

Towards a Safer Future: Integrating Chemical Transparency and Traceability in the Global Plastics Treaty

Only if you know it, you can control it!

The Chair's Text from December 1¹ is anticipated to be the foundation for further discussions and negotiations at the INC5.2 meeting. While it addresses plastic chemicals, including transparency and traceability, these components remain contentious for some delegations. Efforts to dilute or diminish the ambition level in text sections regarding chemicals will have significant negative implications for the Plastic Treaty's ability to achieve its goal.

This brief information paper summarizes the work of HEJSupport, SSNC, and groundWork South Africa, outlining the reasons why the Plastic Treaty must address chemicals, along with chemical transparency and traceability, at the level of individual plastic items.

Plastic pollution is also chemical pollution

In the Chair's Text the objective of the instrument will be "... to protect human health and the environment from plastic pollution, including in the marine environment [based on a comprehensive approach that address the full life cycle of plastics]".

Plastics are chemical products. More than 16.000 chemicals have been identified to be associated with plastics, and over 4200 are of concern². Many lack safety data, and less than 1% of the 16.000 chemicals are regulated under any multilateral agreement³. Many plastic chemicals are not bound in plastic matrices; rather, over time, they migrate out of them and into the environment as pollutants.

Recognizing the identified facts and regulatory gaps logically implies that the definition and scope of "plastic pollution" within the treaty text must encompass both physical and chemical pollution from plastics. Otherwise, the control mechanisms detailed in the instrument will be insufficient and incomplete.

The cost of inaction regarding plastic chemicals is likely very high, with negative effects on human health and the environment, including increased environmental injustice. It impacts the economy in various ways. The burden of disease reduces economic output, and remediation is always more expensive than addressing problems at the source. Lines of reasoning and arguments supported by scientific references were presented in our information paper "Cost of inaction on a system for transparency and traceability of chemicals in plastic products"³.

Furthermore, the paper emphasizes that the demand for materials and products that are safe for human health and the environment is increasing across all levels of society and throughout value chains. This includes the demand for products free from harmful chemicals.

However, without mandatory globally harmonized requirements for disclosing and sharing chemical identity information regarding materials and products, the only means to verify the presence of hazardous chemicals in products is to conduct spot checks and chemical analyses, which are costly and unaffordable for most developing countries.

1 https://wedocs.unep.org/bitstream/handle/20.500.11822/46710/Chairs_Text.pdf

2 PlastChem Report 2024 (https://zenodo.org/records/10701706/files/PlastChem_State_of_the_Science_on_Plastic_Chemicals_Report.pdf?download=1)

3 Cost of inaction on a system for transparency and traceability of chemicals in plastic products (<https://www.globalchemicaltransparency.org/wp-content/uploads/2024/09/INC5-Cost-of-Inaction-on-Transparency-and-Traceability.pdf>)

The paper highlights the need to establish requirements that will lead to the development of a globally harmonized transparency and traceability system for toxic chemicals in plastics across all life stages of materials and products, in accordance with UNEA Resolution 5/14⁴. It explains that a harmonized approach should be preferred to disclose and track chemicals in plastic value chains. It will simplify trade by introducing predictability, levelling the playing field for all market stakeholders, and removing unnecessary trade obstacles stemming from multiple parallel standards.

Chemical identity information for individual plastic items is necessary for effective control measures throughout the plastic life cycle

Key control mechanisms for the treaty are outlined in the Chair's Text under the articles concerning plastic products (**Article 3**), plastic product design (**Article 5**), plastic waste management (**Article 8**), and existing plastic pollution (**Article 9**). Additionally, **Article 4** addresses exemptions. All of these mechanisms rely on access to chemical information. Without knowledge of the chemicals present in individual plastic items, informed decisions cannot be made at any stage of their lifecycle. Therefore, the scope of chemical information should encompass polymers and plastic additives, including processing chemicals that may be present in the plastic items as pollutants.

Our paper "Full and selective information disclosure for chemicals in plastics" explains why various stakeholders in the plastic value chain should have access to information about chemicals in materials and products.⁵

Regulatory agencies, academic institutions, and the envisaged scientific subsidiary body or committee should ideally have access to chemical composition information for individual plastic items. This access would enable them to respond proactively with regulatory actions and conduct research on gaps in hazard data and risk assessments. Furthermore, it would facilitate mapping chemicals regulated within plastic value chains and emerging legacy materials. This is linked to several provisions outlined in **Article 3**.

Unless information about the presence and identity of chemicals of concern with exemptions under **Article 4** is known at the level of individual plastic items, retailers, consumers, waste sorters, dismantlers, and recyclers face a significant risk of inadvertently making incorrect decisions that could result in exposure to chemicals of concern, such as through pollution of the reuse/circular plastics economy and the environment.

The preamble and several articles (**Articles 3, 5, and 8**) emphasize circular economy approaches. Reusing, repurposing, or recycling plastics with unknown chemical composition can disperse hazardous chemicals in uncontrolled ways throughout value chains.

Manufacturers of products made entirely of plastics or those containing plastic components must know the identity of the chemicals in these plastics to meet the product design provisions in **Article 5**. This knowledge is also essential for making decisions regarding the voluntary substitution of chemicals of concern that are not yet regulated under the Plastic Treaty, or for phasing out plastic components containing them.

The effectiveness of the control measures outlined in **Article 8**, including waste sorting systems, waste minimization, reuse, and recycling that do not harm human health or the environment, as well as terminal waste disposal and destruction, ultimately relies on informed decision-making by individual stakeholders throughout the plastics life cycle. To make informed decisions, they require chemical identity information for specific plastic items.

To address existing plastic pollution, Article 9 recommends, among other actions, clean-up initiatives and the collection of physical plastic waste as a control measure, which contributes to the waste management strategies outlined in Article 8. Legacy plastics, or their fragments, lack information regarding the identity of chemicals in individual plastic items. To bridge this information gap for potential future plastic pollution, plastic manufacturers should be required under the Plastic Treaty to disclose the chemical identity information for each individual plastic item as soon as possible.

⁴ UNEA Resolution 5/14 (https://digitallibrary.un.org/record/3999257/files/UNEP_EA.5_RES.14-EN.pdf?ln=en).

⁵ Full and selective information disclosure for chemicals in plastics (<https://www.globalchemicaltransparency.org/wp-content/uploads/2023/05/INC2-Transparency-concept-short.pdf>)

Disclosing and tracking plastic chemicals in individual plastic items

For the disclosed chemical identity information to be useful, it must also be traceable and linked to individual plastic items throughout their respective life cycles as described in our paper, “Transparency and Traceability Systems for Plastics: Design and Practicability Considerations”⁶. The paper also outlines practical approaches to achieving this.

Traceability systems typically utilize labels and markings. Relying solely on physical labels and markings is insufficient, as they may be damaged or lost over the lifecycle of a plastic item. In our information paper, we outlined a concept for a system that combines physical labelling and marking with digital storage of chemical identity and hazard information (see Figure 1). The digitally stored information is organized in a format we refer to as a “digital product passport” (DPP). DPPs can also store additional sustainability and corporate social responsibility data. They are associated with so-called “data carriers” – physical labels and markings that are integral to a plastic item, such as a watermark.

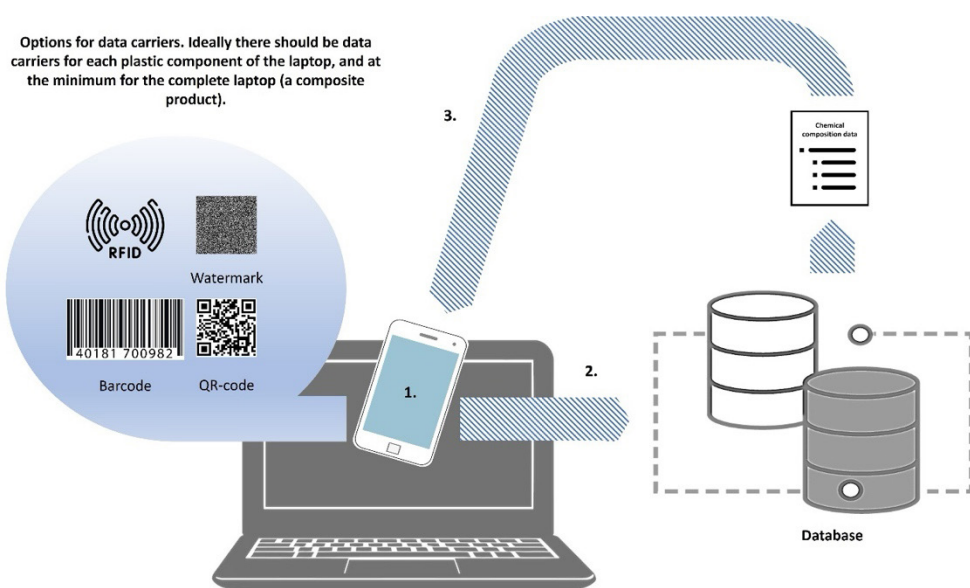


Figure 1: Example of a laptop marked/labelled with data carriers. Ideally each plastic component of the laptop should have a data carrier, but at the minimum the complete laptop (a composite product). The digital product passport/passports for the plastics in the computer, is retrieved from a database by scanning the data carrier/data carriers, e.g. using a cellphone with a dedicated app (1.). Based on the product identifier (embedded in the in the data carrier as a numerical/letter code, a link is established to the digital product passport/passports with the same product identifier in the database (2.). The chemical composition of the plastics in the laptop/its plastic constituent components are displayed on the cellphone screen (3.).

The choice of data carrier is crucial for enabling traceability of data throughout product life cycles. Ideally, the data carrier should remain readable even when an item becomes waste, physically disintegrates, is dismantled, or is prepared for recycling in other ways. With strategic choices of data carriers, DPPs can serve as cornerstones supporting informed decision-making in circular economies, providing stakeholders access to sustainability data for all stages of an item’s life. A lattice of repeated tiny watermarks printed from the plastics across the surface of a plastic item appears to be a promising approach⁷, allowing watermarks to be read even from fragments of the item.

Since the launch of our information paper, developments have been progressing rapidly. The United Nations Economic Commission for Europe (UNECE) is developing guidance for a globally harmonized, cross-sectoral, interoperable, and cost-effective digital standard for information exchange in product value chains. This is called the UN Transparen-

⁶ Transparency and Traceability Systems for Plastics: Design and Practicability Considerations (<https://www.globalchemicaltransparency.org/wp-content/uploads/2024/04/INC4-Transparency-Information-paper.pdf>)

⁷ Holy Grail 2.0 (<https://www.digitalwatermarks.eu/>).

cy Protocol (UNTP) for Digital Product Passports (DPPs)⁸. The concept was first presented and discussed in connection with the 30th plenary of the United Nations Centre for Trade and Facilitation of Electronic Business (UN/CEFACT), and it is set to roll out in 2025. Although this guidance is intended for a non-binding DPP system, the basic format can be adopted and adjusted within the Plastic Treaty as a system for a binding provision.

A labelling/marketing system based on globally harmonized guidelines must be developed to ensure that the labels/markings are available, long-lasting, easily readable with widely available and cheap technology, contain at the minimum information about the presence of chemicals of concern, and are readable and understandable by everyone, irrespective of jurisdiction.

Countries wishing to include transparency and traceability provisions for chemicals beyond those regulated by the Plastic Treaty, should be permitted to do so, provided the DPP still adheres to the guideline or standard.

Recommendations on the way forward

As it is stated in our paper “A treaty placeholder for transparency, tracking, monitoring and labelling”⁹, we are at a pivotal stage in the negotiations. Failing to establish conditions that facilitate informed decision-making at all life stages of plastic items, concerning their chemical composition, will result in a dysfunctional Plastic Treaty. This would adversely affect the potential for toxic-free design and jeopardize the safety of the circular economy for plastics. Public trust will swiftly erode, and decision-makers will regret the future costs of inaction that arise from chemically related disease burdens and environmental impacts. It is easy to do the right thing from the outset, but much more challenging to rectify issues after damage has occurred.

The door is now open to establish the Plastic Treaty as the first-ever multilateral chemicals and waste treaty with provisions for mandatory transparency and traceability regarding chemical identity in products. If this opportunity is missed, the door will close for the foreseeable future. We urge decision-makers not to repeat the same mistake made with the Basel and Stockholm Conventions, which lack mandatory transparency and traceability requirements for the regulated chemicals. A POPRC report¹⁰ addressing this issue will be discussed at the 2025 COP for the Basel-Rotterdam-Stockholm Conventions.

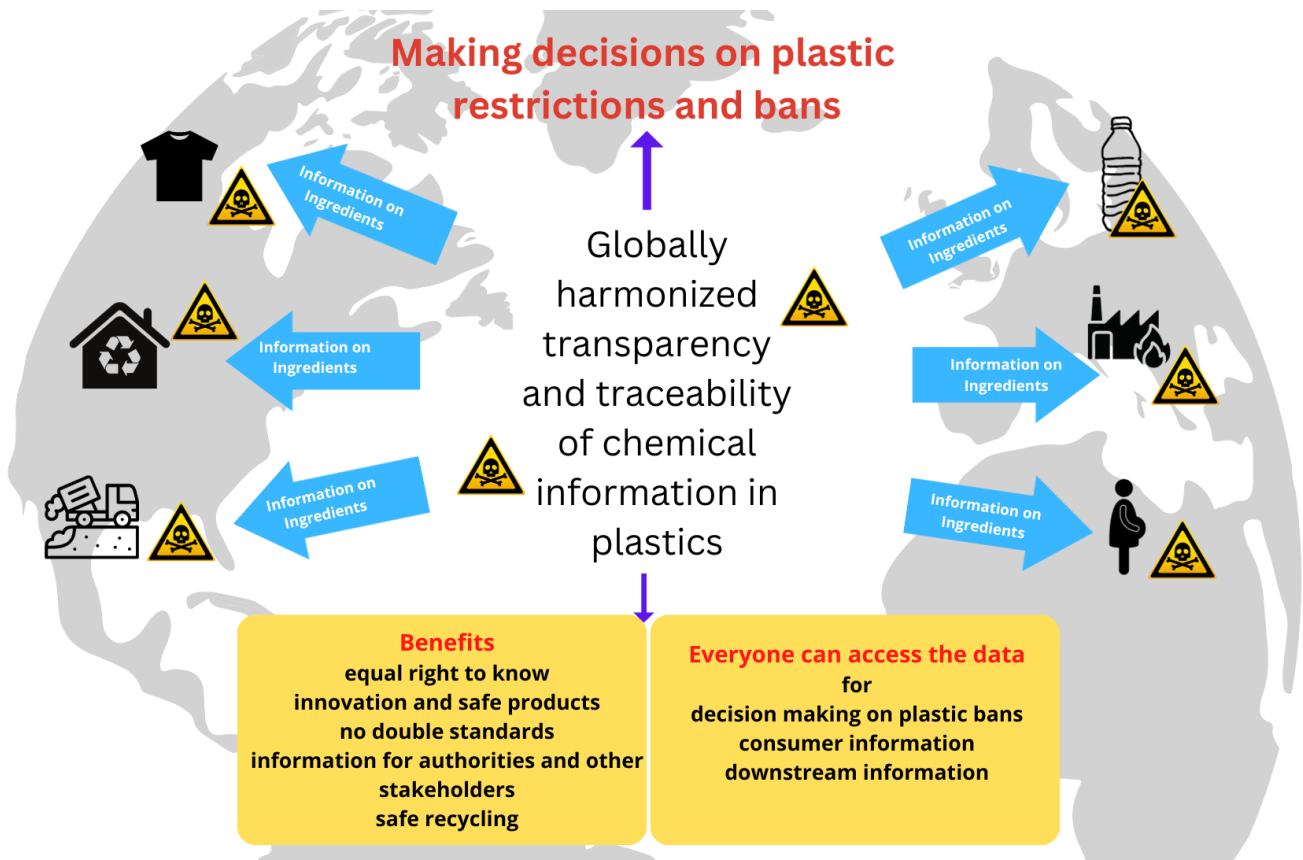
Therefore, we urge the decision-makers in the INC process for the global Plastic Treaty to:

- Support a treaty provision on mandatory disclosure of the chemical identity and hazards, at the minimum of chemicals of concern, in plastic items;
- Support a treaty provision on mandatory physical and digital tracking of disclosed chemical identity information for all life stages of plastics;
- Include a placeholder in the Plastic Treaty text that allows the Parties to later set up a process to develop guidelines for the disclosure format and traceability modality, making use of existing initiatives, such as the UN Transparency Protocol (UNTP) for Digital Product Passports (DPPs).

⁸ Draft recommendation no. 49: Transparency at scale (<https://unece.org/trade/documents/2024/07/session-documents/draft-recommendation-no-49-transparency-scale#:~:text=Among%20the%20deliverables%20of%20this,Protocol%20for%20Digital%20Product%20Passports>).

⁹ A treaty placeholder for transparency, tracking, monitoring and labelling (<https://www.globalchemicaltransparency.org/wp-content/uploads/2024/10/INC5-A-treaty-placeholder-for-transparency-tracking-monitoring-and-labelling-.pdf>)

¹⁰ UNEP/POPS/COP.12/INF/26 <https://www.brsmeas.org/2025COPs/Meetingsdocuments/tabid/10057/language/en-US/Default.aspx>



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