects that there is no control over what can be sold on the market.



The participant from Suriname asked what can do poor countries that do not have the technology to do this type of analysis. Mountains of products that have reached the end-of-life cycle appear and it is necessary to know what to do with them and to have the possibility of analyzing them. Mr. Weber responded that with respect to monitoring he recommends regional approaches, relying on laboratories in the region that have developed analytical techniques. For example, in Brazil, the University of Rio developed an analysis of chlorinated paraffins, and it would be very useful to create a network with a regional focus that helps to obtain data in a systematic way, since the products in Brazil and Suriname are not so different.



**Mr. Timo Seppala**  
**Senior Officer**  
**Finnish Environment Institute**

Mr. Seppala indicated that he belongs to the **Environmental Institute of Finland**, a research and development agency that comes from the Ministry of Environment, they are the competent authority to regulate the European Union regulations on POPs, waste, among others and seeking with his presentation to show the audience the main difficulties that the Institute faces as a competent authority.

To begin his presentation explained that one of the main objectives of circular economy is to increase the reuse of materials, saving unrenewable resources, cutting CO2 emissions and being self-sufficiency.

Many materials are being recycled like, paper, cardboard, packaging plastic, waste of electric and electronic equipment and end-of-life vehicles where hazardous chemicals can be present in almost all waste streams.

He mentioned a Plastics Roadmap for Finland 2.0 (by 2030) implying some measures among which he can highlight the need of improve the recyclability of plastic products, the use of recycled plastic and the introduction of diverse and adequate recycling solutions for recovered plastic. Also referred universal topics on plastic recycling, like not all waste plastics are suitable for recycling (in some cases, their controlled use for energy production is a better option), when using recycled material, attention must also be paid to additives and their impact on the end product's use, additives may also be recycled into new products. Product design is key to the quality and safety of plastics in the future, it is necessary avoiding "downcycling" into low value applications.



Also emphasized that plastics will always contain additives and its function may be delivered at polymer production, at the compounding stage, during conversion or during the use of the article material. According to the UNEP (2023) 13,000 chemicals are associated with plastics production and over 3,200 monomers, additives, processing aids and non-intentionally added substances are of potential concern due to their hazardous properties. Also, ten groups of chemicals associated with plastics have been identified in this report as being of major concern due to their known toxicity and potential to be released from plastics.

The expert mentioned that on the website: <https://plasticscircularity.org/> more information can be found scientific studies and useful information of interest.

Regarding the first way, we can consider, recycling of POPs is prohibited under the Stockholm Convention (for example PBDEs), it also requests for identification and an environmentally sound disposal. But the difficulty lies in identifying these substances, since it involves sending a sample to a laboratory and those cost hundreds of dollars. In some cases, removal of the hazardous chemical is possible facilitating recycling of the polymer, but this must be done in a way that is financially competitive compared to the alternatives. The main problem is that if we want to reduce the recycling of these materials, while increasing recycling through the circular economy, we have two forces pushing in opposite directions.

On the second way is possible to take into account chemical regulations and setting a limit for the chemical in products/mixtures and articles, but this takes time, depending on the circulation time of the material. For example, for packaging materials the lifetime is short, so the results will be seen very soon, on the other hand, for construction materials whose useful life is very long, it could take 200 years to see the results.

To continue, the expert commented on how the European Union (EU) are controlling POP-BDEs and some results. Commercial penta-, octa- and decaBDE are plastics additives listed in the Stockholm Convention, it is known there is human exposure because it is found in human biomonitoring. It is also known that it has different uses and that its functional loading in plastics 10-20%, which is a lot.

Mr. Seppala also mentioned that penta-BDEs and octaBDEs were prohibited 20 years ago in the EU. Some decaBDE use is still ongoing but its use was restricted in 2008 for household appliances and the use of PBDEs was banned in electrical and electronic equipment (EEE) in the EU at concentrations above 0.1% (1,000 ppm). In many cases PBDEs were replaced by other brominated flame retardants.

The expert highlighted that the recycling exemption in the Stockholm Convention was never utilized in the EU, and from the beginning EU has tried to avoid recycling it. Also mentioned two main instruments (in addition to prohibition of use): the WEEE Directive, where plastics containing Brominated Flame Retardants (BFRs) have to be removed from separately collected WEEE, and the POPs Regulation, removal of BDEs in the recycling streams required through Low POP Content Limit value.





Below, he presented the current limit values regarding the EU regulations that sets limit values for BDEs to be placed on the market, and explained that below these values the concentrations are considered as Unintentional Trace Contamination (UTC) and are not subject to restriction and no difference whether made of virgin materials or recycled materials. The EU is the only Party under the Stockholm Convention that fixed a value for the UTC corresponding to 500 mg/kg for the sum of tetra-, penta-, hexa-, hepta- and decaBDE.

Also presented the set limit value for POPs waste for the sum of tetra-, penta-, hexa-, hepta- and decaBDE and it was reduced last year from 1.000 mg/kg to 500 mg/kg, and it will be reduced again to 350 mg/kg at the end of 2025 and 200 mg/kg at the end of 2027. This limit was set since it seeks to implement article 6 of the Stockholm Convention, which consists of including products and articles upon becoming wastes, consisting of, containing or contaminated with a chemical listed in Annex A, B or C, are managed in a manner protective of human health and the environment. Take appropriate measures so that such wastes, including products and articles upon becoming wastes, are (d. ii) disposed of in such a way that the persistent organic pollutant content is destroyed or irreversibly transformed so that they do not exhibit the characteristics of persistent organic pollutants or otherwise disposed of in an environmentally sound manner when destruction or irreversible transformation does not represent the environmentally preferable option or the persistent organic pollutant content is low, taking into account international rules, standards, and guidelines, including those that may be developed pursuant to paragraph 2, and relevant global and regional regimes governing the management of hazardous wastes.

Other important value applies to what at or above waste limit value LPCL (low level of POPs), since there are values defined by article 6 of the SC. This means that the waste is separated into two streams depending on whether the content of those POPs is above that limit or below. Those that have more will be eliminated according to what Basel Convention says and those that have a lower value can be treated following the regulations of each country.

Then, the expert explained that a real recycling environment for WEEE implies apply the different limit values there. First, it has the limit of the RoHS regulation, which is 1.000 mg/kg, which means that we can find products on the market that have a lower limit than that defined, and they enter into the WEEE collection. Then it can apply the LPCL (for BDEs: 500 mg/kg) before or after the separation and this is where the main difference is, what is larger has to be destroyed and what is smaller can continue. And then it has the UTC (for BDEs: 500 mg/kg) that sets the limit for the product that can go on the market. These are the tools to try to eliminate PBDEs in materials.

To continue Mr. Seppala emphasized that the problem is there is not feedback, so it is not know if what we are doing is working or not, and it should be able to evaluate it because there is still a need to reduce these maximum values even more. PBDEs are still recycling because they are found in the products and so it is necessary to do more about it.



The expert commented a study carried out in 2019 in the EU to develop these new maximum residue limits and some of the findings that emerged was that DecaBDE was detected in WEEE in significantly greater concentrations than pentaBDE, PentaBDE in End-of Life Vehicle (ELV) is lower than in WEEE, and DecaBDE dominates in consumer articles made of recycled material. So DecaBDE is the key issue for articles from recycling and this should also be relevant in other waste streams. Also highlighted that levels suggest secondary contamination from use of recycled materials in production.

Mr. Seppala mentioned that according to the European Electronics Recyclers Association (EERA) some 65 % of the content would be recyclable. The existing separation techniques for the different plastics present difficulties and a lot of material that can not be recycled because, for example, these plastics include the solid plastics with brominated flame retardants and in the average mix of solid plastics wastes coming out of the WEEE recycling processes, typically 5 - 10 % consist of plastics with flame retardants.

The expert explained that finally two tools are available, the setting of the residue limit (LPCL) and the level allowed to reach the market (UTC). The Basel Convention establishes certain parameters that must be taken into account when setting the LPCL, this includes human health considerations, adequate capacity for analysis, limit values within national legislation, etc. Regarding the UTC many countries have not set a number, but it is something abstract and there is no technique to define this, but everyone agrees that these values should be close to zero because we do not want these substances to come onto the market in recycled products, but it is necessary to consider the limit of quantification.

In practice the recycling industry implements the UTC limit value it does not measure what goes through the crusher but what comes out of the crusher.

Actually, there is a pressure to lower the value of UTC in the EU because PBDEs continue to be present in plastics (the plastic industry says it can get rid of 95% of them), so the debate on where to land with the new UTC values is ongoing to balance between circular economy objectives and protection of human health and the environment, but lowering UTC too low will prevent recycling of shredder light fraction (SLF)/Automotive Shredder Residue (ASR) and virgin polymers will be needed to replace the destroyed.

Mr. Seppala highlighted that the amount of PBDE in plastics to be recycled is expected to increase because the objective of 65% WEEE collection rate is not achieved by all EU Member States yet, also the export of “used electrical and electronic equipment” and WEEE from the EU will be reduced by Basel Convention and the ELV collection rates will also likely improve.

When we look at the total amount of WEEE generated, 2.600kt (only 54% goes to legal recycling routes), only 7% is incorporated into new products, only 7% goes to smelting and 67% of this material has an unknown whereabouts. So here is a great challenge to increase these recycling rates but make it more difficult result in a large part of it will be exported.



One of the challenges in lowering the UTC value is the lack of capacity and it would require the mobilization by the private sector of 1.000 - 1.600 million EUR to build the 40 plants specialised SLF/ASR recycling facility that would be needed. The other challenge is the lack of information on exposure from materials, according to the biomonitoring carried out in humans, the concentrations of PBDEs are decreasing but we need more of these studies to reflect on where further improvement is needed.

To finish the expert **highlighted some conclusions:**

- Recycling of materials is one of the major goals in circular economy.
- Reduction of plastic additives can be achieved through prohibition of use and separation in the waste management stage.
- Identification and separation technologies are not available for all hazardous additives, best for POPs.
- Identification of plastics with additives in the recycling processes is challenging.
- PBDEs are a decreasing problem, but they are still there.
- Setting limit values for waste and materials placed on the market are important tools.
- Specifying LPCL and UTC values is a challenging task.
- Recycled materials need to be competitive.

Ms. Paulina Riquelme from Chile commented that it is important to have the technology and trained personnel, which is why it is a great challenge to implement this type of limit when regulators establish it in the EU, so she asked how these limit values can be applied, how practical is to apply them in the recycling process. Mr. Seppala replied that it has a standard in the operation of recycling facilities, but most of the plastic waste is exported to other EU countries, and is the company that receives it that must be responsible for complying with those limits. By lowering these limits, the cost of treatment increases, and more investments must be made. Another problem is that many electronics come from Asia and should have the same UTC value and these products are not controlled in customs, the importers must oversee controlling that but there is no a real control on them. No one really knows how well it works and all comes down to environmental permits and who issues those authorizations and then checks to see if it is being done legally but that is difficult to achieve.

Ms. Yoani Gonzalez from Panama asked if he is aware of whether Asian countries are considering regulations like these, because the majority of the products that arrive at GRULAC come from there, and how the EU controls the products that arrive from Asia and if they verified that they comply with the rule EU is asking. The expert responded that the customs authorities has a laboratory there but in most cases customs authorities only perform simple analyzes, and in this case the analysis are complex and expensive so they are usually not performed. As the European market is 550 million people, Asian producers make sure they can comply with the standards, but we cannot say that they comply 100%. Therefore, the essential thing is to set a correct limit so as not to overregulate, otherwise plastic recycling would become non-competitive, but if regulation is not sufficient, recycling of plastic with these substances will continue, so a balance must be found.



A participant asked if he believes that chemical recycling could help in the process of this type of recycling. The expert responded that he only knows a couple of chemical recycling processes, but the problem is separation since if we have just one piece of plastic with PBDEs it could contaminate the entire ton, but he thinks that with chemical recycling there is the possibility of better controlling the process that with the current method is worse, it will take long time to replace the current processes but he is hopeful that it can help to reach a limit closer to zero.

Other participant asked if it was possible to measure the levels of PBDEs before using them for any product. The expert responded that this is precisely what is being done, when the recycler makes the declaration of conformity it must be based on something reliable and what is done is to take a frozen sample of a size that depends on the level of confidence, freeze it, mix it and they pass it through an XRF, because we are talking about brominated, bromine is then the indicator.

Another participant asked if there was any consideration or action regarding the yoga mats on this issue. Mr. Seppala replied that each member state has a consumer protection authority in charge of the materials that reach the market to ensure they comply with the legislation and that is why he can only speak in the case of his country. He mentioned a case where the importer was informed about the non compliance of his/her products and had to remove all of them and pay for incineration.

Mr. Victor Rey mentioned that in Colombia there is a genuine interest in doing these processes and having a much higher recycling rate but there is a lack of knowledge in some companies on how to separate plastics, and it is also necessary to do a good characterization to be able to identify what products could be developed from these recycled plastics, so, high impact and economic value, that is why it would be good to be able to attract academia in order to they can contribute to the industrial sector. The expert emphasized that there is always room for innovation, and it is related to the fact that waste flows are very heterogeneous. Once we pressure recyclers to improve their processes to innovate better technology to produce cleaner products, that becomes more expensive and then those recycled materials are not going to be competitive unless the item that is produced is of higher value. But everything is related to the price of oil, and it is something that we saw with the recycling of EPS in Netherlands, they could not compete with the low price of oil and also the high price of incineration for the companies that were paying for the waste from the EPS. That is why it is important to find our own niche and the authorities must articulate all these factors.

Mr. Harte from the secretariat commented on Ms. Riquelme's question about enforcement, how to strengthen the implementation of these obligations that arise from an international agreement and also commented on some issues where GRULAC must work a lot. One is to define national authorities competent to regulate the matter, since the Environment and Health authorities are not the only actors that regulate the market, especially when we talk about products and industry. Other regions have created agencies specialized in the management of chemical products, but in GRULAC this has not happened, so the powers remain diluted or shared and the roles are not clear.



The second point is that it is necessary to internalize the obligations of an agreement in national regulations to implement them and the last point is that it is necessary to define who the control bodies are to control that a product does not enter, and to control industry and the recycling industry. So, he suggests thinking in the region about the necessary gears to comply at the national level with the different conventions, taking into account that each listed substance will affect all productive sectors and is a great challenge.

Mr. Seppala asked Ms. Ohno if it not be good for the Stockholm Convention in the area of chemicals to define a limit value of UTC. She responded that in her opinion there are several reasons why successive review committees have not included the UTC recommendations. For chlorinated paraffins, a percentage was established that was included in the notes because there was a specific need. However, for other types of chemicals the need was not seen within the review. A UTC value for chlorinated paraffins and PFAS is currently being discussed since it is known that there are products that contain these chemicals intentionally, but it is not known at what level. Another reason is that it is very difficult to reach an agreement on this values and that is why it is left in the hands of each member state.

Ms. Mata from Costa Rica mentioned that at the national level they have tried to define a normative regulation, but it has not been possible since the weakness is found in the surveillance and control mechanism. Although the limits that other parties such as the EU have already set when entering these technical regulations that could be taken as a reference, they must present the control and surveillance mechanism and to do so they need to strengthen the analytical capacity, but they do not believe that through a project they can achieve the sustainability of control mechanism.

Ms. Medina mentioned that as a region that is mostly importers, more pressure on manufacturers should be put in place, so the manufacturers analyze and make a safety sheet and not burden each country with the cost of maintaining a laboratory to analyze each batch that would not be sustainable. In relation to her comment, another participant responded that they could request all the certificates from the producer but they have no guarantee that it will be fulfilled as long as it is not monitored. And this oversight task is very hard and requires a strong institutional framework with the necessary resources.



**Dr. Roland Weber**  
Expert

To finish the first day, Mr. Roland Weber presented about the waste management and recycling of plastics and some challenges of POPs and other chemicals of concern.



Basel Convention Coordinating Centre  
Stockholm Convention Regional Centre  
URUGUAY



BASEL CONVENTION



ROTTERDAM CONVENTION



STOCKHOLM CONVENTION



Food and Agriculture  
Organization of the  
United Nations



UN  
environment  
programme

To start, he explained the importance of plastic waste management to highlighted that the lack of proper plastic management impacts future generations, since degradation in the environment can take hundreds of years in the marine environment with long term of break down into microplastics and nanoplastics which is taken up by marine organisms along the food chain. It is estimated that the contamination of microplastics, which is 4 to 20 times higher in the sea than in the earth.

Also, he added that the life of these plastics could also be controlled depending on their source and the management of the waste and without this type of environmentally rational management, we can have various health risks, because there are many dangerous additives that are already contaminating the environment, the biota, and the food chain. If hazardous additives in plastic are not managed, they can enter by recycling to new products including toys.

The expert also highlighted that for low-income countries open burning of waste is a common practice, for plastic and these open burning result in the release of hazardous additives and dioxins into the environment and contaminate air, soils and food.

Mr. Weber commented that the Stockholm Convention recognizes the waste hierarchy, also the EU, where the management of waste is prioritized. For example, the EU has a five-step hierarchy that is included in the Waste Framework Directive. There, the importance of reduction and prevention is recognized, which stands out here for plastics and reuse. The expert explained that his presentation focusses on the recycling phase and the recovery, and also a sheet on the wastebanks.

To continue, the expert mentioned that there is a label that exist, at least for certain plastic categories. He presented one from the ASTM International Resin Identification Coding System (RIC), which is a resin identification system, which is based on these symbols of the public products, and which identifies six types of plastic resins that are made of these products and a seventh category of other plastics. This was developed in 1988 by the Association of Plastic Industries of the United States, and since 2008 it has been administered by the American Association for the Recycling of Materials at the ASTM International. The objective was to label the number and identify if it's easy to recycle or not. For example, for the category one of HDPE, the polyethylene of high density (category 2), it tends to be recycled, and can be recycled in large quantities or in large proportions, but for others they can be recycled on some occasions or can be difficult to recycle. So, there is a certain separation or recycling of plastics in middle or low income countries but, most plastic fractions do not have a market.

Mr. Weber mentioned that in 2013 the RIC marking system changed the symbol that means recycling and the arrows were eliminated and replaced by a solid triangle, and the reason was because of the confusion between the consumers about what this symbol meant. Because in reality the marking was not a sign that a product was recyclable, because in fact less than 10% of plastic has been effectively recycled. Therefore, the industry had to admit that its symbol of recyclability was not real and that is why they had to change it. So, in the future if we have better recycling process it hopes this symbol can come back.



To continue the expert explained some considerations about physical recycling (is differentiated in mechanical recycling and in solvent-based recycling) and chemical recycling. Physical recycling is when the polymer chain is not broken and it recycle the whole polymer, in chemical recycling the polymer chain is degraded by a dead polymer and that is through the depolymerization or the solvolysis, and then is possible to make a new polymer or if not, is possible to heat the whole system and do pyrolysis and from that you get hydrocarbons or synthetic gases, with these you can produce a polymer for other purposes. Something that is not considered recycling is the use of these hydrocarbons or synthetic gases for electricity production and heating.

There is a definition of mechanical recycling by ISO standards, is from 2008 and refers to those processes that involve reprocessing the plastic through melting, without significantly changing its chemical structure, but has a range of limitations and challenges. The first is there are many types of polymers that must be separated, and recyclers don't know how to separate it. There are also difficulties to work with products that have multiple layers and there is the problem of these inherited chemicals which are colors, as an example, which need to be discolored and recycled plastics need to be deodorised. There are also different fillings that make recycling hard, considering some electronic products. For products that are in contact with food the recycling of some polymers is restricted, in the EU, for example, PET can only be recycled for items that will contain foods or drinks like bottles for example. Depending on the requirements there are the cost of the collection, transportation, separation and processing. This was evaluated for some plastics and here the calculation was that it could cost up to 1.200 euros per ton, making recycled plastics more expensive than virgin plastics, especially when there is a relatively low oil price. The quality of recycled plastics is usually lower and normally this cannot be used for plastic films which is something very important for packaging.

Mr. Weber also mentioned that is important see the quality that needs to be separated. The majority of plastics are not compatible, this means that they cannot be mixed. If there is 1% or 2% of another type of plastic it can cause that this recycled plastic can not be used for high quality new products. There are only a few types of plastics that have the appropriate compatibility. A very good separation of the plastics is needed to produce the right kind of plastic for recycling and for downcycling.

For recycling, is necessary to distinguish between thermoplastics and thermosets. Thermoplastics are produced by poly-condensation, poly-addition or polymerization and which have some implications on recyclability. Thermosets are not suitable for mechanical recycling since they cannot be re-melted and therefore, it need to look for another way to recover these plastics, and an alternative could be chemical recycling.

Other issues related to polymerization is suffering from thermo-oxidative processes, which means that PE, PP and PS, degrade over time. And we are not talking about weeks or months, but years and decades. So when you have a polyethylene container and you analyze it 30 years later, it becomes more brittle. And that is also something to consider for long-term recycling and circular economy.



Regarding polyaddition, which is related to hydrolysis, they can condense again. So the quality of these plastics does not reach the same level of the virgin plastic. On the other hand polycondensates (PETs, polyamides) after the end of their life cycle and at the recycling process, can reach a quality similar to that of virgin plastics, and that is why PETs are preferred and used in large volumes and why we see a higher quality.

The expert highlighted that for a clean circular economy, hazardous chemicals need to be controlled, including hazardous additives in plastic, because a wide range of hazardous additives are in certain plastics and can be transferred by recycling. So, a range of additives have been restricted by the Stockholm Convention or regional or national legislation in the EU and they need to be managed in an environmentally sound manner: brominated flame retardants (PBDEs, HBB and HBCDD), short-chain chlorinated paraffins (SCCPs), medium-chain chlorinated paraffins (MCCPs). Several phthalates, cadmium and lead, bisphenol A (BPA) and phosphorous flame retardants can have a negative impact on the recycling.

The expert emphasized that recycling flow of PBDE/BFR containing plastic seems largely uncontrolled. Therefore, these contaminated plastic fractions need a better life cycle management and control. Waste plastic is now addressed by Basel and Stockholm Convention and that plastics containing POPs are better managed.

Current WEEE recycling facilities are often not optimized for separation of PBDE/bromine containing plastics. The EU has a regulation for the retardants of brominated flame and it should be separated, but this separation capacity is only 30% for this type of plastics of electric and electronic devices. The capacity of the management of WEEE even in EU, after several years in force and many improvements and regulations, still does not meet the requirements. The complex mixture of plastic in WEEE is difficult to separate and industry has tight specifications for materials and chemicals resulting in low recycling rates of polymers from WEEE. However, there are major plastic types as target plastic (ABS, ABS-PC, HIPS, and PP). The Strategy is to separate/produce valuable recyclates of major plastic types with a quality accepted by producers of new products and separation of PBDE/bromine containing plastic as an integrative part of this recycling.

The different plastic density can be used for gravity sink-float separation of common plastics. Since brominated flame retardants are heavy and the additive content is 5% to 25% in flame retardant plastic, these BFR-plastics can be separated during plastic recycling by sink float technology.

The different categories of plastics can be found by infrared and in different applications, also XRF is used for separation. We have seen that these techniques cannot achieve a separation of 100%, there will always be some kind of impurity, so in EU we have a standard of plastics containing >2.000 ppm bromine must be removed from recycling processes and must be disposed properly, and the EU RoHS directive maximum values for PBDEs and PBBs are 1000 mg/kg.



The expert also mentioned an example of how an industry tried to recycle TV stations with flame retardants plastics through 6 steps of separation, including magnets and the same type of plastics with rotatory tables. After separation and cleanliness of this plastic, only 10% of these recycled components could be used with 90% of virgin plastic.

To continue presented about **physical recycling** based on purification from solvents, that was already developed about 20 years ago, it is possible to dissolve the plastic with the subsequent precipitation leads to a purified polymer. Fillers and foreign plastics that cannot be dissolved are removed. He also mentioned a case study of a solvent-based recycling with BFR elimination: CreaSolv®. The CreaSolv® process enables the separation of hazardous brominated flame retardants (BFRs) from flame retarded plastics from electronics or insulation by a solvent-based recycling approach, and a recycled plastic is obtain. One full scale plant has started operation in the Netherlands for HBCDD containing insulation foam, but after one year of operation it broke down, The plant could not compete because the fuel prices increased and at that time fuel was a high cost, the enterprice was no longer competitive in the market. This was the only full-scale plant where the separation with solvents was used.

Mr. Weber commented about the challenges and needed improvements from recycler perspective in the EU. He said there is a need for recycled content targets to pull end-markets for recycled plastics, other is set incentives rewarding the environmental and social benefits of recycling, also appropriate financing of waste management, due to the lack of financial resources to improve the overall waste management infrastructure needed for the separation of plastics. Other needs are the implementation of improved separation, the practical harmonized legal framework to increase the implementation to control or restrict the exportations of illegal waste to countries that did not have the infrastructure to give adequate treatment, especially for low-income countries, especially in Asia. Also, improve products eco-design and development of the interface between waste and chemicals legislation. So, the expert mentioned that is a very useful study for GRULAC countries because in Europe it has been working for many years in this area and this type of problem continues.

To continue, the expert presented about chemical recycling of plastics. Chemical recycling can be categorized in depolymerization into monomers or thermolysis (thermal degradation of the polymers by pyrolysis to a hydrocarbon mixture or gasification to syngas H<sub>2</sub>/CO). Is defined in an ISO standard from 2008, and it is a conversion of monomers or new raw materials changing the chemical structure through gasification, depolymerization and cracking and energy recovery and incineration are excluded in this recycling.

The chemical recycling via depolymerization implies that the polymer chains are completely broken down into monomers and is thus classified as monomer recycling. These monomers are separated and purified before entering the polymerization process again to produce new virgin-quality polymers. This step can remove pollutants and for example the POPs can be separated well. PET and PA6 are currently recycled via depolymerization on a commercial, but limited, scale. SPA6 or PET plastics can be used as an input but in practice they are generally used in case of PET for packaging of post-consumer and pre-consumer food and textiles is still under development and in case of PA6 the mainly post-consumer are use in carpets, also fishing nets and industrial waste.

Mr. Weber also presented about chemical recycling by thermolysis. Pyrolysis is carried out and a type of oil and gas is obtained which is then evaporated and you have a kind of talcum that is left with the fillings with pigments and ashes. Chemical recycling might be able to degrade or separate POPs/CoCs but monitoring studies are missing. The application of pyrolysis for the production of a recyclable fraction from plastic waste has two main challenges: the use of a very heterogeneous feedstock and the treatment of the low-grade gaseous and/or liquid products obtained from it. In combination, this has been a high obstacle and only a few (half-)industrial pyrolysis processes for plastics exist. The current concepts are focused on the decentralized depolymerization of pre-sorted and treated plastic fractions to produce oils. Therefore, pyrolysis vapors are condensed, and the oils may be used as potential feedstocks for oil refineries or for large centralized steam crackers of the chemical industry. It is important to take care of these processes because many pyrolysis and chemical recycling attempts have failed. The expert highlighted that industry should finance (EPR) and not governments should waste money in false promises and pilots and also pyrolysis oils or gasification syngas for energy recovery is not considered chemical recycling but energy recovery.

To continue the expert mentioned a case study about chemical recycling by thermolysis: feedstock for refinery. One option currently assessed in pilot scale in Europe and USA is the pyrolysis of selected plastic fractions and feed the resulting oils as feedstock into refineries which produce the feedstock for plastic production. He showed an example from an Austrian company OMB, they use oil produced from their ReOil process as plastic feedstock. As feedstock for the ReOil plant high and low density polyethylene (Code 02 & 04), polypropylene (05) and polystyrene (06) can be recycled. The used plastics are presorted and delivered already shredded to the refinery. The first phase of the process is called the "Solving phase". Plastic is a poor heat conductor and to heat and dissolve large quantities is one of the main challenges of chemical recycling. Also melted plastic is very viscous making it very difficult to transport through pipes. The second phase is the cracking stage where the thermal energy breaks the plastic's long hydrocarbon chains into shorter ones. Refineries have experience with cracking processes, as many refinery processes rely on cracking. Then in a third step, called "Flashing", any substance that has a sufficiently short chain is separated off to be processed in the refinery and used again for plastics. Longer chain hydrocarbons go through the ReOil cycle once more. Current a ReOil® demo plant is constructed with a designed capacity of 16.000 t/year at the OMV site in Schwechat, Austria. Production startup was planned for 2023 but is delayed.



Mr. Weber explained a bit more about chemical recovery/recycling of plastics. Composting of biodegradable plastic can be seen as a chemical recovery. But almost all plastic do not biodegrade and cause rather large problems in composting and this is still a great challenge. He highlighted that now there is a lot of biodegradable plastic that goes to composting and therefore it is polluting the soils. Looking our waste management, the largest share of municipal waste is organic (>50%) which is normally not separately are collected and disposed together with the plastic fraction from households and that is a bigger challenge.

To finish, the expert mentioned that much of plastic from Europe was sent to developing countries in particular East Asian countries, so they have not recycled, partly they have recycled but a large share was sent to the composting in small boilers, and for example high dioxide emissions are produced. So, it is important that the authorities are concerned that these mixed plastics do not go to these incinerators or boilers. There are better techniques available to destroy or eliminate a large amount of plastic for example the coal ovens that works to replace the oil or the coal, plastics can be a good substitute. Also the expert added that there are several examples of pollutants when food is measured in the environment of greenhouses there is contamination in milk for example, in eggs, etc. Also, plastic additives are released and they are filtered from the greenhouses and they reach the groundwater sources and also water bodies. There is the presence of PFAS that will continue to contaminate for decades or centuries from what is filtered from the greenhouses. So, that is part of the impact of recycling including chemical recycling which he knows is a topic that is talked about a lot now.



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One participant asked about chemical recycling. There are many detractors regarding this type of technical recycling because they mention that during the process more dangerous waste can be produced. So, he wants to know if there are any research that has been done on the comparison if these techniques are really polluting versus if it is declared that plastic definitely doesn't have a recycling option it goes directly to coprocessing. The expert replied that it is important to take into account that with the pyrolysis process the products are dirty, the carbon is dirty, there are polyaromatic hydrocarbons in the oil, therefore in this Austrian company they feed these materials in this product that they develop, and it is practically a closed process, and it is about a better available technique. He also mentioned that knows from Pakistan and India that the pyrolysis is a nightmare because normally these facilities are not so good. They are not so isolated which means that part of these gases or the oils are evaporated. It is necessary to work with good companies with the right technologies to develop them. He expressed that he is in favor of this being done on a larger scale like the case in Austria. So, it is important that when this chemical recycling begins the authorities pay attention to its functioning.

The expert also mentioned that at the domestic level composting could not be done because the optimal conditions are not there. For example, if a city builds a huge composting plant, there are hundreds of tons of compost there and you can get higher temperatures at a homogeneous temperature and in those conditions biodegradable plastic can decompose on the scale of the compost, but the challenge is how to separate that biodegradable plastic from the non-biodegradable for that composting. Biodegradable plastic is a part of the solution for some products only if it is done in large quantities, the second part are the optimal conditions. It is not the perfect solution but for some problems it is part of the solution.

The participant from Trinidad and Tobago commented that she has been following a company from Australia which supposedly has developed a super enzyme that can degrade molecules. It is a recycling that they are promoting, so she wanted to know if the expert had some information about it. Mr. Weber replied that he had not seen it in a large-scale application and asked the participant for the information because it is something that would be interesting to see.

Other participant commented that the plastic industry is investing a lot of money in advanced recycling to update that technology and make it successful. So, regarding chemical recycling which is seen as an addition to mechanical recycling for PET it is easier to make mechanical recycling so it would not be necessary to make chemical recycling for that type of plastic. Also commented that a colleague in Canada sent her new research in which bio-membranes are used to try to separate polymers from additives so it would not necessarily be a traditional pyrolysis system but there would be a kind of barrier to be able to collect polymers and separate them from additives.



Mr. Harte mentioned about biodegradable plastics and the experience that he observed in the city of Buenos Aires. There is a plant that receives basically two streams of wastes, one is the waste from the pruning remains of branches and leaves of the city, and the other stream is food waste from a collection program from big food waste generators (restaurants, hotels, etc.), and both streams go to industrial compost. So, maybe some type of biodegradable plastic could get into this process, Mr. Harte asked the technicians that work there if biodegradable plastic could be part of this process and the answer was yes, as long as biodegradable plastics come from these two streams of waste, pruning or food. So if within the collection of food remains biodegradable plastic for example, in contact with food and therefore comes as part of that waste they can incorporate it, but they will not incorporate other sources of waste because the risk to introduce plastics that are not biodegradable and the main objective of a composting plant of this type is not only to manage the waste, but also to generate material with some added value. It is difficult to put into the market or sell this type of composting as fertilizer because it requires many certifications to ensure that it is harmless and safe, this compost is used for land or soil filling, leveling or some type of application in construction. If they start to mix with other waste streams the whole process will be complicated, so we need to see what kind of biodegradable plastics will be useful for. The other thing that the sector addressed was if we start to put biodegradable materials into materials that we want to last, it can also be a problem, so they will have to separate waste streams that have different management. So, for countries where the origin separation of waste is a challenge, to introduce another type of material that is the same but requires a totally different management is a bigger challenge, so we have to think very well what are going to be the replacement and the solution in this case of biodegradable material.

Ms. Gomez from Chile following this topic explained that are different types of plastics that are biodegradable, so also it is important to know what origin they are, if they are corn starch origin or if they are of other types of origin, because some although one puts them in an industrial composting plant, they do not degrade completely, they are fragmented in microparticles, so you also have to be careful with the type of bag is in use and its origin, so it could be even more complex than one can think.

Another participant from Chile added regarding the former interventions about compostable plastics, there is not a certification as it correspond not even a formal certification on the composition of the products manufactured to be compostable, all of us stayed in a situation that anyone sells what they want because it is compostable. In Santiago (Chile) there are very interesting pilots of collection of organic waste in some communes, and they are at pilot levels, they are not big yet and there is one of the big plants of industrial composting which stopped receiving the bags that sell some offerings from the market precisely because of that, and it generates a huge problem in the composting pile because they are not compostable. So, it is necessary analyze the product they are delivering because apparently it has composition of traditional resins.



Ms. Gardiner from Trinidad and Tobago added something about this point, it is important to have standards in this sense, in the example of Trinidad and Tobago that will ban expanded polystyrene in various sectors, a standard is needed, is needed to develop one standard for bioplastics as a whole and it is known there are different variations, there are some that are biodegradable, some are of biological basis but in addition to the biodegradable are the compostable ones, so it is important to understand what it means and to have a standard established. It is necessary to see other aspects to make sure that these materials can be compostable, they have to meet certain criteria at a certain level to be safe. Mr. Weber explained about ISO 14855 it is a biodegradable aerobic standard for plastic materials under control in composting conditions, so when you think about standardization there is an ISO standard for that.

To close the first day, Ms. Ohno from the BRS Secretariat give the last words and share a little more about what is going to happen the next day, and she motivated the participants to complete and send to her a form to collect information that has been already shared with all participants as well as Stockholm Convention Parties, to know about the experiences and challenges when implementing appropriate strategies for the identification of POPs in products and articles, situation on landfills with this POPs waste, and other relevant information. The results of this survey will be share with the POPs' Committee.



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Ms. Ohno opened the second day by thanking the participants and summarizing the first day. There was an opportunity to learn more about plastics, the amount of chemicals present in plastics, chemicals in contact with food, the challenges in recycling and management of plastics waste containing some hazardous or dangerous chemicals. The exchange of knowledge was very enriching. Chile's presentation on monitoring data in collaboration with RECETOX was a highlight.



**Ms. Therese Karlsoon**  
**Scientist and Technical Advisor to the International Pollutants Elimination Network (IPEN)**

To begin the day, **Ms. Therese Karlsoon**, Scientist and Technical Advisor at the **International Pollution Elimination Network (IPEN)**, gave a presentation on the urgent need for increasing transparency of chemicals in plastics. She offered an overview that shows a simplified version of how plastics are made: a combination of carbon and chemicals, most derived from fossil fuels, and even if they are of biological origin or biodegradable, they face the same challenges regarding chemical substances and their transparency. Plastics are made up of monomers that combine to form polymers, for example polystyrene. There are also additives, including flame retardants, dyes, UV stabilizers and various types of chemicals that are used to create the necessary properties in a particular plastic or plastic product. There are also unintentionally added substances that are present in many types of plastics, such as processing aids, degradation products to degrade other substances, or chemicals from recycling of plastic.

Ms. Karlsoon showed a report from last year and pointed out that for many of the chemicals that are currently used in plastics there is no data regarding their hazardousness, there are not even regulatory databases, and many of the chemicals that are used are chemicals of concern. The way it behaves today makes plastics carry toxic chemicals and crosses the limit, they reach our homes, there is very little control and there is no transparency.



There is an article within the Stockholm Convention that indicates that each Party State must develop strategies to identify products, articles in use, wastes containing or contaminated with substances listed in Annexes A, B or C of the Convention. However, many challenges have been identified, and have not been addressed as desired to safeguard the health from POPs.

She indicated that several studies have been presented that discuss these types of chemicals and seek their elimination at the global level. Specifically, the presence of POPs in toys was studied in 10 different countries. All the toys tested contained brominated flame retardants. The concentrations do not play a flame-retardant role, so they are likely to be there due to recycling. 0% of toys were labeled for the presence of toxic chemicals, there is no transparency in the life cycle of plastics, and we find that many materials have an unknown chemical composition and are mixed to form new materials whose composition is also unknown. After many studies, it became evident that recycled plastics are much more toxic than newly produced plastics, this lack of transparency shows that recycling workers are exposed: 92% of the samples contained brominated flame retardants, 92% of the samples contained bisphenol A and 100% of the samples contained benzotriazole UV stabilizers.

This is something that is reflected in other studies over the years, the same thing happens in toys when we analyze plastics, brominated flame retardants have been found, and although there are some techniques to separate plastics that contain some chemical substance to date, there are no methods that allow us to separate all these substances, which is why it is very important that controls and tracking be carried out on these products. Currently, the lack of transparency and traceability of plastics is poisoning the circular economy and consequently exposing people to toxic chemicals throughout the life cycle of plastics.

She questioned whether this is regulated in other Multilateral Environmental Agreements (MEAs) and indicates that less than 1% (128) of chemicals in plastics are regulated by existing MEAs. The need for transparency must be covered in harmonization codes. We see these codes are used to obtain the number of wastes, but they were not made to know the chemical composition and materials. The codes do not cover all types of plastics, even if new types of plastics are included, which is plastic pollution in paper or textile bales, the numbers increase much more, however, it still does not cover everything. There is a discrepancy according to how we look at these numbers and the waste, which is much larger.

She explained that it cannot be done on a voluntary basis because plastics are quite complex, because they are mixtures of chemical compounds, complex chains of life. In one of the studies, we tested baby bottles, and 23 of the samples had BPA-free labeling, but only 14 were BPA-free. Transparency and traceability must come from policy to make sure something is enforceable and agreed upon globally.





From her point of view, she indicated that there are many aspects of traceability and transparency that need to be improved in plastics to protect the environment. All require publicly available data, and for example for toxicity there is no database available. For many of the chemicals that are being used in plastics today there is no hazard data available so you don't know what the consequences of those chemicals are, and you can't tell.

Regarding the chemical content, this is something that can be combined databases that have labeling and other types of identifications, the important thing is that this will not answer all the problems, but it will be a challenge, it is important to have consideration, maybe the population was not looking at the small labels, but it will give the possibility to implement policies and increase the possibility of monitoring these policies and it would be more efficient and cheaper than trying to perform traceability and monitoring downstream, given that it is a very complex group of chemicals. It is necessary to have that transparency and security throughout the life cycle of plastics.

In addition, she indicated that publicly available production volumes, those that currently exist are limited and the data does not cover all types of plastics, this again would help us in policy implementation. She added that she does not want it to appear that these are simple solutions we are moving forward from a system where there is quite limited transparency and traceability, if any, but there are systems that can be used as inspiration to find a way that can work, for example in the EU there is the SCIP database which has substances of concern and there are also different sectors that have had different approaches, for example the automotive industry also has tracking systems, internal standards.

Ms. Karlsoon mentioned that when a Hewlett-Packard computer is disassembled there are different parts of the computer with different codes, and those codes give us information about the content of chemicals contained in the plastics of the computer and that was integrated for any part or piece of a computer of a given size. There are also many useful documents and guidance, for example, the Stockholm Convention document that was developed in 2017 is an initial considerations document "Labelling of products or articles that contain POPs, initial considerations" and now there is ongoing work as part of the POPs review committee to look at other challenges, other possible methods to increase transparency on POPs use and also on waste, hopefully that will produce a lot of useful information.

It is important to emphasize that this is fundamental to be able to implement policies, it is fundamental for monitoring as well as for the protection of human health and the environment, to do this from the beginning, considering the entire life cycle of plastics would be more efficient than doing these subsequent analyses further downstream, there are countries that do not have access to laboratories and even some that do have access, there are so many materials and so many chemical substances to analyze, that is why transparency is required from the beginning, throughout the life cycle of plastics.

Ms. Karlsoon thanked everyone for their attention and remained open to questions and comments.



Ms. Ohno thanked for the presentation and mentioned the importance of remembering the tools available, as well as highlighting the mention of the work of the POPs review committee. The information provided in the form for the committee will be very useful to prepare this document that will be meaningful for the negotiation meetings.

Ms. Mata, representative from Costa Rica, thanked for the information presented, indicating that she agreed with what was stated that the effort must start with the manufacturers; however, she asked about the reliability of a label, because although the label could not be promoted, it must be accompanied by a quality system to determine which producer will carry that label at a global, worldwide level, how would it be done to have a reliable label.

In response, Ms. Karlsoon said that she could not answer in detail because there are parts that must be negotiated by the member states, but she emphasized the difference between voluntary labeling and mandatory labeling. There is an example of voluntary labeling as in the case of Bisphenol A, and therefore there is no consequence if it is not accurate, but if there is a standard or regulatory system that requires labeling or other forms of identification can be tested to ensure that the rules are followed, it is like what happens in the food sector. Given the complexity of plastics, it is important that the system is global, given that plastics cross borders all the time so the plastics agreement is an opportunity to have these discussions and develop these types of systems.

Mr. Seppala, thanked Ms. Karlsoon for the presentation and in particular for mentioning the industry database since it is something very interesting that has been developed. From the presentations he has seen on this database, he reads that it seems to cover this topic and it would be useful to replicate with all the items that are available in the market, but it is also important to note that they have been working on this for 20 years and what was said is that the cost of the system has been 16 billion Euros. The automotive industry and its chain seems very complex if we separate them into the items that make it up, but, although there are challenges he point out that he believes that this shows that this is something that can be done and can be tested. For example, with waste management of items containing POPs, but it is a huge challenge, and he agrees with Ms. Karlsoon that the system would have to be global. He also pointed out that we live in a society where materials and sub-components of articles are very complex and cross borders.

Ms. Karlsoon thanked Mr. Seppala, also for his presentation the day before. Regarding the comment she pointed out that the cost of implementing the system was very high but she does not know the details, only that she has read in different presentations, but she believes it is important to think the starting point, 20 years ago was very different from what we have today. She pointed out that technology has advanced a great deal, and this type of system is now available. She agrees that it is complicated, but the cost must be weighed and compared with the cost of the impact on human health and the environment of waste management at the end of the chain, which is what is being done today, so she understands that the equation is not easy and believes that the final consequences are more costly than asking for transparency on the part of the producers who know what they put in their products instead of carrying out subsequent analysis.

Ms. Gonzalez, indicated that she believes that something that would help a lot, is something that Ms. Therese mentioned about the customs codes, since now the plastic waste amendment of the Basel Convention must be implemented. The traceability has been very difficult due to the fact that there are not many tariff codes that fit, so that would help a lot, If, from the point of view of the BRS Secretariat continue talking with the World Customs Organization so that they continue specifying more and more the tariff items and even include that they have important POPs content or other substances of concern, because in that way it can help the countries, because if it is in a tariff item and you have to demonstrate that it has "X" thing or "X" percentage, then sometimes it can be very difficult for the countries because sometimes they can grab more the private or commercial sector with these strategies, and she asked if Ms. Karlsoon would have something to comment on.

Ms. Karlsoon indicated that there are conversations about increasing transparency as part of the harmonized system, but pointed out that she has not really followed it in detail, but believes that the changes requested by the Basel Convention make it more important because it is very difficult to follow up on plastics because these systems were not created to do this follow-up, but now there is a need to address the point raised. She pointed out that the Secretariat works and participates in the meetings to discuss the active tariff codes and she precisely commented that a couple of years ago work began to develop subheadings for the implementation of the amendment of the Basel Convention on plastics. She indicated that this amendment proposal is finalized, and she will be looking to share the information. She added that the process to include new tariff positions is very complex and long and from what he understands the next revision will be published to come into force in 2027, it is a 7-year cycle from the beginning of the discussion until new tariff codes are approved. She pointed out that the times obviously make things more complex, currently they are working on new codes for waste electrical and electronic equipment, it will make it easier to understand a little more the control of transboundary movements of these wastes that are included in the Basel Convention, and she also indicated that it is an exercise carried out a few years ago and she can say that it is a huge challenge to identify in tariff positions.



To the articles and products that may contain POPs, given that when a sweep of the entire tariff code was carried out, there are entire chapters that could contain articles with POPs, since they are in auto parts, in plastic products, so when one really wants to control the items that enter one has to look at a lot of tariff items, it would be very complex to identify or have specific items for articles that contain POPs, especially with all these new substances of industrial use where the applications in textiles in a lot of articles and products, therefore it is impossible to expect that there will be specific items.

Finally, she commented that there must be a commercial interest, so normally when a product is banned and not much movement is expected. For example, for substances listed in the Rotterdam Convention, specific tariff items have been identified to facilitate control, so this is a continuous work that is carried out with the World Customs Organization and those responsible for the tariff code.

Ms. Cárcamo, representative of IPEN RAPAL (Red de Accion en Plaguicidas y sus Alternativas para America Latina), thanked for the presentation and indicated that the difficulty that countries have in identifying products was discussed during the day, largely because, not only GRULAC, also Africa, do not have the capacity to analyze everything that enters. In addition, the region does not produce, but everything that comes from outside enters, so she indicated that she knows that it is difficult and complex to analyze and how to do it, and therefore perhaps see how the industry can indicate what it is using, they have the information, I think it is a question of transparency. And if you have that information, the countries maybe have a better chance of knowing what they are getting.

Ms. Ohno thanked for sharing this important element regarding the responsibility of the manufacturers who are the ones who have the information, this information should be provided by the industry and in fact there are participants during the forum, these discussions are difficult and have been held during the COP last year, many member states commented that it is difficult to carry out this identification and there are certain codes that have certain periods. She gave as an example the V328 above all, it is necessary to know, what spare parts, what parts are composed by V328. And for those countries that are importing, it is important to know, and a difficulty is to know what they have or what they do not have. So, some countries were suggesting including this responsibility, and that this responsibility is in the hands of the manufacturer, which was indicated to be something quite difficult to achieve, in addition to that there is the issue of where to put the responsibility, plus the additional costs that may be associated, if it must be assumed by the producers. She pointed out that all of this could be possible as they mentioned, rather than voluntary if it is legally binding this is a very important part. Finally, she asked Ms. Karlsoon if she had any final comments to add.



Mr. Moraga, representative of Chile, thanked the presentation and commented on the reuse of containers, that sometimes in some countries people reuse containers that have contained products labeled for triple washing for other things. Although companies normally remove this plastic, it is peeled off and then disposed of, many times this is not done, and in the past there was a practice of taking these containers, cleaning them and then selling them. The problem is that the new user did not know what the origin was. He pointed out that according to what has been researched regarding the reuse of containers, they really should not be reused because they have contained material inside that may even have contained POPs, whether inside the container or not.

Ms. Ohno thanked for the comment and stated that this is one of the key points as to why there should be controls on chemical substances in the different treaties and international environmental agreements because they can always be put to other uses, but if there is transparency, at least they could be limited. The plastics agreement there is a request to increase recycling, reuse and that cannot be done safely if we don't have transparency. The traceability of chemicals is very important that is another reason why it needs to be done in that way.





**Mr. John Norman**  
**Senior Director, Regulatory And Scientific Affairs American Chemistry Council**  
**ICCA Plastic Additives Initiative**

Mr. Jhon Norman, representing the American Chemistry Council, began by stating that his presentation will focus on some of the major issues of additives and chemicals in plastics and indicated that he will discuss some of the updates, industry initiatives that are intended to increase transparency around chemicals in plastics and additives in plastics.

The presentation began by commenting that ICCA is the Additives in Plastics Initiative, an international association of the Chemicals Council which has global representation. Within ICCA, specifically this project is under the Chemicals Policy & Health Leadership Group (CP&H) in coordination with the Plastics Leadership Group (PLG).

He then indicated that, during the negotiations for the plastics agreement, these issues continue to be discussed, and it is almost the same problem. Mr. Norman indicated that in the risk framework that they are developing, they want to support the management of chemicals substances in the different economies and they want to increase transparency with respect to the use of additives. He also added that they also want to aggregate information regarding environmental health into one source so that they can then do a proper risk assessment. He then showed an overview of how the database works. In the left column there are the additives in the commercial database and what they want to do is have all the information available in a comprehensive way and this information will be included in what is already being used, along with the safety and regulatory information. They believe that it is critical that there is only a select group of chemicals substances that are managed globally. He also added that there are other regulatory agencies around the world that have already collected information regarding exposure and hazard to these chemicals substances and emphasized that what they are trying to do is to bring all this information together in one place to know what has been done in the world so far.

He then pointed out that the organization he represents has partners such as NGOs and academia, and in the coming months they plan to form a discussion panel on these issues. On the other hand, the second aspect of this initiative has to do with providing the necessary tools to carry out a risk assessment with these additives found in plastics to understand the hazards, the risk to exposure and thus also determine the risk to human health and the environment throughout the life cycle of these plastics. He mentioned some of the specific elements of the project, in particular the database of additives found in plastics, what was done to find or search for this information that was already published in the environmental program of the United Nations. In addition, he indicated that they added safety information so it would be as comprehensive as possible, and it would be a direct source for anyone who wanted to find information regarding additives in plastics. They also seek to connect it with information on the management of chemicals or additives, and at the same time integrate all this data in one place. Currently, he notes that they are conducting an additive in commerce survey that is looking to identify some key metrics to be able to understand what is in commerce today. The program E-commerce uses information that indicates where those additives are being used, in what type of polymers and in what concentrations, with that, they will focus it on the sector of use, in what sector those polymers and those combinations of additives are being used.

It is a risk assessment, he points out, that additives in plastics are chemicals polymers are chemicals as well, so he believes that regulation should be based on a risk assessment to understand the risk that these additives in plastics have on the environment and on human health throughout the life cycle. He mentioned that they did an integrated workflow using the ICCA of plastics in this database that they have created along with a risk assessment. As he mentioned earlier, they are going to meet in an external advisory board and there they are going to get more input from experts to know that if they are in the right place. The ICCA plastics additives database is a framework in which they included the UNEP information and started to identify additional sources to include in the database.

He showed an example and indicated that it is possible search by CAS number, the chemical name of the substance or also from the international chemical identification, but chemicals have different CAS numbers, and sometimes it is difficult to find those numbers, so they are trying to harmonize these identification numbers that are used in plastics and also there will be the function of the additive in which industry sector it is used and what is the type of polymer.

He went on to indicate that for INC 3 they included about 12 chemicals to demonstrate how to navigate to identify chemicals, what information is included: physicochemical information, the background information that is needed of the chemicals for regulation. Then, it is possible find columns of different regulatory agencies, and there it lists their classifications and where that information is located. The goal is to replicate it and do it worldwide with every regulatory agency and have links to each of those assessments.



A second aspect, he pointed out, is the risk assessment that applies to plastic additives, the same as there is for chemicals that are in any other type of use that these plastic additives are chemicals and they have to be regulated under this paradigm, this risk assessment can be done in different ways, in the UNEP database they are associated with plastics, that does not mean that they are indeed additives added to plastic, but it has been identified that they could be associated with plastics but there is very little information on the risk and the danger they represent.

He went on to comment on risk assessment, and under this paradigm there are different ways or different levels to carry out the risk assessment, and as he mentioned before, a risk level can be made, before making this assessment the policy goal is identified, then for the different levels: one, two and three; there can be a different question from the public policy and he gave as an example, Canada, when they developed their chemicals management system they decided to make an assessment at the level of all the chemicals that were in their database. So, what they did was where they were missing information, from animal testing, they used information models and data system models that had been developed by toxicologists and regulatory agencies over the years, and had essentially been validated through use for over 30 years. Therefore, one of the ways to assess the risk of a potential chemical is toxicological risk, of concern.

He highlighted that many food agencies use this system to evaluate food packaging, it is used by the FDA in the United States and the European Union authority. In Canada, as he mentioned, a very similar system is also used to analyze these chemicals, an evaluation is made with the information included in the model, the modeled information of the risk comes from more than 1.000 chemical substances, for more than 1.000 substances there are already models and it has been determined what would be a safe level, then from that it is estimated what the exposure would be. He added that to visualize the worst possible scenario, to evaluate it and reflect, for example, what would happen if one comes into contact with a piece of plastic and all the chemical substances come out of that matrix, at the same time, how would that exposure be and then from that it is estimated what the risk could be, and following with the system of levels where it indicates tier 2 and 3, there is information from real experiments, from models in animal studies and where the effect of the exposure that workers or general public could suffer can be measured. In most cases, regulators and toxicologists have concluded that the use of these modeling systems allows them to quickly review many chemicals and identify those that have a very low potential health and environmental risk, and those that could be a problem, leaving out those that do not appear to be problematic to concentrate resources. In those chemicals that have been highlighted as risky by the system, to do a more detailed analysis and get more information, are more than 13.000 chemicals, then using that information, structured and modeled on how the chemical can categorize, you can model and do these evaluations instead of traditional toxicology that would use animals to do various tests, on the material, in particular, then with this information modeled in the system we can save time and energy also, and cost, but that also helps in the number of animals that must be used to test the impact of all these chemicals.





He cited an example of how these analyses are done, it was developed by the Health and Environmental Sciences Institute (HESI), it is an international NGO that develops scientific studies for a safer and more sustainable world. A risk assessment was conducted in the 21st Century project, several organizations have been involved, such as industry, academia, and regulatory authorities around the world. He showed a small sample of the institutions that have been involved in the development of the system and it really is a worldwide effort by HESI to be able to advance the concept of using modeled information for risk assessment. So, the system is a simple matrix in which the risk or a toxicology threshold is estimated, and a safe level is determined above which the information is modeled and that is compared to the potential for exposure and that gives you a colored graph where orange is 1. The risk is divided over 1 or under 1. If it is less than 1, that is usually interpreted as a low potential risk, then that chemical would be left out and those that are over 1 would be riskier because according to the worst-case scenario analysis, these represent more risk.

To finish Mr. Norman highlighted that those chemicals and additives would be the ones that the regulatory effort would be focused on to have enough information, to be able to do a detailed risk assessment and to evaluate whether there is a need to refine the models even further. Then, if you combine the information, with this risk assessment framework and this visualization tool that would be the overall workflow that they hope to get and have up and running soon to help get more transparency about additives in plastics, and also be able to support in taking that information that has been collected to use in a way that helps identify those chemicals that are of lesser concern and those that need to be focused on more.

Ms. Ohno thanked Mr. Norman for his presentation and commented that she thought the database would have information on chemicals in plastics coming from the owners, not from the industry itself. She stressed that this was an excellent initiative.

Mr. Flamenco, representative from El Salvador, thanked for the presentation and asked about the date by which the platform will have all the information available, or a good amount of information available, so that it can be accessible to the public.

Mr. Norman thanked for the question and indicated that they are working to have a demonstration database for the INC4 meeting to be held in Ottawa at the end of April. It will not be ready yet because, as he announced, at the time of these meetings and as Ms. Karlsoon said, this is a very complicated system because it is a very complex issue, so identifying and aggregating all the information is a big task that they are focusing on now. He indicated that they have had discussions with representatives of the OECD who have a lot of information, they have also been talking to data providers to see the possibility of cooperation. He estimated that, being optimistic and cautious, and being more realistic, they think it could be ready by the end of the year so that the delegates can do this test at the meeting at the end of April.

Mr. Seppala consulted on the need for a database with information on what articles and materials contain. And he used the chemical industry presentation to reflect that it is also necessary to recognize that the chemical industry is one thing, and then the users of those chemicals are another thing. And he commented there are some kind of innovation and confidential business information relates to the additives that are used in plastics, that are a kind of hurdle to developing a system. He pointed out that they have seen the system in the automotive industry, but that is not accessible to the public, so it is really within the industry, and it is not known who has access to it, he asked what kind of objective he thinks this will be if there is an attempt to develop more transparency.

Mr. Norman thanked for the question and began that the first iteration of the data will not get to the level of the radio button in the car, future iterations are being discussed, but at the moment it will be somewhat generic, this chemical is used in this percentage in this type of application, and worst case scenario and whether it is safe for the intended use, which gives you a rough estimate of the combinations of polymers and chemicals that may require more detailed risk assessment and those that may not. He pointed out that version 1.0 is intended to facilitate, transparency efforts are underway, there are member companies discussing the use of the QR code system. A lot of companies are looking at chemical recycling and how do you go about identifying those chemicals, the chemicals that you need to use, as well as what is the outflow of those raw materials, what do they look like compared to the stock version. He pointed out that there are many, many other initiatives going on right now and his presentation is just one that they are working on right now. It's a touchy subject and he believes that the owner in question is that there are multiple, multiple issues with the ownership, so it's the combination of the additives that is the proprietary part of it, is that they only sell in one. They are the only ones that manufacture it, so they can identify that it is manufactured, you can infer that it is manufactured, so there is a lot of complicated confidential business information that they are working on. He indicated that he always says confidential business information as if it is the industry that is keeping secrets, it is not necessarily, but they also must comply with antitrust and anti-competition laws around the world and they must make sure that they do not violate them.

Mr. Barrientos from the Plastics Industry Association in Chile pointed out that it seems that the database contains information that is perfect to give it an artificial intelligence approach, it is something that has been done in many industries and asked if it is something they are looking at doing in the future.

Mr. Norman replied yes, they have talked to some vendors about how artificial intelligence could help fill in those information gaps, when they have already identified it, with a project as complicated as this. He emphasize that they want to have the system in place by the end of the year, but this is not the end of the project, it is an iterative process and therefore they have a vision that this is a project that will be updated the information that will be added to it, they decide start from some point and the plan is to continue adding more information and hopefully with the help of artificial intelligence speed up the process.



From the Plastics Industry Association in Chile also commented that in Chile, Mexico, Brazil and also in Uruguay they are doing work in this regard, expressed wanting to know if they are using those works that have been done by these particular countries. Chile has a very comprehensive list and they expect good results from the efforts that are being made, and with respect to risk assessment it is more generic and instead of understanding the potential harm that each of these chemicals has throughout the value chain, whether in plastic or in any of the other possible applications, so if we want to move forward with respect to what we are expecting here in this work, prior to the plastics agreement, the usefulness of this particular information, for example for a car, is very difficult for a person to be exposed to some of those additive, different is when this is already treated, these same compounds become waste. Then, he questioned how the value of the information is obtained, how this work is broken down and how the information is used with respect to transparency, for example, a user of a broom does not need to know what type of additives it contains, we can break them down into perhaps four types of plastics that this broom contains and at what level it would be classified, it will be necessary for people who are at home to know what type of additives it contains. I reflect that maybe it does, but you don't know. With respect to transparency, he consulted if it is necessary to make efforts to group them in a set, when and how to use this information, and that does not know if possible or feasible, in some cases it seems to him even impossible to put all the additives in a list, it may be useful for free trade agreements. The question he raised is how to approach this discussion regarding transparency, which is something they agree on, but also on how it is used.

Mr. Norman indicated that the database is not intended to be publicly accessible, he indicated that their vision is for this to be a tool or instrument to help academics and NGOs, so they know what the combinations are, what do exist and what their uses are. He mentioned that at the INC they were told that there were some researchers who were interested in this area, but they had problems to understand what types of additives were used in what types of plastics, so if a researcher were to use a polyethylene milk jug, to know what type of additive it contains, using this tools they can evaluate if these combinations or characteristics of a product can become a health risk or a risk to the environment, and it can also help researchers to carry out their studies. He explained that to give complete transparency, even if a broom does not produce a significant exposure, that would show up in the system, because we would have chemical X, for example, it has a structure, you make a model of that hazard, the exposure would be almost nothing, so it would be used as a matrix and it would be seen as a type of chemical or a low priority chemical combination, that is the idea of how you want the tool to be used. He indicated that the information is going to be available, whether you run the scenario in your head and you think it is not going to be of great importance, if you do it in this instrument you are going to be able to verify it, with all the information that you have, you can verify it so for complete transparency, we are including as much information as possible in it, so they could run or run that scenario as discussed.



Ms. Aburto Schweitzer, representative from Chile, asked if the OECD is included in this initiative and if there is any linkage or synergy with the mat program, which is a recommendation of the OECD, which is the engine that accepts data.

Mr. Norman indicated they are looking for possible collaborations, but they do not have a formal agreement with the OECD, for the moment they have had conversations with managers of the portal and they have commented that they want to update certain forms and they suggested using this system and have wanted to incorporate it as they move forward, given that they will talk with other systems. He mentioned that they have spoken with the OECD about what the potential legal issues could be, how they can be structured. He indicated that it is a difficult conversation, about what can and cannot be done regarding the information, because this will be a portal for information from more agencies. They are evaluating possible areas where they can obtain data and there are providers that have aggregated information, they are working to standardize these data systems and have the tool available as soon as possible.

Mr. Seppala also asked about the scientific panel, he would like to know if only scientists will be present or also legislators and how it would work.

Mr. Norman indicated that if Mr. Seppala is interested in being part of this panel of experts and being contacted, please send an email. Also, it is not legitimized just for scientists, because the database will not just be about scientists, but there are policy decisions included in the database, a person must think if this data is going to help to answer questions regarding policy when it is completed. Mr. Norman pointed out that the good thing is to have representation, both from scientists, the various stakeholders, also regulators.



**Ms. Keima Gardiner**  
**Representative from Trinidad and Tobago**

Ms. Keima Gardiner began by thanking for the opportunity to present and indicating to those present that Trinidad and Tobago is in the southern Caribbean, the lowest island in the chain. The objective of the presentation was to provide an overview of plastic management in Trinidad and Tobago.



Basel Convention Coordinating Centre  
Stockholm Convention Regional Centre  
URUGUAY



BASEL CONVENTION



ROTTERDAM CONVENTION



STOCKHOLM CONVENTION



Food and Agriculture  
Organization of the  
United Nations



UN  
environment  
programme

To started she share some general information on the quantities of plastic in her country and indicated that in 2022 they conducted study to characterize waste, and obtained that plastic represents about 94.000 tons and liquid containers are about 67.000 tons. Beverage containers have PET and HDPE and represents about 33.000 tons of waste. In terms of PET, HDPE and plastic, that gives a total of 127.856 tons of waste that is produced every year and that is .the plastic situation in Trinidad and Tobago from 2022 data. She added that there is also an impact on the aquatic environment and with the cleanup data from her country, they have observed a trend in the last nine years that there are plastics that are the ones that are predominant on the coasts and are the main contaminants in the marine environment, plastic is a source of contaminants as additives or also chemicals that are absorbed. With respect to management, She would point out that there are different legislations on waste management, not a specific one for plastics. There is an integrated waste management policy that has to do with the country's waste management, and there is also a recycling policy that includes plastics. She also indicated that they have regulations on waste management, handling and disposal, but they do not have specific legislation for plastics. Currently, they are working on a policy for beverage containers to have a plastic repository, they are also advancing in a legislation for expanded polystyrene, which is also known as polystyrene foam. What they are looking to do is to have a mechanism to phase out polystyrene from the beverage and food sector. There is an environmental management plan in Trinidad and Tobago, and they have talked then with various stakeholder groups that she see here. There are representatives from the ministries, the manufacturers. She indicated that unlike other Caribbean countries, they have production of expanded polystyrene, so, they work with the industry and are part of the multi-sectoral steering committee.

She pointed out that there are also chamber of industry and manufacturers' associations, as well as distributors and alternative packaging, so they have this multi-sectoral steering committee to have feedback on what could be a proposal for a decision and to know what is happening in the operational aspects. She added, as part of this committee, four specific working groups were developed, one focusing on health issues, one on environmental issues, one on socioeconomic issues and one on alternatives basically. These four groups focus on those aspects and the implications in those areas to be able to implement a policy. Based on the reports of those four groups, a cabinet decision was made to ban the importation of expanded polystyrene for the beverage and food sector, and as part of that decision, then, the cabinet agreed to ban the sector and also to eliminate tariffs on alternative products, to make it more competitive, because in fact they are currently more expensive than polystyrene foam products, so the idea here is to level the playing field. She added that they have also worked with manufacturers so it was also agreed to promote the migration to sustainable products, giving access to financing to update their production line and machinery.



She then reflected on the status of this law and indicated that it is still being drafted in the office of the Public Prosecutor, the ministries and the Ministry of Legal Affairs.

As part of that decision, she also noted that they want to develop a standard that was mentioned earlier, in 2018, the Ministry of Planning and Production, requested the Trinidad and Tobago Bureau of Standards to develop a standard for alternative products to Styrofoam. She added that the idea is to have a standard on more reliability in the effectiveness of the products, what that proposal sought was to support the cabinet's decision to ban the importation of Styrofoam. The goal is to verify any claims made about the biodegradability of a product, or what manufacturers say about the composability of a product. Also, that the market is not flooded with these products as an alternative, which are promoted as an alternative, and which may have a negative impact on health or the environment. She stressed the importance of clarity between manufacturers, regulators and consumers, on what these alternative products mean, the standard itself ensures that products have the proper labeling so that consumers have clarity and accurate information when making a purchasing decision.

She added that, in 2020, the Trinidad and Tobago Bureau of Standards worked with the Mirror National Committee, and in 2022 the development of the standard began. The work of this Mirror Committee started and when the first draft was done, it was published for comments, and they received a lot of comments, especially from the manufacturers, and they had to respond to every one of those comments. And as part of this development, after the response to the comments received, they consulted with technical experts who reviewed the specific standard, compared it with what is done internationally and this whole process was followed and so last September the standard was approved by the board. She pointed out that currently they are still developing and hope that the Minister of Commerce will approve the standard and that it will become mandatory. It is called a national standard for single-use plastic products for use in food, it specifies limits for fluorine content and heavy metals, particularly lead, cadmium, mercury and hexavalent chromium.

Additionally, she indicated that they are working on developing a beverage container recycling policy, and clarified that for the moment it is voluntary, not mandatory. In Trinidad they have a program called iCare that started in 2015 for the collection of PET plastics, but also for aluminum, tetra pack and glass. She said that currently there are about 788 collection sites for these products in the country and there are three depots from where they are stored. In addition, she commented that they have a resource recycling initiative in Tobago that was launched in 2020, is a public-private partnership. In Tobago there is another body that is responsible for the legal aspects of the island, which is the Tobago House of Assembly, and they are working with two divisions of the House of Assembly, one that has to do with health, the other with environment, and a private company, which is the recycling company, RWL. She indicated that RWL also collect cardboard, tetrapack and plastics. In both cases, the materials are sent abroad for further processing.



Finally, she proceeded to show pictures of the recycling process, including images of one of the landfills in Trinidad where there is a materials recovery facility that is the first in the English-speaking Caribbean, where plastics are manually processed and separated by color to be sent to the beverage container recycling station where there is a plant where PET containers are rinsed and then exported for further use. They also have a voluntary refund system for PET bottles, and people receive money in exchange. It is led by several beverage companies and a local bank. They also have another initiative in collaboration with the Inter-American Development Bank (IDB) and some NGOs, which transforms recycled plastic into plastic wood, flower pots and other products. He also showed some images of a modular house built from plastic bricks.

Mr. Flamenco, representative from El Salvador, pointed out that the presentation was very interesting, both the legal part and the technical aspects that are being developed. He called her attention to where they present the bricks made with plastic. He understands that in this case it is not totally plastic, but a mixture of cement, sand and plastic, or it is totally plastic. In addition, he asked what specific type of plastic is being used, considering the potential of plastics to have different types of contaminants, perhaps this is not the case, because he noted that they go more for PET and other types of materials, but there could be a problem at a given time if plastics containing persistent organic pollutants were used, for example. Therefore, he asked how to guarantee that they are not going to have these types of materials in the construction materials.

Ms. Gardiner responded that these bricks contain plastics that are crushed and mixed with cement. Regarding the type of plastic they are using, what they are trying to do is not to use that type of PET, because they have value in the market, so she pointed out that they use other types of plastics that are difficult to recycle, and as mentioned, they are currently exploring these plastics for other alternative uses. She added that they were exploring pesticide containers, those types of plastics, but she is not clear. Regarding whether safety can be guaranteed, she indicated that she imagines that the danger could be reduced because of the way this brick is composed, but the truth is that she doesn't have how to guarantee that answer.

Mr. Rey, representative from Colombia, pointed out how interesting the presentation was and commented on the Voluntary Deposit Refund Scheme. He indicated that he lived in Australia for a while and commented that the government and the Melbourne City Council had a very similar program that was very successful, because it encouraged people to return PET bottles and they obtained the resources. He asked how successful the program has been in Trinidad and Tobago, how much it takes, if the money is returned to the person who takes it, who pays the money, if it is the government or there is a link with the private sector. He highlighted that the system is interesting how it works in Australia, so he would like to know in Trinidad and Tobago what has been its real effect.



Ms. Gardiner responded that the system has been quite successful so far, at the beginning they received money for each bottle but it was very time consuming. Currently the bags of everything that is returned are weighed and the money is calculated and given in exchange. She indicated that she participated, so she can indicate that has worked. She added that the program has no relationship with the government, it is privately funded, the money coming from different entities, one is a bank, the other is Coca-Cola, the other is a bottling company, and they use their resources to give that money to the locals who return the bottles.

Ms. Ohno pointed out that they have manufacturers in their country, and they received that feedback. She asked that when Ms. Gardiner indicated that it was not legally binding, that it was voluntary, what kind of feedback did they receive from the manufacturers.

Ms. Gardiner indicated that they have three major manufacturers that they started with when the decision was taken, they were not so happy about the decision. The important thing was that they understood what the government was thinking, what they wanted to do in the future, and it was very important to get their feedback as soon as possible, so they could understand how they must change the lines in their manufacturing process. The feedback was rather technical, it had to do a lot with specifications or limit levels, and it was not only polystyrene foam, but they wanted to make sure that they had alternatives, that there was no PFA coating, it is to test it also with different types of contents, there are many technical comments within these committees, the comments are rather general and they were not so willing to change to these alternative products.

Ms. Ohno pointed out that she can imagine that it is difficult to receive that feedback, but it is also important to include them as stakeholders, especially when the government is preparing for these regulations. She concluded by thanking Ms. Gardiner for her presentation.



**Ms. Yoani Gonzalez**  
**Representative from Panama**

Ms. Yoani Gonzalez from Panama, began by mentioning that it was a great challenge to condense everything that is happening in the country in a few slides regarding waste management and its generation.



She continued her presentation by showing what the current regulations are in Panama. There is nothing specific for the management of plastic waste, or even for the management of waste of electrical and electronic equipment. A comprehensive waste law was recently approved at the end of 2022, which she said it was a great step forward as it distributes the responsibilities at the national level of the different bodies involved in waste management. She pointed out that the interesting thing is that this law motivate the regulation of the extended producer responsibility. There were previous regulations that had been approved, but now that it is at the level of law, it opens the whole panorama to start regulating according to the type of waste, in this case plastic waste. They also have requirements for hazardous waste managers, they are quite general requirements, and they are evaluated on a case-by-case basis, they verify which methodologies work for the waste that can be used. She pointed out that they must adopt the technical guidelines that have been worked on previously at international level, there are technical and sanitary standards for specific hazardous waste streams. She explained that a lot of work has been done on sanitary or hospital waste, given that the Ministry of Health oversees waste and chemical substances, emphasis has been placed on the management of hospital waste and the technologies that can be used. One technology that is quite regulated is incineration, of course, complying with all that is required by the Stockholm Convention and the best practices that must be in place for this activity.

She added that specific laws or regulations can be mentioned that already give a mandate of extended producer responsibility to certain streams. One of the most important they have worked on in recent years is with the Ministry of Agriculture and is on the management of empty pesticide containers, all this arises from the fact that Panama, despite being a small country, they have enough agriculture and there are regions that the use of these products is quite large, then, the need was identified to protect human health and the environment and see how private enterprise and government work together so these containers were well managed.

She said that the pesticide and agrochemical industry should be organized in such a way that there should be a national collection system, and at the same time, to see what options they have for the treatment, recycling and others of these empty pesticide containers. Another example, she added, on extended producer responsibility is the treatment and withdrawal from the market of pharmaceuticals; this is already quite well controlled and is quite well managed with the Ministry of Health. The Directorate, together with the Pharmacy and Drug Directorate, worked jointly to monitor the procedure.



Continuing, with regard to plastic, she pointed out that Panama has two laws that are very important with respect to plastic products. The first, is the prohibition of the introduction of plastic bags for commerce, there are only a few exceptions, for some years now when you go to a supermarket, even before the pandemic, you have to carry your bag, and the types of disposable bags that can be used have been regulated. Second, a more recent law that has to do with plastic, single-use plastic, specifically with reeds, disposable plates, disposable cups and so on, this regulation came fully into force at the beginning of this year, and one of the challenges they have with this regulation is precisely to issue the comfort certificate that indeed these products that are entering to the Panamanian market definitely do not have any plastic part and, if so, then it must be a plastic that is recyclable. With respect to the challenges she remarked that start with imports, Panama, like most countries, imports almost everything, it is also a country in transit through the Panama Canal. They have free trade zones, in which there is a large handling of goods, in which sometimes it is a little difficult to control what is going through there, precisely because it is seen that it is a transit, not exactly an import and at that point they need to implement a registration system for chemicals and if possible, for some products of interest. She stressed that during the Forum the importance of traceability has been pointed out, to see which products are entering into the countries of the region and to see what the possibilities are of knowing what the percentage of POPs in these products is. She added that another challenge they face is that any registration system must be accompanied by a system of analysis and detection, in this case in Panama, especially at universities, in the academic area there are laboratories that have done a lot of research, because they still do not have a very well implemented system for the detection of POPs, not to mention that customs, despite having a laboratory, still do not have the capacity to analyze, specifically POPs, although they have devoted much time to other types of chemicals, but they do not have the capacity to analyze POPs. In the case of control chemicals, due to the BRS conventions, it has been quite difficult.

With respect to minimization and prevention of hazardous waste generation she added, is difficult because this contemplates changes in attitudes regarding responsible consumption. She pointed out that in her country is necessary to create a definitive culture of researching friendlier options and reducing the generation of waste, many campaigns were carried out at the local government level. In Panama there is a wide decentralization of local governments, and they are the ones in charge on how they manage their own waste and garbage. The only exception is Panama City, which is not managed by the local government but by the central government, an authority that was created more than a decade ago and oversees managing waste at the capital city level. She indicated that they have commented on how a plan can be implemented, especially for waste segregation, and speaking specifically for plastic waste and even WEEE, so that those who need this raw material can have access to it in the correct conditions (clean and segregated). The collection system in most of the country is not segregated and goes to the same bag.

Panama has few norms and manufacturing standards for the main products and equipments, some certificates of conformity are given for the importation of certain products, such as cosmetics and similar products, where they are controlled, for example, that they do not contain mercury, heavy metals and others, but not the entire group of products.



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She added that especially in the case of plastics, the prohibition of these single-use plastics is being studied, and how these certificates of conformity should be given, to allow the importation of this type of products and with respect to the same waste management. The difficulty in the implementation of the Basel Convention's plastic amendments is due to the tariff items, especially the amendment is divided into three codes and what is left in Annex II could be said to be the mixtures that are considered hazardous and those that would be in list B in Annex IX, so as they do not have those specific codes, all plastic waste can be enclosed in that which are hazardous, they are under this code, and they are a mixture.

Then, she mentioned that they are working with a regional project on the integrated management of WEEE (UNIDO), which is already known in GRULAC, she indicated that there are 13 countries and in the case of Panama they have made considerable progress in general and specific regulations for the management of waste electrical and electronic equipment based on the extended responsibility of the producer, which has been a successful system in most countries and the interesting thing about the project is that one component aims to leave the installed capacity within the country and involves working with some managers for the identification of flame retardants in WEEE plastics. A equipment was purchased which has been tested in various WEEE plastics, and at the moment they have found the presence of bromine. They are based on the recommendation of the project participants, which is based on manufacturing standards.

The technical guidelines of the Basel and Stockholm Conventions do not yet define a maximum limit for bromine; they are working with this limit, but for waste, and in this case, it is for products. She indicated that they used a guide that was developed in Colombia, which works with the colors, is rather probabilistic, they have already done so many studies of what are the percentages of brown microps in the different types of plastics and takes this RAEE, it is a black case of a Hewlett Packard CPU, then that is introduced in a super database and it indicates green color, which is below the RoHS directive, or it is yellow, which means that it is probably dangerous and if it comes out red, it is definitely contaminated with persistent organic compounds.

Then, she mentioned that they are also working with the Secretariat of the Rotterdam Convention on a project for the sanitary registration of chemicals of interest, with a view to strengthening the capacities of the Rotterdam Convention in the country. This project is starting, and they are deciding how this registry will be and with which substances they can start. As a background, she indicated that in Panama they have pesticide registration, they also register cosmetics, what they have not started yet is the registration of industrial chemicals and that is what this project is helping with. She mentioned another project that is being finalized, which is the plastic waste management project in Central America in which three countries, including Panama, are participating. The project works on integrated management and transboundary movement.



She remarked they participated in a workshop in Uruguay that helped them a lot to begin to determine the inventories they have of plastic waste in the country and to detect which tariff items they need to begin to control to comply with the amendments on plastics. In addition, several activities have been carried out in which microplastics have been collected in different beaches of the country, this is done together with the academy, precisely to know throughout the months how the evolution of the types of plastics and microplastics that are arriving to their beaches are going.

Currently they are about to start another project on POPs and mercury waste, with GEF funds, the project includes working with the new POPs and they are starting to work on the inventory, if there really is a presence of HBCD, in the construction materials that have entered in recent years, all that is the integrated management within health facilities, so that in this way all these sanitary wastes can be managed within the facility and do not reach the garbage dumps or landfills. There are also some activities that are going to be worked on in many tourist areas with respect to emphasizing the recycling of plastic waste.

Finally, she indicated that, although it has not been approved, they have been working with the Basel Convention Regional Center of Argentina in the preparation of the implementation of the globally harmonized system (GHS) in some Latin American countries, in Panama they have started to implement the GHS, since it is a necessity precisely because they are a transit country (due to the Panama Canal), they handle chemicals and consider labeling to be important. In Panama they use the Central American Technical Regulations, where they are much more advanced in pesticides, precisely to obtain pesticide registrations in a more expeditious way, but it is not much based on GHS, but it is based on World Health Organization standards.

Ms. Ohno thanked for the detailed presentation, including the five projects along with the one in preparation. Questions to the Panama presentation were left for after UNEP presentation.



**Ms. Stéphanie Laruelle**  
**Programme Management Officer | UNEP | Chemicals and Health Branch | Knowledge and Risk Unit**

Ms. Laruelle from UNEP's Chemicals and Health Branch thanked for sharing this very important topic of chemicals in plastics. She pointed out that together with her colleague Mr. Markos Ieridis, they will present on a case that was recently carried out by the United Nations Environmental Program (UNEP) that talks about chemicals in plastics and some concerns about it.



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To begin with, she indicated that the presentation of 2023 report that talks about chemicals in plastics is a technical report developed by PNUMA together with the BRS secretariat, where they talk about the contamination in plastics. She pointed out that they are now the lead authors of this report whose objective is to provide knowledge on the issues related to chemicals and plastics, to see the impacts on health, on the environment and on resource efficiency and circularity. In addition, the objective is to provide a summary of the chemicals of concern based on their hazardous properties and to highlight the need to act in different areas, as it is well known that with the increase in the production and consumption of plastics in the world, the production of these chemicals associated with plastics is also increasing in quantity, as well as in diversity.

With respect to the report, she pointed out that some 13.000 chemicals associated with the plastic production or because they were detected in plastic materials, of these 13.000, 7.000 have hazardous properties, and some 3.200 of these substances are monomers and have added substances that are also of potential concern because of these properties. Another important finding of the report is the fact that about 6.000 are not well characterized, there are information gaps on their data, on the ecosystems and on the identity of the chemicals. There are many reasons why there is not enough data, including lack of methods to find the properties or also incentives to deliver that information. The report identifies, in addition to several monomers, 10 groups of chemicals that are of great concern because of their toxicity and potential to migrate or be released from plastics, these include flame retardants, UV stabilizers, PFASs, bisphenols, alkylphenols, unintentionally added substances, which are in a wide variety of sectors. She added that the report talks about 10 specific ones that need to be prioritized and action taken because of the risk that these chemicals pose.

The report shows some of key areas of chemicals of concern, the fact that exposure to these chemicals of concern in plastics occurs throughout the life cycle of these plastics at different measures and at different stages, both from extraction to the end of the life cycle.

It is key to address this problem, prevent and minimize the use of these chemicals of concern in plastics, also regulate approaches complementing along with some of these initiatives that are discussed in the report, plus it highlights the relevance of what have been mentioned that there are many other chemicals that need to be addressed. It calls for more transparency, access to information, which is a critical thing, along with throughout the life cycle of plastics. This information is key on the identity and the amount of chemicals used and found in plastics, in different products, and the releases into the environment. This knowledge is generally not available to the value chain actors, including those who oversees waste disposal, recycling and their exposure to these hazardous chemicals when carrying out their tasks. She pointed out that transparency must be improved, that is key to reduce exposure, risk, to have sustainable alternatives, in addition to carrying out each of these executions in a safe manner. It is also useful for decision making for policies and to be able to identify all these chemicals in the products and plastic waste to take care of workers, also to avoid cross contamination and for consumers and companies to make informed decisions.



She went on to show the next report on chemicals of concern, the United Nations Environment Assembly, in 2020, developed an assessment report to inform on the status of specific chemicals and some wastes of concern, some of these were identified in this instance. Different policy issues were also evaluated and ICCM, which is the International Conference on Chemical Waste Management or Chemicals, mentioned the status associated with plastics, with BPA, PFAS, phthalates, among others. In UNEA 5, it is recognized that actions must be taken, work must continue to be carried out, to follow up and to know the views of the member states, to take legal action for the future, an international action. This process was carried out last year, an international meeting was also held, and, on the screen, it is possible to see an image of the summary of this report, this was carried out at UNEA. It shows some visions expressed, also some issues that are of concern regarding these issues included everything that has been done lately, the new, the old, tools and recognizes the need for approaches to be based on sectors, based also on life cycles, with measurement of levels, of chemicals that are found in different products. In addition, there is a call for grouping chemicals, also assessing concentration, compounds, mixtures and understanding the full life cycle of these plastics. Many stakeholders realized that these instruments on plastics will play an important role with respect to policy panels when talking about plastic waste and the chemicals found in them, this was taken from the 2020 assessment report, which has to do with issues that are of concern. This is where the knowledge is delivered to support the exchange of information with respect to chemicals or products. It is a legally binding instrument but can also be used in voluntary initiatives.

She also wanted to comment on some aspects of a new chemical's framework, the Strategic Approach to International Chemicals Management, known internationally by its acronym SAICM, was a voluntary, non-legally binding agreement developed within the framework of the United Nations Environment Programme (UNEP) to protect human health and the environment. A new framework, replacing SAICM, with the same multi-stakeholder and participatory nature, known as the "Global Framework on Chemicals – For a Planet Free of Harm from Chemicals and Waste", was adopted at the fifth session of the International Conference on Chemicals Management (ICCM5) held in Bonn, Germany, from 25 to 29 September 2023. This framework addresses the the whole life cycle of plastics, waste, and one of the key principles is the need to have relevant information on these chemicals, also information to protect food, the environment and human health. It has five strategic objectives and 28 targets. These are made to have comprehensive information, so that stakeholders can make informed decisions and have all this data available specifically to bring transparency to this issue.



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**Mr. Markos Ieridis**  
**Chemicals Specialist UNEP**

**Mr. Ieridis, Chemicals Specialist UNEP**, continued by sharing information about different sectors and the use of chemicals. He commented that GEF project “Global Best Practices on Emerging Chemical Policy Issues of Concern under the Strategic Approach to International Chemicals Management”, the objectives were to accelerate national value in supply chains, initiatives to control emerging policy issues and they were particularly focused on the presence of EPAs, lead in paints and chemicals in products. From this, there are some guidelines to reduce the use of chemicals in three sectors, the construction sector, the electric and the electronic equipment sector and toys sector, following the value chain approach to be able to make interventions at the beginning, upstream.

First, he wanted to give key information of the three sectors regarding the use of chemicals in electrical and electronic equipment, this is a market that is growing rapidly about 2.5 million tons per year, is the weight of products that come to market each year globally, and these products mean an important part of the amount of plastics that goes between 25% and 40% for household appliances or electrical appliances, and also devices for personal use such as computers or tablets. He added that there are also lead, mercury, cadmium, certain phthalate, and there are also the use of flame retardants that are used in these products and that mean a risk throughout the useful life of the products, from manufacturing to the end of the life cycle and in waste management. Talking about waste management, in 2019 only 17.4% of e-waste was collected and recycled and this is because many of these products are not collected by formal recycling, but are recycled informally a lot in developing countries, this informal recycling can lead to the release of chemicals of concern that reach the ecosystem and can also mean risks for the workforce health and the environment. As far as building materials are concerned, this is one of the most important end markets for chemicals, there are many important building products that are made entirely of plastic, such as pipes, insulation panels, flooring, are entirely plastic, chemicals of concern are used here including phthalates, for example, in plastic flooring and in sealants, PFAs in textiles and lead in paint.



A problem linked to this construction sector is the fact that buildings have a very long service life, it can be decades or centuries, resulting in a gap between the design and construction of a building and the end of its service life. Then, during that period new knowledge emerges, new information about the chemicals that were used in its construction, it often happens that during the useful life of a building, it is discovered that some chemical that had been used decades ago is a chemical of concern, and the fact that the building still exists makes it difficult to replace those chemical components. Toys use different materials, plastic, metal, wood, textiles and others, and all of these can contain chemicals, about 90% of toys are made of plastic. Examples of chemicals used for toys include phthalates in plastic components, bisphenol A in resins and cadmium in pigments. A very important issue linked to toys is that children are the end users of toys and are more vulnerable to health risks. This, has been seen by their high metabolic rate, the very high ratio between surface area and body weight and the rapid growth of organs and tissues.

These are some of the key sectors, and he talked about the work that is being done in the recycling projects. This year they published the key messages that came out of the work in component 2 of the project that he mentioned. There is a common thread in the key messages for users in these three sectors. One key message for all three sectors is the need for transparency and efficient communication about chemicals content to all stakeholders along the value chain. Another message for policy makers is to develop policies that are ambitious and harmonized with other countries and globally, given the global scope of the value chain of these three sectors. Also to improve the understanding that exists about chemicals that are used in products, particularly identifying these chemicals of concern and their impacts over the lifetime of a product and also the need for more collaboration between the various stakeholders that are part of these three sectors, improve communication and collaboration between stakeholders to be able to identify issues in a timely manner.

He added that one of the tools developed under the project, in addition to recommendations for the various stakeholders, was a report that was published on regulatory approaches to address chemicals of concern in the electronics sector. He noted it is a very useful read, especially for policy makers. Another report was also published for policy makers on alternatives for action for the development of public policies on chemicals of concern with concrete alternatives for action to address this issue that also focus on the initial links in the chain, on upstream processes, in order to address this issue from the beginning. They also published two regional studies, one for the Latin American and Caribbean region and the other for Central and Eastern Europe on the life cycle management of electrical goods, which also provide recommendations and a roadmap for making the electronics value chain more circular.





They also published global guidelines for sustainable public purchases in the electronics sector, how to use public purchases as a tool to make the sector safer in terms of chemical substances. That is also quite a useful resource for those who are in charge of policy and involved in public purchases decisions as well.

Then, he added that there is a report with chemicals of concern in the construction sector that gives an overview on these chemicals and related topics, also identifies products containing chemicals of concern and discusses alternatives. There is also a report on financing sustainable construction for financial institutions on how to use finance as a tool to accelerate the adoption of safer construction practices with products that do not have chemicals of concern. And there is also a source of information, a library, a repository of resources that can help designers, architects, but all interested and involved parties in the building sector to be able to better understand products that contain chemicals and also how to find better alternatives.

He mentioned that some tools and guidelines on the topic of toys were published, there is a report that makes a review of policies focused on the safety of toys from the point of view of chemicals and also the regulations that exist in some low and middle income countries, for example, it talks about certain policies in this regard in selected countries that import toys from China. They also published a summary of the policies on chemicals in toys in China and mentioned other initiatives, mentioned laws and regulations. Also he highlighted that a toolkit for international chemical management in the toy supply chain was developed to support companies in this sector to track and manage the chemicals that are used in their products in order to address this issue of chemicals of concern. Closing, he pointed out that was a brief summary of the project.

To continue, he commented in a more general framework in order to address these issues related to chemicals of concern that UNEP developed a Sustainable Green Chemistry Handbook, a guiding principle for addressing issues related to chemicals, which has 10 objectives. He stressed that it is a very useful tool for stakeholders who work with and use chemical substances.

Ms. Ohno commented that UNEP is preparing a policy document regarding chemicals of concern and they are preparing it to be available during the INC negotiation.

Mr. Ieridis remarked that, yes, they are working on that policy document and will add polymers of concern, as well as chemicals of concern, and their alternatives, so that it will be available during the INC talks.

Ms. Ohno indicated that the information provided by UNEP is collected at a global level and also summarizes this policy document format, so it will be very useful for negotiators at the INC, and she indicated that they are awaiting the document. She also pointed out that during the Forum they mentioned different chemicals in plastics, as well as materials that are in contact with food and have chemicals that could lead to hazardous exposure. She asked that they could talk a little bit about the exposure and information regarding exposure.



Ms. Laruelle indicated with respect to exposure and the chemicals of concern included in this document, the focus will be more on alternatives to these chemicals, a substitute one to one of these chemicals is intended, and also functional design alternatives. In the paper, she indicated that the issue of exposure and those risks will be addressed, but very briefly due to will not be the aim the paper will have.



**Ms. Victorine Pinas**  
**Representative from Suriname**

To continue, **Ms. Pinas member of the POPs review committee from Suriname**, and currently the **chair of Chlorpyrifos Working Group**, presented about the role of science and chemicals in plastics. She started giving a a brief overview of why plastics are needed, and mentioned that plastics arrived to save nature, it is very strange, but the idea in the beginning was had a surrogate for an ivory, because the animals in Africa were being killing because of the ivory. So, it starts to protect nature, and now we are again at the beginning of the same process, to protect nature, because a lot of used plastics are in the oceans and everywhere else, and it is already in our bodies, plastics are circulating in our blood because the consuming of vey little pieces of plastics.

SShe talked about what was before plastic, and mentioned that in the beginning of the previous century we not use for food plastic bags, bottles for milk used to come in glass and beef were wrapped in papers, but when people in the world increasingly was needed something more efficient to preserved food for longer than one day or two days, so that is why plastics were needed.

To continue, she explained the current situation: science created these plastics but the end of their life cycle had never been discussed and it was necessary to think about it. Although it was not common to learn why these chemical products are being prepared, it is necessary to write the proposal in great detail and think about what is included.

Ms. Pinas mentioned in Suriname there are a lot of import goods like TV, PCs, but there is no regulation for the end of life of these products. She showed an inventory from 1998 up to 2016 where you can see how the households in Suriname are compared with the very small population. The inventory was presented in categories and the categories also depict the waste, electronic device, tools and the concentrations that are in this apparatus. And this statistic shows how many of these large households are consumed in the country from 2007 up to 2016. With this key data it was possible to estimate about what will be the waste.



She presented the estimated c-OctaBDE entering the waste stream of Suriname. Also showed the management flow chart which is used, and can be seen that the imported polymers in category 3 and 4 from 2001 to 2016, those are polymers which were inventoried in 2016, and then they entered at the waste stream, end of life, and then go back to be reused. There is also plastic waste for recycling after exportation, there are two or three companies in Suriname that send it abroad to be reused but also a large amount is entering the open dump.

Also, she mentioned that Onamibo is their largest open dump, and everything is actually dumped there. There is no separation, but it is trying. To continue she showed some pictures where can be seen that people are dumping their stuff, TVs, refrigerators, etc., in the city. She added that would be very nice, to have something to measure when these products are coming in the country, to have some tools to know the beginning, and then in the end, what it is expected to be the waste and what is the impact. So, it is necessary to check on other data because it is not possible measure these things, not because it is not knowledgeable, but because there is no financial support for this and there is also no equipments to measure this.

To continue Ms. Pinas presented a case study in Nigeria regarding contamination at a municipal dump site. Concentrations of PBDEs in topsoils around dumpsites at 15 cm depth are measured in 112 to 366 ng/g dry weight, and in the topsoil control site at 500 m from the dumpsite it was 26.8 to 39.7 ng/g dry weight. She highlighted this is the result of the improper handling and disposal, and it is important see that this situation is similar to happen in other countries, but there are not measures yet. Also, high concentration of PBDEs were found in plant root (bentgrass, spinach, tomatoes, pumpkin and sweet potatoes), in chickens and cows feed of soil in the vicinity of this dump site and people consume them. Also, she mentioned a comparison study of PBDE levels in chicken eggs, indicating that PBDE levels in the soils are sufficient to explain the levels in the chicken eggs with a reasonable carry-over rate for PBDEs of 0.28 on average. So, the case study shows that the PBDE contamination in soil was sufficient to result also in exposure to human through this accumulation of this PBDE in eggs. Also, shows that a better management of end of life products containing PBDEs is needed to reduce this exposure in Africa.

Then, she presented about the role as scientists, it started to help nature, but scientific methods provide alternative for ivory at that time, and more, several products which have been used have an impact on a daily life. So, thinking of this end-of-life phenomenon something was skipped and actually what would happen did not thought, the impacts were not measured, and mid-income countries are suffering.



To finish, she highlighted the need to do something about it and teach students and customers to take care actually not to use, and the industry would be helpful to think about methods to know in the beginning and should be necessary some transparency to decide by ourselves if these goods will be import, yes or no. She emphasized that poor countries and the mid-income countries are really suffering about these things, because when plastics are contaminated with PBDEs, other countries do not want to reuse them, but why in the first place they were imported to our countries and why did not tell us in the beginning that they were contaminated.

Regarding the PBDEs exposure information, Ms. Ohno asked if other plastics related chemicals are present in the same place, and therefore, might also have exposure to other chemicals of concern. And if so, which chemicals for further global control, potentially under new instrument or as persistent organic pollutants. Ms. Pinas replied that all the listed POPs are present in her environment and are being dumped, but the problem is the detection. She mentioned that in Suriname they are working on it and in the region, but you need to be at the right place to do something, it is bothering scientists the political way to solve this. So, the only thing someone can do as a scientist is with the law in hand say this is listed, you should not use this, and the ministry can controlled everything. Mr. Weber added that Nigeria, Sindicu has developed the PBDE analysis, but it could not analyze the brominated dioxins, there are e-waste in the dumps and are open burning, so, the brominated dioxins and furans are probably more relevant, but these ones could not been measure in this study.

Ms. Gonzalez asked if in the future the monitoring will continue to determine the persistence of these POPs in the environment. Ms. Pinas replied that the monitoring does not continue because there is a lack of analytical equipment, but it is still under inventory although they rely on financial support to do it, so, this is also very challenging and BCRC SCRC Caribbean is guiding Surinam to made the inventories but measuring is not possible.

Ms. Gardiner commented that Trinidad and Tobago shares the same challenges regarding monitoring and added that her country had the benefit of participating in a GEF project where they do some testing at one of our landfills and some surface soil and water samplings were done to get an idea of the type of POPs that is in the environment. Then, based on that, developed an environmental risk management plan to try to reduce and mitigate the risk. As part of that project was essentially to remediate the landfill, so, the landfill was meant to be closed, and then remediation will take place. The government made kind of changes policy along the way, so the landfill remains open, but they are aware of the potential risk of course from the leachate, from the items that are in the landfill and of course the leaching to the environment. They were able to develop a plan to actually put that in place, and coming out of that project, one of the outcomes is to install a reverse osmosis plant at the landfill to try to treat the leachate to prevent it entering into the environment. Also mentioned that like a benefit of a project related to plastic was to get a XRF device, which was loaned to the Bureau of Standards Agency to testing at border control for these chemicals.

Mr. Seppala asked a question if the artisanal recycling of WEEE that occurs in Africa and Asia is something that is happening in GRULAC countries as well, or is it like the semi-industrial scale operation like in Ghana? He expressed that all knowledge is about Africa just because the research projects have been there, but he does not have an understanding about this in GRULAC, particularly the incineration of e-waste. Ms. Pinas replied that there are two companies working with plastics, they collect them, flatten them, and then send them for export, that is a good beginning. But there is a financial problem with the incineration for plastics, because Suriname is one of the three countries that are most forested in the world, so in those companies of incineration there will be gases coming out and should have a control systems. In Suriname there are lot of plans, but implementing them is one thing, and control them will be the most important, to avoid having a big problem. The participant from Argentina mentioned that in his country there is one plant and they are working in a program that is looking for efficiency with WEEE, they want to identify POPs in WEEE. Also, Argentina is part of a GEF WEE regional project, that is finishing, but there is a line of work linked to this type of waste and the recycling of this electric and electronic waste that will be part of a GEF 8 project. Mr. Harte added that there is some significant commerce in few countries, circuit boards are valuable, they gather these circuits to export them, whether they classify it as hazard or not hazard material or product components of WEEE. He understands that in GRULAC is easier to just bury the waste than incinerating it, when the waste is not properly managed it will end up in those non-controlled landfills or open air dump sites that are very common in the region, those are one of the biggest POPs emission sources when the inventories of the region are checked.

Ms. Victoria Gomez asked a question regarding the breast milk samples, she wanted to know what others POPs were analyzed and if those women were representing a specific population exposed to POPs such as living near the dump sites or just woman from cities for example, if there was any criteria for selecting or no. Ms Pinas replied that there was no criteria and to her knowledge it were four or five samples which were measured just, it was the Bureau of Health that sent those samples to Germany company and she does not remember which type of pollutants were measured. Mr. Agustin Harte added that under the Global Monitoring Plan of Persistent Organic Pollutants, the core media are air and human milk and blood, the results were reported in the third global monitoring report. It has been measuring the persistent organic pollutants levels such as PFAS, and there are now data that could be compared the time trend, which was showing, for example, increasing trend in PFH excess while PFAS level was going down. But talking about the question, as part of the monitoring exercises that it been implementing, given that one of the goals is to assess the base levels, so it should be thinking about people that are not part of a particularly vulnerable group.





**Dr. Roland Weber**  
Expert

To start the last part of the day, **Mr. Weber** made a presentation about the monitoring of **PCBs and Dioxins in eggs** as sensitive indicators for contaminated sites from PCB management, highlighting the need for stricter control of PCB wastes and he mentioned many of the data that he showed is from the International Pollutant Elimination Network (IPEN), so therefore his presentation can be considered in cooperation with a range of IPEN members which have gathered the data and analyzed eggs in the past.

The expert explained about human exposure routes to Dioxins and dl-PCBs. They are ubiquitous in fatty foods, they bioaccumulate especially in top predators including also humans. So, the dioxin-like PCBs in food is often more than 50% of the total toxic equivalent, TEQ and almost all of these PCBs stem from commercial PCBs released to the environment.

Regarding the life-cycle" of PCDD/PCDF and PCBs and human exposure, it is important see the relevance of commercial PCBs and their release they had into food, so 90 % of these exposure of dioxins and PCBs come with the food. Over the last 100 years PCBs and dioxin have been released into the environment, they accumulate in animals, in **kettles** and fish and come back in our food.

Regarding the protection of food and the food and feed-production-Industry, the expert highlighted the human exposure as an important aim of POPs/PCB control. He explained it is especially relevant for South American countries which have large food and feed production and exports as important industrial sectors. Brazil, Argentina and Chile, have large meat production worth 34 billion, 12 billion and 7 billion respectively. Meat and other products of animal origin have a high risk for POP exposure and contamination and a stringent risk management is needed to avoid the extreme high costs of dioxin and POPs food crises. Therefore when managing POPs/PCBs in addition to health aspect, also the commercial relevance should be considered and the risk of POPs in food and feed production. POPs/PCB management also could be seen as risk reduction for food and feed production business in addition to health/environment protection.

To continue, the expert showed an overview of the largest food and feed contamination with dioxins and PCBs. He mentioned three cases: a large-scale feed and food contamination in Chile in 2008, one in Ireland with the bakery waste and other in Belgium. Regarding Chile case it was dioxin contaminated meat due to the use of recycled ZnO . Zinc oxide (ZnO) is partly used as feed additive, food supplement and fertilizer.

ZnO can be produced from virgin ores or can be produced from recycling processes. The PCDD/F levels in ZnO produced from virgin ores for feed was between 0.008 ng TEQ/kg and 0.034 ng TEQ/kg. Contaminated ZnO used as feed additive in Chile was measured at 17,150 ng TEQ/kg. This caused a large food contamination (mainly pork meat) resulting in around 200 million USD damage cost for meat production, because the meat production and exports had to stop for some time. The source of such highly contaminated ZnO are zinc recycling processes such as the Waelz process. In the Waelz process a variety of scrap and secondary raw materials are used, so, circular economy needs control and monitoring. Then, he continued with the two PCB cases, the first is the Irish pork crisis in 2008. Waste oil containing PCBs were used to dry animal feed in Ireland which was used then as commercial feed for pork and beef. The concentrations of PCDD/F and PCBs, discovered in pork meat at levels that were between 80 and 200 times EU food limits and in December 2008, the Food Safety Authority of Ireland ordered the recall and destruction of all Irish pork products dating back to September 1st, and the financial damage was approximately 120 million EURO. Finally, the biggest food scandal was in Belgium with the largest damage in 1999 and also PCB was the source. About 25 liter PCB oil were disposed in a wrong collection box for food fat/oil, and mixed with 107 tons fat for animal feed. Chicken eggs, meat from chicken, pork and beef were found in Belgium several hundred times above today's EU food limits. So in total there was around 1 billion US dollar direct cost and around 3 billion dollar indirect cost. After that, in the EU, it has been prohibited that industrial waste oils and waste food fats are managed within the same company.

Mr. Weber presented about the major exposure pathways of PCBs and PCDD/Fs for chicken/eggs. Soil is the major exposure pathway for PCDD/Fs and PCBs for free range poultry since free-range laying hens and broilers ingest on average about 11 g and up to 30 g soil per day and transfer about 50% of the dioxins and PCBs into the eggs. So therefore, free-range eggs are sensitive indicators for PCB & PCDD/F contamination in soils, and eggs and meat are an important exposure pathway from polluted soils to humans. Eggs are therefore ideal "active samplers" and indicator species for PCB and PCDD/F contaminated soils. Since the beginning of the Stockholm Convention the International Pollutants Elimination Network (IPEN) monitored eggs around priority dioxin/PCB sources listed in the Stockholm Convention, and published these reports over the years, so, through the whole life cycle PCBs is contaminating areas and soils from the production, from the use, from open applications, from waste management, and from there, food and feed can be contaminated, including eggs.



Then, the expert presented a global egg study published in 2022 about the monitoring of dioxins and PCBs in eggs as sensitive indicators for environmental pollution. In this study data on PCBs and PCDD/F contaminated eggs were assessed from 20 years monitoring of IPEN and the scientific literature. IPEN monitored 113 chicken flocks at potential PCDD/F and PCBs contaminated sites and 88% of the pooled egg samples were above the EU maximum limits for PCDD/Fs (2.5 pg PCDD/F-TEQ/g fat) or the sum of PCDD/Fs and dioxin-like PCBs (5 pg PCDD/F-PCB-TEQ/g fat). More than 50% of dioxin-TEQ came from PCBs. Children consuming just one egg exceed the FAO/WHO TDI (based on 70 pg TEQ/kg month) and the EU Tolerable Weekly Intake (TWI). This indicates that close to 90% of areas around these industrial emitters and open burning sources in low- and middle-income countries were unsafe for the production of free-range eggs and chickens.

IPEN monitored 21 pooled chicken eggs around secondary metal smelters or steel industry in 7 countries (Armenia, Bosnia and Herzegovina, Egypt, Indonesia, Kazakhstan, Thailand, and Ukraine) and all chicken flocks exceeded 10 times the EU regulatory limit with TEQ (26.0 pg TEQ/g fat). This indicates that all areas around these metal industries were unfit for free-range chicken farming. At 15 of the 21 sites commercial PCBs were the main TEQ contributor. This demonstrates that over the last 40 years PCBs have entered metal smelters on metal scrap with associated pollution of surrounding soils and chicken eggs with exposure to humans. The expert highlighted that the management of metals from PCB containing transformers, capacitors and other PCB contaminated metals need a better control and better cleaning of metal parts before enter, for example, copper or aluminum smelters.

To continue, Mr. Weber also mentioned that high releases of PCBs have been detected from metal shredder plants with associated PCB contamination in the surrounding areas. Sources are mainly small capacitors in washing machines and other electronics. Also, some cars produced in the 1970s and 1980s contained PCB as brake fluid. IPEN global egg monitoring studies, pooled eggs from 6 chicken flocks around shredders and recycling plants were analyzed from 3 countries (Belarus, Mexico and Czech Republic). The PCDD/F-PCB-TEQ of the pooled egg samples ranged from 5.8 to 31.9 pg TEQ/g and therefore all chicken flocks exceeded the EU limit. This indicates that the areas around the three investigated shredder/recycling sites were unfit for free-range chicken. The pooled egg from Belarus was sampled near a large car shredder plant in a small town (Gatovo) and had TEQ levels of 15.6 pg TEQ/g fat with 73% contribution from dl-PCBs. Also the chicken eggs close to an e-waste shredder plant and recycling workshops in Mexico (Guadalajara) were impacted with 6.8 pg TEQ/g fat with a contribution of 36% TEQ from PCBs. The sampled eggs in Pitarne village (Czech Republic) near a recycling plant for cables wires and other PVC products that uses shredding to produce PVC roofing materials. Pooled egg samples from 4 flocks were sampled in the surrounding area. PCBs contributed between 52 to 79% of TEQ which could possibly stem from PCBs formerly used as plastic additives in cables.





The expert also presented an IPEN monitored of 7 pooled eggs from chicken flocks at e-waste sites in 5 countries (Ghana, Kenya, Indonesia, Philippines, Thailand). The PCDD/F-PCB-TEQs were between 20,4 to 856 pg TEQ/g and therefore all eggs exceeded the EU regulatory limit. The mean TEQ was 308,4 pg TEQ/g fat, and by far the highest mean/median TEQ of all source categories. Eggs at the Ngara e-waste dismantling market in Kenya were contaminated with 567.4 and 519.6 pg TEQ/g fat with 97,8 and 96,6% TEQ contribution from dl-PCBs which are the highest dl-PCBs levels ever measured in free-range eggs. With 855,8 pg TEQ/g fat in eggs from the e-waste site in Agbogbloshie (Ghana), where e-waste plastic parts/cables is frequently burned. The major TEQ contribution came from PCDD/Fs (661 pg TEQ/g fat) but also dl-PCBs were high (194,8 pg PCB-TEQ/g fat).

So, the expert highlighted that e-waste sites in developing countries can be PCBs hotspots and also dioxin hotspots because the open burning and associated exposure, and he stressed that PCBs equipment need a better management.

To continue, presented about PCBs point sources at farms. He mentioned that the 5th highest dl-PCBs-contaminated egg ever reported was sampled by IPEN at a small farm in a pristine mountain area in Kazakhstan. So, actually this farm is use as reference background site but obviously heavily impacted by a PCB point source. But this is not the only one, the ninth highest PCB contaminated egg was found from a PCB point source on a farm in the Netherlands, this contamination could be determined as PCB paints on the asbestos roof. A range of further cases with contaminated eggs but also meat and milk from farms with PCB paints on walls, silos and asbestos roofs have been documented in industrial countries as important point sources. This highlights that PCB paints can be relevant PCB sources on farms and that within a national PCBs inventory of the Stockholm Convention the assessment of past use of PCB (S/MCCP) paints and sealants is useful to understand the relevance for a particular country.

Also, the expert introduced an IPEN Global Egg Study in landfills and dump sites. He explained that 1,3 MT PCBs, more than 50% were not adequately managed and were disposed in landfills and dump sites in the past. As semivolatile organic compounds, PCBs can migrate out of landfills over time. When we look to the 20 pulled eggs which IPEN sampled around landfills, 16 of these pulled egg samples around landfills and dump sites were above the EU regulatory limits and in 12 of the 20 sites, PCBs-TEQ alone exceeded the EU TEQ-limit for eggs. The highest contaminated eggs were sampled around a landfill in Moldova with 50 pg TEQ/g fat from dl-PCBs. Also, the eggs sampled around landfills in Uruguay were mainly contaminated with dl-PCBs/g fat contamination. In landfills in Belarus, Cameroon, Gabon and Uruguay the TEQ contribution of PCBs was higher than the contribution of PCDD/PCDF. The high impact of PCBs contamination in eggs around landfills and dump sites highlights that landfilling of PCB results in release and contamination of the surrounding with the very persistent and semivolatile PCBs. So, the expert emphasized that PCBs should not be disposed into landfills and dump sites since they evaporate over time and contaminate the surroundings.

To finish, Mr. Weber concluded that the large PCBs (and PCDD/F) contamination along the life cycle of PCBs including production, use and end-of-life treatment demonstrates that an overall assessment of PCB-contaminated sites along the PCB life-cycle is needed. Also, highlighted that the pollution detected at metal smelters, e-waste recycling sites, shredder plants, and around landfills/dump sites remarks that an overall improvement of PCBs management in end-of-life is urgently needed in developing and emerging economies countries, and that care is needed when increasing now the PCBs management pressure to meet the 2025 PCBs phase-out and 2028 final PCBs elimination goal of the Stockholm Convention. In addition, he mentioned that human exposure from the related PCB-contaminated sites and soils from past (and ongoing) PCB-releases need to be assessed. Contamination of food produced on such sites like eggs, milk and meat needs to be assessed, controlled and eliminated. He reviewed the IPEN article with recommendations to improve the management of POPs waste, including PCBs waste, and the tracking of pollution in the POPs life cycles, which is very important for PCBs.

During the round of questions, the participant from Argentina commented regarding that Mr. Weber mentioned about the Ministry of Agriculture from his country. This Ministry controls the formal circuit, and everything complies with the parameters, but might be there is not a control regarding those informal circuits of commercialization. At the internal level the National Service of Animal Safety controls the meat that is consumed, and this meat is not contaminated with any type of substance in addition to other diseases, and the country has very high standards of control for meat exports and all those depend on the Ministry of Agriculture in Argentina. The expert replied that in Europe there were large cases in 2008, 2012 and later where it already had for more than 10 years very severe control of feed and food case. It is not easy, and the best regulatory frame and assessment can at some point fail. He claimed that also in South America there are protection measures, but there is a risk and really reasons to take care of PCBs.

A participant in the chat made a question about if the PCBs method mentioned in the IPEN study is open. The expert replied that it is possible to find the description, the eggs are measured with GC-MS. But additionally, for the screening, there are bioassays for dioxins and dioxin-like PCBs and especially for screening, is cheaper. He mentioned also that Chile has installed a dioxin bioassay for monitoring of food and feed which he thinks is quite interesting for developing countries, because, the method is really cheap, below 100 euros, and there is reliable to see if food or feed is above regulatory limits. A normal instrumental analysis when you want to analyze dioxins and dioxin-like PCBs costs approximately 400-500 euros but it can also be more expensive. These methods are both described in the study.

The participant from Panama mentioned a study from the University of Panama regarding breast milk of young women. 60 mothers of a specific area participated and were analyzed pesticides and PCBs. All of the 60 women had PCBs in their breast milk. The most interesting was that in Panama the entrance of transformers with more than five parts per millions of PCBs is forbidden or banned since 2009-2010 and the study took place in 2018-2019. So, the expert highlighted that in this case it is possible see how persistent are these type of PCBs in their breast milk and also, that the pollution sources were relevant and have contaminated the soils in the surrounding.





**Mr. Agustin Harte**  
**BRS Secretariat**

To finish the second day, **Mr. Harte from the BRS Secretariat** presented about **PCBs sound management**. To started, he asked the participants in which year their country banned the use of PCBs in electric equipment and some countries replied. About the PCBs related deadlines under the Stockholm Convention, he mentioned that some countries started banned it since 1990, others started doing it or going to do it by 2025. So, that is the first aim, to remove it from use. Mr. Harte highlighted that this is going to be a difficult goal to achieve because there are a lot of equipment that people are unaware of what the content of PCBs is, due to we are not been able to remove from use because these are equipments that provide energy to people and industries establishments. The second goal in the Convention about PCBs by 2028 is to make all necessary measures to guarantee the environmentally sound management of PCB waste, including PCB containing liquids, contaminated electric equipments, contaminated soil that was removed and all kinds of things that might be contaminated with PCBs. 2028 it is an important date, countries that have identified stocks of PCBs' waste should dispose them adequately. There is another agreement quite important for PCBs waste and is the Basel Convention, because the PCB waste elimination could imply transboundary movenets. Lastly, he mentioned, that there is a ban that does not have a date, but there is in the annex of PCBs that talks about the open applications that countries should make efforts to identify other uses. Some of the known uses could be cable sheets painted, thermal insulation materials used for a very long time in construction buildings, and in electronic devices that might have PCBs.

Mr. Harte mentioned that those are the main goals in the agreement about PCBs, so there are several challenges, there is a very big lack of information regarding where is the remnants of PCBs? Which are the contaminated equipments? These are really big issues and also about cross-contamination whit new equipments that were repaired or were filled with oil of a used transformer. About 3% of all of the equipments that were analyzed have contamination above the 50 parts per million, which is the limit that is defined as PCBs or non-PCBs. Also, lack of finance to identify PCBs and dispose them.

Regarding the last decisions of the Conference of the Parties of the Stockholm Convention, Mr. Harte mentioned the COP-11 decisions where were established some attention calls to some countries. Firstly, to accelerate the elimination or disposal of PCBs, update their inventories to report to the Secretariat of the Convention through the national report on 2026. Also, a group of experts was reestablished in an intersectional group of work to manage PCBs. This is a group of experts from every region and international organizations works on developing tools to help countries to accelerate the disposal of PCBs.



To continue, he showed some of the products of the work made in the past years from the BRS Secretariat, it received a mandate to have a review of several documents in addition to the strategy that countries can comply with the goals. The review of the guidelines within the Stockholm Convention establishes what are the requirements and recommendations for countries to comply with it, also a report that takes place every four years. So, he presented the results about the progress made in the world for eliminating PCBs. The BRS Secretariat was requested by COP decisions to continue providing technical assistance, organizing the work and continue to engage with entities, providing multilateral, regional and bilateral financial and technical assistance, through implementation agencies that are the ones that implement GEF projects. Also, mentioned that was requested to update the report on further options for addressing the needs, including funding needs, and the challenges met to reach the targets related to the elimination of PCBs. Regarding the Global Environmental Facility (GEF), is not enough for the elimination of the all PCBs that exist in the world, so it is necessary to evaluate what other financial tools there are to comply with the goal.

Mr. Harte mentioned that there was a decision made last COP with the work that was made with this group of experts about the structure of an inventory. The experts worked in the chart that already existed and improved it, changed the structure of it and made several changes to facilitate the countries to present their PCBs inventories for the next cycle of presentation of the National Report. It is requested to each country to present the information of the kilograms or tons of the equipments or materials contaminated with PCBs that are in use, some that are not in use and are stored as waste, for example, transformer equipments that have PCBs or some other electric equipments like capacitors. But in addition, one of the changes is that the group decided to include the number of equipments because sometimes the data of the weight is unknown, but countries can know how many equipment they have, and with that it is possible to estimate what quantity of PCBs will be included. The update chart will be shared with the countries to be used to present their national plans and with this, the BRS Secretariat will be able to gather this information and make better reports.

Then, he presented the strategy to the members of the Convention can comply with the goal by 2025 and 2028, the strategy was presented at the last COP and it is under improvement. This states the challenges in identification and inventory of PCBs, PCBs use phase-out, treatment and disposal and also the sustainable funding for PCBs elimination. He mentioned that the BRS Secretariat are receiving recommendations, lessons learned, experiences on how to address each one of these issues on PCBs management to improve it and in the end an annex will be shared with the Parties.

Mr. Harte continued talking about the assessment of national capacities and asked participants if they can share if they have at least one or several laboratories that are capable of analyzing oils, and other matrices. He explained that the goal of this self-assessment is being able to identify those areas in which it is necessary to work harder, areas where Parties can ask for some financial or technical support, to have a map of the capacities available in the region.

Regarding the report of Progress on PCBs elimination, GRULAC region has a higher percentage of reporting comparing with others, but there is still a long way to go. About PCBs local elimination there are seven countries reporting local elimination, meaning that they destroy or treat the PCBs. Maybe other countries did not report because they have the local capabilities at least for chemical treatment but this situation is reflecting the need for technologies for waste disposal. He also mentioned that in the Caribbean there is also a regional project, and they are collecting PCBs and exporting those, it is already functioning, so, 95 percent of waste contaminated with PCBs from Latin America and the Caribbean goes to a plant in France, Europe, where they decontaminate the metals and incinerate porous materials and liquid PCBs.

From the BRS Secretariat also highlighted that GRULAC treated 75.000 tons of waste (7 countries) through its local capabilities, but only 15.000 tons of waste was exported on a yearly basis. So, the region needs to continue in making efforts to try to provide disposal for PCBs. In many cases there is no local capabilities for this disposal, that is a challenge, and the region needs to improve its inventories, because most countries have incomplete or partial inventories inventories, and it is quite important for the National Implementation Plans and National Reports, to provide this information and to be able to conduct new projects. Regarding available funding resources for PCBs treatment, it is estimated that the GEF would have around \$50 million to distribute in 24 projects for PCBs elimination, but the region needs to know how much PCBs has.

Mr. Harte mentioned that thanks to funding from the European Union the BRS Secretariat is implementing a project that started on March 2023, which primary goal is to build capabilities on developing countries to comply with the goals for 2025 and 2028. Various pilot projects in different regions are being conducted. In GRULAC, Venezuela and Cuba are starting a pilot project that is focusing on developing methodology that allows to validate the inventories, because this is the challenge, being able to quantify how much PCBs there are in the countries. The BRS Secretariat is also working on guidance and tools for countries to have the standards and the adequate forms to submit the information, methodologies to determine the presence of PCBs in different matrixes and other topics related to the inventory, also a series of regional workshops that are being organized.

He also highlighted that thanks to the Regional Centre in Panama the BRS Secretariat will have a meeting in April and technical experts from the Stockholm and Basel Convention were invited. PCBs and hazard waste management is a complex topic when it comes particularly to exports so that is why this topic will be covered with two focal points of the two Conventions, and most of the region has already confirmed their remote or in-person attendance. Also mentioned that the BRS Secretariat are working with other multilateral funding organizations like development banks because GEF funding is not enough. There are other types of investments and options for private parties to cover a significant part of the investment equipment when this type of equipment cannot be unpolluted when they have concentrations over 5.000 ppm of PCBs.



Finally, Mr. Harte mentioned that the BRS Secretariat is undergoing a global assessment on capacities, to provide a status report to present at the next COP on the actions and what should be done urgently to be able to comply with 2028 goal, and invited countries to join their experience or new tools to complain with the goals.

The participant from Argentina mentioned that they have a regulation of minimum budget since 2002 for PCBs disposal and management, because his country has adopted a regulation judicial system for everything that involves environmental regulation. Argentina is a federal country, and because of that it has a regulation of minimum budget so it is based on each province, the provinces can establish their own regulation, always more rigorous or same standard as the minimum budget regulation, but never less rigorous than the standard. In 2015 after the resolution of the Environmental Secretariat a national program was created to manage comprehensively PCBs and in 2020 the national registry of PCBs holders was created. Both were a mandate adopted after the Conventions and the agreements that Mr. Harte just mentioned, this valuable instruments are also linked to the UNDP projects that went from 2012 to 2017 and other from 2020 to 2026. A new GEF project was presented to the GEF 8 to continue with the ESM of POPs, mercury and other hazardous substances. Also added that Argentina exported 240 tons of PCBs and the challenge is to improve the technical aspects as well as improving the analysis of PCBs. Actually, they are working with the network of public and private laboratories with the aim to enhance sampling and assessment, with better training as well, specifically for the people who work on the side of the State. He also mentioned that they are working on a guideline of safe handling of contaminated equipments and also in improving the inventory of what exists and disposals. Lastly regarding the funding, the UNDP project, which is since 2020 to 2026, will do one last withdrawal of PCBs. It will be a historical action.

The participant from Trinidad and Tobago took the floor to mentioned that regarding waste management with PCBs, they were part of a regional project with FAO funded in 2016 to conduct a rapid assessment of PCBs nationally, with the support of the Caribbean Centre. 110 pieces of equipment in their former sugar cane industry and the power generation industry were sampled, and of the 110 pieces that were sampled, 17 were suspected to contain PCBs. Finally, five were identified as actually containing PCBs, one of the transformers had about 517 milligrams per kilograms of PCBs oil, and two of them were confirmed based on the identification plate, because it said Paranol, which is like one of the trade names of PCBs. In 2020 another transformer was identified containing PCBs. So, she mentioned thar under the FAO project of the GEF 7, about 17 tons of PCBs were shipped for disposal in a facility in France during the COVID pandemic period, but it was very strenuous to get the necessary permissions, and most of the transformers they identified between 2016 and when the equipment was actually to be collected, to be shipped, they disappeared in somewhere for whatever reason, maybe they were part of the scrap metal industry that takes place nationally in the country. During that time, the power generation facility was demolishing, so it worked out really well that they were able to get the transformers and the equipments to be part of the disposal actions during that time period. One of the challenges they experienced was the retrieval of the equipments that were identified as PCBs contaminated, given the timeframe during which they have been initially identified and then essentially collected for environmentally sound disposal.

There were also some delays from the competent authorities from the various countries involved in the shipment process itself, which then extended the entire process, but on a positive end it was good to have the engagement of the various members of the committee as well as the various key stakeholders, for example the power generation facility was very much engaged in the process, which was excellent. And as part of that community, continuous communication was necessary to ensure that they had that environmentally sound disposal taken place.

Mr. Harte clarified about exports, there is the challenge of incineration of waste because many countries have not approved or do not have the equipment to destroy PCBs in high concentrations, that is why they are sent to other countries. Also some countries, in addition to the incineration of the oils contaminated with PCBs and other materials, what they do is to decontaminate the metallic parts, because if it does not decontaminate appropriately, it will end up at a scrap recycling center and it will contaminate other materials. Some companies that treat hazardous wastes offer the service, but it requires autoclaves and not all countries have this technology, so they end up exporting the oil and also the whole equipment at times to be decontaminated and recycled, so this material goes back to the circular economy, and when not, it ends up being incinerated in right furnaces. Opt for the decision of exporting is not cheap at all and they are working on assessing costs and analyzing what are the costs that are being covered for transportation, for bidding processes and for the final disposal of the waste. The amounts depend on if it is maritime or terrestrial transportation and that will end up impacting the possibilities of financing that.



**Mr. Timo Seppala**  
**Senior Officer**  
**Finnish Environment Institute**

Mr. Seppala shared some information about identification of chemicals in articles, which is the EU market surveillance for persistent organic pollutants in non-food products, as well as other plastic additives. He explained how to access it by Google through a link to the European Commission site on safety gate alerts, in this portal market surveillance authorities in the EU member states post their findings in case there is a an article on the market that has to be removed from the market and it is open for everybody. It is possible consult alerts for multiple search categories or fields. He mentioned that if for example plastic additives alerts are search regarding POPs, only appear three results in 2024, 2023 and 2021, so, there are not a huge amount of data but it is interesting to know of what kind of materials are found on the market that would exceed the limit values in in chemicals legislation or in POPs regulation.



Basel Convention Coordinating Centre  
Stockholm Convention Regional Centre  
URUGUAY



BASEL CONVENTION



ROTTERDAM CONVENTION



STOCKHOLM CONVENTION



Food and Agriculture  
Organization of the  
United Nations



UN  
environment  
programme

He also showed that one of the alerts is regarding an optical mouse and it is possible get information about in which country is the finding, the origin country, and also it is possible to get a good explanation of what are the reasons why it was notified by the country as being an article against the regulations. In these cases, he explained that the reason for the recalling the product from the market is not that it exceeds the limit values in POPs regulation, phthalates, SCCPs, measured value up to 1.2 percent by weight, it really shows that it does not comply with the REITs regulation, which would set limit values for the phthalates, or the persistent organic pollutants regulation. To finish the expert mentioned the importance of this tool, because a lot of these products come from China and the same articles could be on GRULAC market, so this portal is accessible to looking at what sort of chemicals or materials could be found in a specific product.

A participant asked what additional actions the EU has made to identify these products, whether it leads to a ban or a control of taking these products out of the market, or what they do. The expert replied that these campaigns of the EU concentrate on identifying SCCP in soft plastics or rubber, things on the market, but sometimes individual countries have their own campaigns, and they do a small market surveillance. Also, mentioned that for example for PFAS compound that was listed in 2019, two findings appear, which both seem to be those little cups that are used in baking for muffins that have excessive concentrations of PFAS exceeding the UTC limit value. Not all the time POPs are analyzed, it really depends on what the local or member state market surveillance authorities consider most important at the time, and it is always risk-based.

The BRS Secretariat requested the participants to share with the others in groups related to these topics and about what others topics participants want to learn more, the Forum finished by sharing some sentences of each group.

Ms. Mata reflected about PCBs were one of the first chemicals included under the Stockholm Convention and 20 years later we are still fighting to update inventories to identify the companies that produce this type of waste, and to move forward and this chemical is a pure substance despite its mixtures. The main use of PCBs is electric oils, and the countries are still trying to improve its management. So, regarding polybrominated chemicals and other chemicals that are part of products that the countries do not know much about them, it is pending years of work to do on identifying and managing them and also need to work to improve transparency, work on management and training. She highlighted that will be necessary that the industry comes to transparency, but countries need to train people at local level as well, build capacities for analysis and try to find a mechanism for auditing, maybe strengthening mechanism to control all of this. It is necessary be stronger and sustainable which she mentioned that the biggest challenge for the region.



Mr. Rey added that the level of commitment and ambition of the countries, should be equal to the level of the international aims. We have these lists of chemicals under the Stockholm Convention, but there are thousands of chemicals. So, these processes take years. But these lists are no good if, at the national level, the countries that ratify these conventions do not do their work to implement and enforce the agreements. He highlighted that international cooperation is key for training and for technology transfer, but the country needs to do its internal work to implement the commitments undertaken at the international level. Also mentioned that the industry plays a relevant role when it comes to transparency. All this will make easier to identify if these chemicals comply with the levels and to be able to prevent the consequences for human health in the environment.

Ms. Arruda from Brazil highlighted that in her country some institutions believe that it is not necessary a new treaty of Plastics because these chemicals are part of other conventions or agreements but to her it is clear that those conventions are not enough.

Mr. Marchesi from Argentina agreed with Mr. Wagner about that it is necessary go from this individual approach to a group-based approach. Grouping these chemicals will allow to manage the huge number of chemicals that are part of plastics and consider always the complete life cycle approach.

Mr. Flamenco agreed with the previous comment about the need of go to a group-based approach and added that it is key to have access to existing databases that can provide with more criteria to help decision making.

Ms. Gardiner highlighted the gaps between the developed and the developing countries and the fact that in GRULAC region there is a lack of access to certain technology, resources and the disadvantages in terms of not having access to certain types of information. So while the EU is able to get certain products off its market, these products still enter to our markets and still cause harm to our countries. She suggested to get more resources of solutions that can be used at a local level, for example more access to databases. There is the Safet Gate website that was shared, those things are very important to access the information that is currently available to us to move forward.

Ms. Vargas mentioned that the Dominican Republic has a lack of technology to identify this POPs, so, she is grateful to receive information and ideas about how other countries identify the chemicals in those products.

Mr. Vidal emphasized the importance of the comprehensive management of chemicals throughout the entire life cycle and that is a necessity for countries to control and regulate since the production to final disposal. He mentioned that Peru is just starting that path with its regulations, and it is necessary take that into the plastics treaty to being able to have higher ambitions based on the best available knowledge, taking into consideration the entire lifecycle of plastics.

Ms. Ramirez from Mexico highlighted the importance of creating the synergies between the different conventions and being able to translate this into the plastics treaty. Also mentioned that it is a need to base these agreements on science, because a political negotiation would not mean anything without the scientific support. It is necessary to have knowledge about the gaps in the regional capacities and is important being able to understand how that translates into the implementation.

Ms. Gonzalez mentioned that there is a wide range of commitments related to the life cycle of plastics and their waste in relation to the Basel, Rotterdam and Stockholm Conventions and therefore there are a lot of information to begin to protect our countries and it is not necessary to wait for the plastics treaty to begin to act. These conventions have been fighting against this situation for two decades and therefore it is necessary to move forward and wait for the gaps, in relation to plastics, to be covered by the new treaty.

Mr. Barrientos emphasized, regarding the new plastic treaty, that he is concerned that the discussion is changed to chemicals in plastics, and is not about the bigger issue, which is why started the treaty, which is avoiding plastics to get to land and sea.

Ms. Brathwaite from Guyana highlight that is important continuing sharing information to learn on how help our countries, she believes that networking, public awareness and better management are the key issues.

Mr. Seppala thanked these two days of Forum and highlighted the importance of sharing experiences about what it knows and it is also important to share what we do not know. He mentioned that was really helpful to him to get a good understanding of which is the level of knowledge in general.

Ms. Aburto mentioned the importance of the prioritization, because there are a lot of actions to make, and she believes that necessary efforts to make progress are being doing. She added that in necessary putting the focus on these goals and making small progress with different sectors, the academia, the private and the public sectors, so it is possibly to create actions that will have the same focus for all of the involved parties.

Mr. Roa from Chile highlighted the experience has been enriching, he is surprised about this topic because in the area of pesticides it is almost like something that not many people know. Also added that recycling could be much more complex, and it is necessary searching for more alternatives to eliminate those or to make final disposal of them. So, he thinks that the new instrument could address a lot of more topics, and it will be a need to define the priorities such as additives and the management of waste.

Mr. Norman mentioned that during these two days he learned a lot about the work that is going on in GRULAC region, especially in the challenges regarding the management of the chemical substances and he can confirm that the industry of the waste is following the path to get transparency and better management systems.

Ms. Carcamo highlighted the importance of every actor is present in order to reach agreements. She indicated that the presentations showed very clearly there is a very severe problem, and it is necessary to hurry in taking actions and measures. How was mentioned previously there is the Stockholm Convention, and its experience, but in a presentation was showed that some pesticides that were eliminated several years before in Chile are still present and that is a clear example of persistence of this substances. Also she added about recycling, the presentations show that is not a good idea, so, it is necessary to reduce the production of plastics.

Ms. Medina thanked for the organization of the instance for the region to have the possibility of listening firsthand the issues from the experts. She mentioned that was interesting the participation of the developed countries to see what the region knows and also what does not know. She expressed that is concerned because a convention is under negotiation with a term of two years to do something very complicated and it is possible to make mistakes in the rush and put into the market products that have not yet been approved, and then maybe in 20 years, will be necessary to have another agreement or amendment because what was considered as safe product is not. Also, she considered important that the region can learn of the experience of those developed countries to no repeat the same mistakes, and added that the region needs a process of education and information of the personnel who is negotiating so they can have the required tools to reach a good agreement, scientific based. The counties need more instances where all actors are present, such as the academia, NGOs, civil society and the industry.

Mr. Harte finished the round of comments mentioned that he was pleased to see familiar faces, but also new faces because it is important for the work to continue adding new people, younger people that become part of these efforts. Also, he was very thankful for the presence of all the participants in person and he was very surprised for the high online participation the Forum had. He asked to participants to commit with the chemicals and waste agenda because it is one of the main causes of biodiversity loss, pollution and climate change. He highlighted the BRS Secretariat is working on reports and data as part of the conventions to strengthen this agenda based on the mandate of Parties. He considered important to continue this professional and ongoing work in all countries, with all stakeholders, the industry, the academia, NGOs, civil society and others, particularly those who are members of the value chain, like consumers, consumers also need to be part of the discussion. He finished inviting to stay involved, to keep working on building consensus at national, regional and global level.

Ms. Ohno closure the Forum thanked the participation of all.



Basel Convention Coordinating Centre  
Stockholm Convention Regional Centre  
URUGUAY



BASEL CONVENTION



ROTTERDAM CONVENTION



STOCKHOLM CONVENTION



Food and Agriculture  
Organization of the  
United Nations



UN  
environment  
programme

- The Forum from the logistical point of view it was done successfully.
- Through the conducted dynamics, the participation of all countries was achieved to capture the knowledge and experiences acquired.
- The meeting was carried out with a high degree of commitment on the part of participants, they actively participated in the discussions. The exchange of experiences and essential information between countries to generate national positions was also highlighted.
- All participants agreed on the importance of this type of instances that allow the exchange of information between the parties and the updating of information in this regard. Furthermore, the assistance of all actors involved was highly valued, which makes possible to expand the framework of action and reach agreements in the region.
- It is important for all parties to be aware of the obligations related to the BRS Conventions, the potential for synergy, and which are the gaps or the areas that are not regulated and require additional action.
- The importance of building partnerships between different parties and countries to overcome technology and monitoring barriers was also emphasized.
- The gaps between developed and developing countries were highlighted, the lack of access to certain technology and resources, and the disadvantages in terms of not having access to certain types of information in GRULAC. It was considered important to get more resources of solutions that can be used at a local level, for example more access to existing databases.
- It was also stressed that for a treaty to protect human health it must address plastic chemicals and polymers, including micro and nanoplastics, as well as include the life cycle of plastics since people are affected at all stages.
- Recycling is very important, but better waste management and proper separation are needed to ensure that plastics containing POPs are not recycled for sensitive uses. Global measures must be taken to control these additives in plastics, POPs and other hazardous chemicals must be replaced by sustainable chemicals, starting with priority uses.



# Annex I: Agenda

## Day 1



### Technical workshop: 'Chemicals in Plastics Forum'

6–7 March 2024, Santiago, Chile

#### Provisional Agenda

#### Day 1: Wednesday, 6 March 2024

Time	Activity	Facilitator
09:00 – 09:30	Registration	
09:30 – 09:45	Opening, objective, and structure of the Forum	Host + Secretariat
09:45 – 10:00	Round of self-introduction	All participants
10:00 – 10:30	Updates on recent decisions of the BRS COPs related to chemicals in plastics (Listed chemicals, exemptions, BAT & BEP guidelines, POPRC work)	Kei Ohno Woodall, BRS Secretariat
<i>Coffee break (30 min)</i>		
<b>Session 1: Identifying and prioritizing the chemicals in plastics for sound management</b>		
11:00 – 11:30	PlastChem state-of-the-science report on plastic chemicals, identifying and addressing chemicals and polymers of concern	Mr. Martin Wagner and Ms. Laura Monclus Anglada (Norwegian University of Science and Technology (NTNU)) - online
11:30 – 12:00	Chemicals in food contact plastics and health impacts	Ms. Jane Muncke (Food Packaging Forum Foundation) - online
12:00 – 12:30	Country presentations and discussions	Participants (5 minutes x 3 countries) and discussions
<i>Lunch (90 min)</i>		
<b>Session 2: Environmentally sound management of plastic waste and chemicals in plastic waste</b>		
14:00 – 14:30	Learning from challenges with PBDEs, need of urgent control of chlorinated paraffins and many more challenges ahead...	Mr. Roland Weber (Expert) - online
14:30 – 15:00	Limiting the recycling of hazardous additives in plastics within a circular economy: An overview of EU approaches and considerations on PBDE Limit Values	Mr. Timo Seppälä (Finland)
<i>Coffee break (30 min)</i>		
15:00 – 15:30	Waste management and recycling of plastics and some challenges of POPs and other chemicals of concern	Mr. Roland Weber (Expert) - online
15:30 – 16:45	Country presentations and discussions	Participants (5 minutes x 5 countries) and discussions
16:45 – 17:00	Wrap up	Host + BRS Secretariat

# Annex I: Agenda

## Day 2



### Day 2: Thursday, 7 March 2024

Time	Activity	Facilitator
<b>Session 3: Enhancing transparency and traceability of chemicals in plastics</b>		
09:00 – 09:30	The need for increased transparency and traceability of chemicals in plastics to protect human health from toxic chemicals	Ms. Therese Karlsson (International Pollutants Elimination Network) - online
09:30 – 10:00	Enhancing transparency and traceability of chemicals in plastics	Mr. John Norman (American Chemistry Council)
10:00 – 10:30	The role of science and chemicals in plastics	Ms. Victorine Pinas (Suriname) - online
<i>Coffee break (30 min)</i>		
11:00 – 12:00	Country presentations and discussions	Participants (5 minutes x 4 countries) and discussions
12:00 – 12:30	Latest work on chemicals in plastics and issues of concern under UNEP	Ms. Stephanie Laruelle, Mr. Markos Ieridis (UNEP) - online
<i>Lunch</i>		
<b>Session 4: PCB elimination</b>		
14:00 – 14:30	Monitoring PCBs and Dioxins in Eggs as Sensitive Indicators for Contaminated Sites from PCB Management Highlighting the Need for Stricter Control of PCB Wastes	Mr. Roland Weber (Expert) - online
14:30 – 15:00	PCB environmentally sound management and the 2025 and 2028 targets	Mr. Agustin Harte (BRS Secretariat)
15:00 – 15:30	Country presentations and discussions	Participants (5 minutes x 3 countries) and discussions
<i>Coffee break</i>		
16:00 – 16:45	Open discussions	All participants
16:45 – 17:00	Wrap-up and closing remarks	Host + BRS Secretariats



# Annex II: Photos

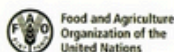


# Annex II: Photos





# Annex III: List of participants



## Technical workshop: 'Chemicals in Plastics Forum'

Santiago de Chile, Chile

6<sup>th</sup> and 7<sup>th</sup> March 2024

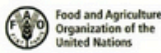
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# Annex III: List of participants



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# Annex III: List of participants



Food and Agriculture Organization of the United Nations



UN environment programme



Centro Coordinado Convenio Basilea  
Centro Regional Convenio de Estocolmo  
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# Annex IV: Form for collection relevant information

## Form for the collection of information on experiences with and challenges encountered in developing and implementing appropriate strategies for identifying persistent organic pollutants in products and articles in use and in stockpiles and wastes and other relevant information

Submitter information	
Name of the submitting Party/observer	
Contact details (name, telephone, e-mail) of the submitting Party/observer	
Date of submission	

### Introduction:

Today, a large share of persistent organic pollutants (POPs) is present in articles, products, stockpiles and waste. The identification of chemicals (such as by labelling) in products and articles has been a challenge for many Parties to the Stockholm Convention, particularly for POPs with multiple uses or applications and that are listed with specific exemptions and/or acceptable purposes.

To assist Parties in implementing the Convention, in paragraph 2 of decision SC-11/12, the Conference of the Parties requested the POPs Review Committee to consider options for identifying POPs in stockpiles, products and articles in use and in wastes and issues related to the production, import and export of products and articles containing POPs, and to report on the outcome of that exercise to the Conference of the Parties at its twelfth meeting.

Furthermore, in paragraph 3 of the same decision, the Conference of the Parties invited Parties and observers to submit to the Secretariat, by the date to be decided on by the Committee, information on experiences with, and challenges encountered in, developing and implementing appropriate strategies for identifying POPs in stockpiles, products and articles in use and in wastes and other relevant information to support the work of the Committee.

In paragraphs 4 and 5 of the decision, the Conference of the Parties requested the Committee to take into account the information received from Parties and observers, existing guidance relevant to labelling, export and import, as well as relevant work in other forums when undertaking the work referred to in paragraph 2 of the decision and invited the Committee to involve experts with relevant expertise in that work.

### Questions:

A. Products and articles in use	Responses
1. Are you aware of any methods, strategies or approaches for identifying POPs in products and articles in use?	
2. Please provide a description of the methods, strategies or approaches.	
3. Please describe your experience in using those methods, strategies or approaches. Was it a one-time exercise, or was it performed periodically?	
4. Have you identified POPs occurring as constituents of articles in use as per note (ii) of Annex A or B to the Convention? Please describe your experience.	

B. Stockpiles and waste	Responses
1. Are you aware of any methods, strategies or approaches for identifying POPs in stockpiles and waste?	
2. Please provide a description of the methods, strategies or approaches.	
3. Please describe your experience in using those methods, strategies or approaches. Was it a one-time exercise, or was it performed periodically?	
C. Labelling or marking	Responses
1. Do you have any experience in labelling or marking POPs in products and articles? (For example, for hexabromocyclododecane and pentachlorophenol). Please describe.	
2. What are your views about a requirement to assist identification of POPs in products and articles in use by labelling or other means? Do you think it is feasible to implement such a requirement? How do you think it could be implemented in your country?	
D. Any other information	Responses
1. Please provide any additional information regarding experiences with, and challenges encountered in developing and implementing methods, strategies or approaches for identifying POPs in products and articles in use, as well as in stockpiles and wastes.  Where applicable, provide information on the capacities and means of implementation in the relevant situations.	
2. Please provide any other relevant information to support the work of the POPs Review Committee as outlined in paragraph 2 of decision SC-11/12.	