Implementation of transparency and traceability systems for chemical identity information for manufactured materials and products

GFC Implementation Programme for industry

Does the GFC consider transparency and traceability of chemicals in manufactured materials and products?
A short answer is "Yes". Targets B2 and B3 are about making information on chemical identities in manufactured items available, and the disclosed information traceable linked to individual items throughout their respective value chains. Currently no suitable indicators exist for these targets.

Why did stakeholders agree to include these targets?
The need for transparency and traceability is well understood and recognized among all stakeholders in value chains. Virtually all manufactured goods contain chemicals. Some are harmful, others harmless for health, but may interfere with recycling.

Knowing which chemicals are in materials and products is crucial for achieving the SDG targets 12:4 and 12:5 on sound chemicals management and waste reduction and management, including through circular economy [1] By identifying the chemicals present, we can take measures to minimize their release into the air, water, and soil, reducing adverse impacts on human health and the environment. Furthermore, understanding the chemical composition of products helps in developing effective recycling and waste management strategies, ensuring that hazardous substances are properly handled and do not contaminate the environment. The circular economy is now mainstreamed in most UN contexts and promoted in multilateral agreements as a control mechanism for material life cycles, including in the Global Framework on Chemicals and the Global Plastic Treaty under negotiation.

How do stakeholders benefit from access to chemical information?
Because chemicals are integral to materials, we cannot ensure sound chemical management unless we simultaneously sustainably manage the material cycles in which they are present. This requires, at minimum, all stakeholders to have access to information about the presence and identity of chemicals of concern in materials. Regulatory agencies and researchers may benefit from access to even more extensive chemical composition information. Furthermore, as long as only the identity of a chemical is disclosed, and not its exact concentration, intellectual property concerns are unwarranted. Competitors cannot replicate a product unless they know the complete recipe. Moreover, according to §22 of the Dubai

1 Sustainable Development Goal (https://sdgs.un.org/goals/goal12).

Declaration that underpins the Strategic Approach to International Chemicals Management (SAICM) 2, information about hazardous chemicals cannot be classified as Confidential Business Information (CBI), and this principle is also embodied in Article 9 of the Stockholm Convention[2].

To meaningfully support informed decision-making for all life stages of materials and goods, including design, purchasing choices, handling of waste, reuse and recycling, the disclosed chemical identity information should also be linked to individual items and traceable throughout their respective life cycles.

Ensuring transparency and traceability for chemicals in materials and products is not merely a business model that may provide a competitive edge in the market. It is increasingly a regulatory requirement and a demand from investors and consumers. Awareness of the need to secure the sustainability of goods is rising at all levels of society globally. Failure to ensure chemical transparency and traceability may severely harm brand reputation and incur fines. Overall, the urgency of improving the management of chemicals in products to achieve safe toxics-free circular economy, the complexity of information sharing, and the need to develop safer alternatives became the reasons for adopting chemicals in products as SAICM issue of concern.

SAICM Issue of Concern: Chemicals in Products and Chemical in Products Programme

Chemicals in products became a SAICM Emerging Policy Issue (EPI) in 2009. In 2015, the Chemicals in Products Programme (CiP Programme) was created to support its implementation. The programme focused on chemical information disclosure and sharing in supply chains for the textile, toys, electronics, and construction sectors. Manufacturers of materials and product components should take responsibility for identifying the chemicals present in their products and for sharing the chemical identity and hazard information with downstream manufacturers of composite products. To support this, the program includes hazard criteria to identify chemicals that should be prioritized for information disclosure and sharing. Please refer to Table 1.

The Chemicals in Products Programme hazard properties correspond to hazard statement codes for Safety Data Sheets (SDSs) under the Globally Harmonized System for Classification and Labelling of Chemicals (GHS) and/or the EU Classification, Labelling and Packing Regulation (CLP)[3]. See Table 1. Therefore, GHS/CLP formatted Safety Data Sheets (SDSs) can be consulted to determine if a chemical/components of a chemical mixture used in the manufacturing of a product meets the criteria, and should be checked for its/their presence in the final material or product This however, leaves it to the discretion of the manufacturer to decide which chemicals meet the Chemicals in Products Programme criteria for disclosure.

Another, harmonized, approach is to collectively agree upon a negative list of chemicals of concern to disclose.

Under the EU Registration, Evaluation, Authorization, and Restriction of Chemicals regulation REACH, so-called "Substances of Very High Concern" (SVHCs) are identified with corresponding hazard criteria as for the CiP Programme (§57 REACH)[4]. SVHCs that member states have identified are listed on the Candidate List, which is publicly available at the EU Chemicals Agency ECHA webpage[5]. All chemicals on the EU Candidate List meet the CiP Programme criteria for information disclosure and sharing.

2 Stockholm Convention (https://www.pops.int/Portals/0/download.aspx?d=UNEP-POPS-COP-CONVTEXT-2023.English.pdf).

3 SDSs can sometimes be consulted to determine if a chemical/chemical mixture used in the manufacturing of a product and present in it meets the criteria. Some of the criteria have matching hazard statements in GHS and/or CLP, and are required to be accounted for in the SDSs. CLP is the EU system for implementing the GHS. CLP is more comprehensive than GHS in that it also has additional health and environmental hazard statement codes, and consequently matches the Chemicals in Products Programme hazard criteria better.

4 EU REACH (https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32006R1907).

5 EU Candidate List for SVHCs (https://echa.europa.eu/candidate-list-table).

In addition to the official EU Candidate List, companies may consult the Substitute-it-Now-List (SIN List) when selecting chemicals for information disclosure and sharing. The SIN List can be seen as a "shadow list" to the Candidate List and is more comprehensive. It is updated more frequently than the Candidate List, based on assessments by independent scientists using the REACH SVHC criteria. Many companies proactively use the SIN List to phase out chemicals that are likely to eventually end up on the Candidate List sooner or later.

The chemicals listed in the EU Candidate list, or the SIN list, could serve as the initial chemicals for disclosure, and be complemented over time with additional chemicals. In this way, we would capitalize on work already done and create a living global list of chemicals of concern for disclosure. Furthermore, the examples mentioned above illustrate that although the CiP programme and the GHS are voluntary, their principles and intents have already been incorporated into national legislation in certain countries and regions. This process clearly highlights the demand from countries for a harmonized approach to chemical transparency information and its traceability in products.

Table 1: Chemicals in Products Programme hazard properties and corresponding GHS and/or CLP hazard statement codes for Safety Data Sheets.

Hazard property	**GHS and/or CLP hazard statement codes[6]**
Persistent	No official code, but EUH440; EUH441; EUH450 and EUH451 includes persistency
Bioaccumulative and toxic substances	EUH440
Very persistent and very bioaccumulative substances	EUH441
Chemicals that are carcinogens or mutagens	H340; H341; H350; H350i; H351;
Chemicals that adversely affect the reproductive system	H360; H360F; H360FD; H360Fd; H360Df; H361; H361f and H361fd
Chemicals that adversely affect the endocrine system	EUH380; EUH381; EUH430 and EUH431
Chemicals that adversely affect the immune or nervous systems	No official codes
Other chemicals of concern	Unspecified and no official codes

UN ECE Guidelines for a Digital Product Passport

In response to growing demands for communication and verification of product sustainability and corporate social responsibility claims, the United Nations Economic Commission for Europe (UNECE) is developing guidance for a globally harmonized, cross-sectorial and interoperable, cost-effective, digital standard for information exchange in product value chains. It is referred to as the UN Transparency Protocol (UNTP) for Digital Product Passports (DPPs).[7] The concept was presented and discussed in relation to the 30th plenary of the United Nations Centre for Trade and Facilitation of Electronic Business (UN/CEFACT), and it will be ready for rollout in 2025.

DPPs are digitally stored records of product related data, with pre-defined scope and agreed data management and access rights. They can be unique to a material, a product component, a composite product, or a product batch, and are linked to them via a data carrier with an embedded identifier (a numerical/letter code) matching the identifier of the DPP (see Figure 1).

6 The CLP Regulation is the EU implementation of GHS. CLP is more comprehensive than GHS in that it also has additional health and environmental hazard statement codes.

7 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.).

Examples of data carriers include bar codes, QR codes, and various chips. Information from DPPs is retrieved by scanning data carriers. Simple scanning systems include dedicated apps in cell phones, which allow many users to access DPP information without the need for advanced technologies. This is important for the systems to be practical also in low- and middle-income country settings.

The selection of data carriers is crucial for enabling traceability of data throughout the life cycles of materials and products. Data carriers that are integral to an item usually last longer and remain readable compared to product labels with hang-on tags or those on packaging, which can be easily lost. Ideally, the data carrier should still be readable when an item becomes waste, physically disintegrates into its constituent parts, is dismantled, or is otherwise prepared for recycling. With smart choices of data carriers, DPPs can serve as cornerstones in supporting informed decision-making in circular economies, allowing stakeholders to access sustainability data for all life stages of an item.

Benefits of a high degree of harmonization of the DPP format include, but are not limited to, interoperability between companies and across jurisdictions, predictability of information exchange requirements in trade and levelling of the playing field, easier implementation of counterfeiting measures, and verification of due diligence obligations for brands and retailers.

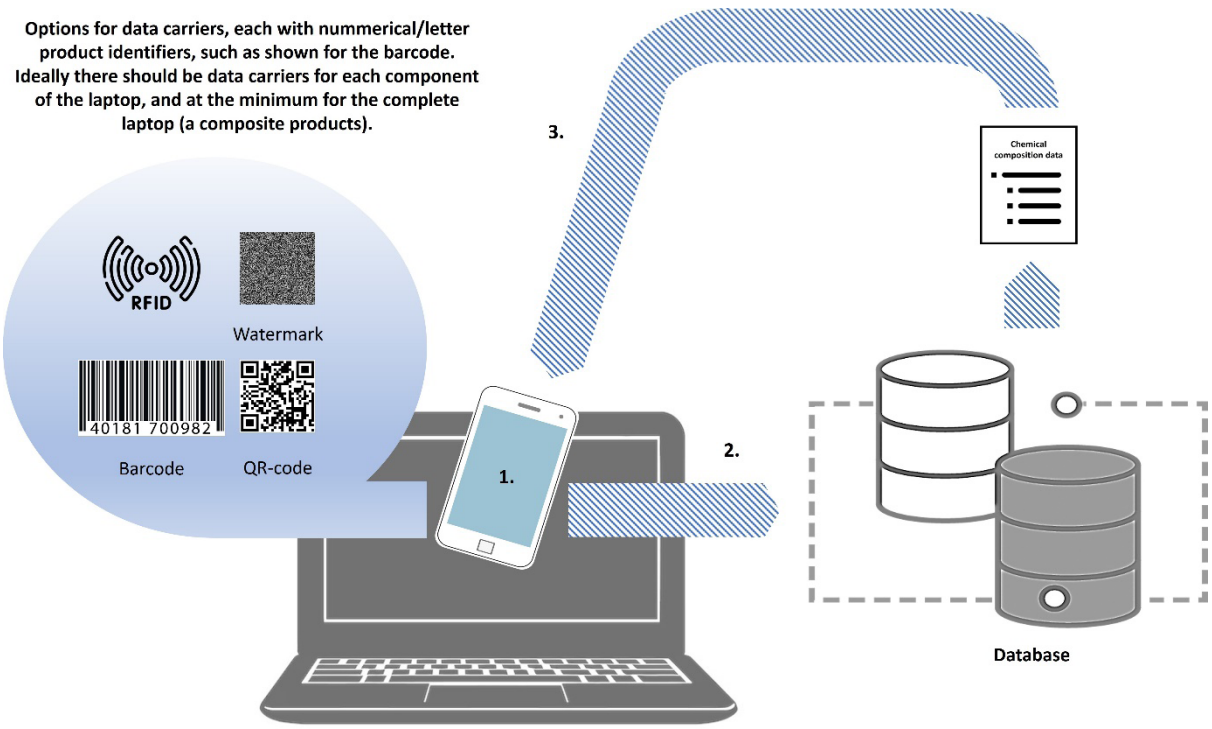


Figure 1: Example of a laptop labeled with data carriers. Ideally, each component of the laptop should have a data carrier, but at a minimum, the complete laptop (a composite product) should. The digital product passport(s) for the computer or its constituent components are retrieved from a database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

Recommendations on the way forward

The GFC will promote circular economy approaches while upholding Strategic Objective A, Section V, which addresses the safe and sustainable management of chemicals throughout their

life cycles, along with the principle of transparency for informed decision-making as stated in Section IV B[8]. Furthermore, the Bonn Declaration, §8, advocates for "recycling free from harmful chemicals," necessitating the disclosure of chemical composition data and the sharing of this information within value chains[9].

Targets B2 and B3 involve making reliable information on chemicals in materials and products publicly available along the value chains[9]. As of now, the Inter-organization Programme for the Sound Management of Chemicals (IOMC) has not proposed suitable indicators for these targets, although an open-ended ad hoc working group on measurability and indicators will investigate this as part of its mandate.

Clearly, the intents of the IoC CiP and the CiP Programme continue to be highly relevant to implementing the GFC. **Operationalizing their intents would support GFC priorities and could serve as concrete B2 and B3 indicators. It would also provide a standardized format and modality for identifying chemicals of concern, in support of taking action to eliminate or reduce them along material and product value chains, relating to Target D6.**

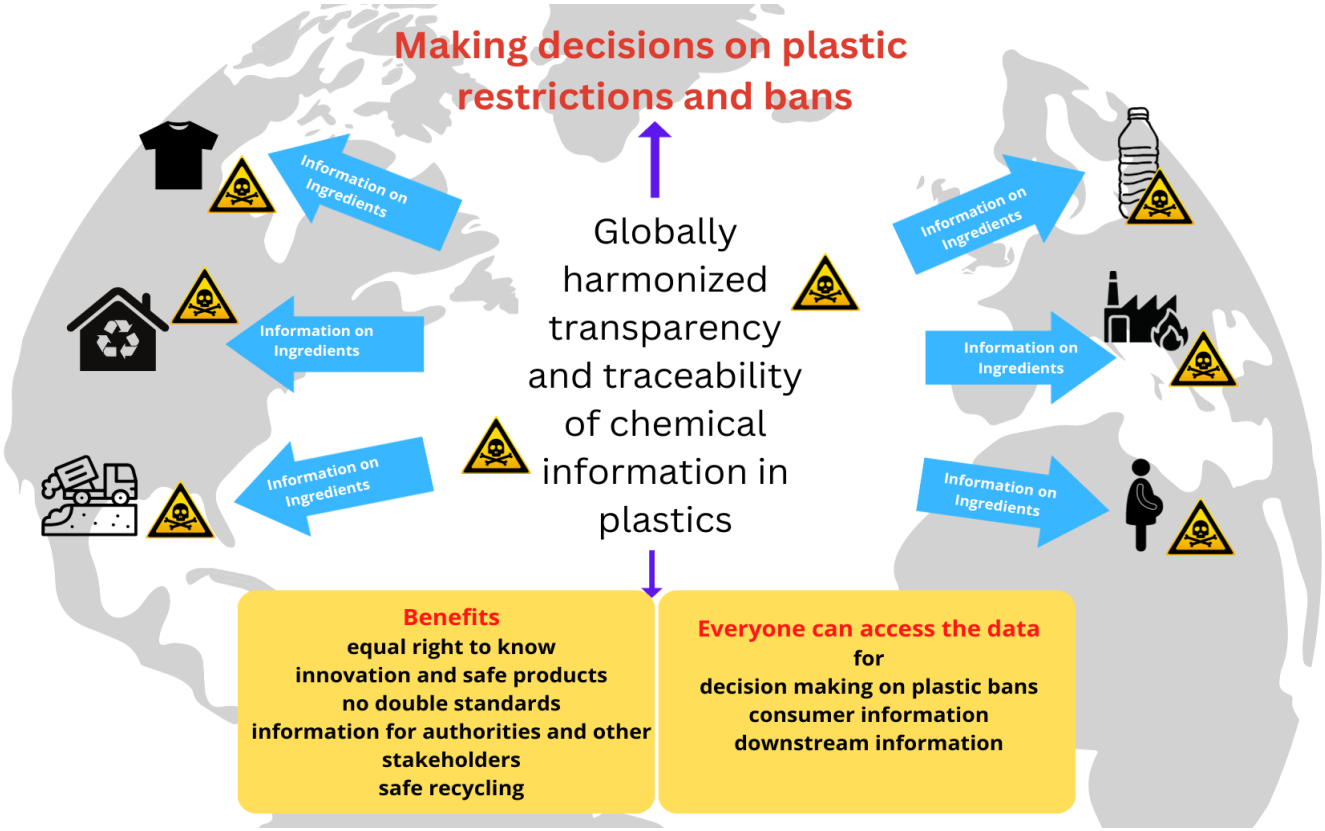
To meet the GFC needs accounted for above, and at the same time raise the ambition level compared to the work with SAICM, we suggest the following actions:

- Operationalize a Globally Harmonized Minimum Transparency Standard (GMTS), based on the CiP Programme criteria for hazardous chemicals to prioritize for information disclosure, by defining disclosure thresholds for the hazardous chemicals;
- Establish a cross-sector multi-stakeholder approach to revise the criteria based on new scientific developments.
- Expand the scope of information sharing from the CiP Programme to entire value chains and all of their stakeholders;
- Set up a cross-sectoral multi-stakeholder modality for maintaining a living list of hazardous chemicals to disclose with the GMTS. The Candidate List, or the SIN List, may serve as the initial list;
- Build on the UNTP DPPs to set up a tracking system for the chemical identity and hazard information for chemicals disclosed with the GMTS;
- Create an inventory of data carriers that support the circular economy. Specifically, data carriers that are durable and remain readable for the longest duration of a material's or product's life cycle.

These tasks are realistic for an industry GFC implementation project. It would build on systems and experiences already in place. To begin with, it could be a pilot study for a specific sector, but the intent is to make the outcomes scalable. Ideally, the work should be cross-sectoral from the beginning.

8 Global Framework for Chemicals (https://www.chemicalsframework.org/document-download/modal/2864/field_files).

9 Bonn Declaration (https://www.chemicalsframework.org/bonndeclaration).



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