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Advancing Supply Chain Transparency for Chemicals in Consumer Products

Project Summary and Recommendations

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Table of Contents

List of Tables and Figures

List of Abbreviations and Acronyms

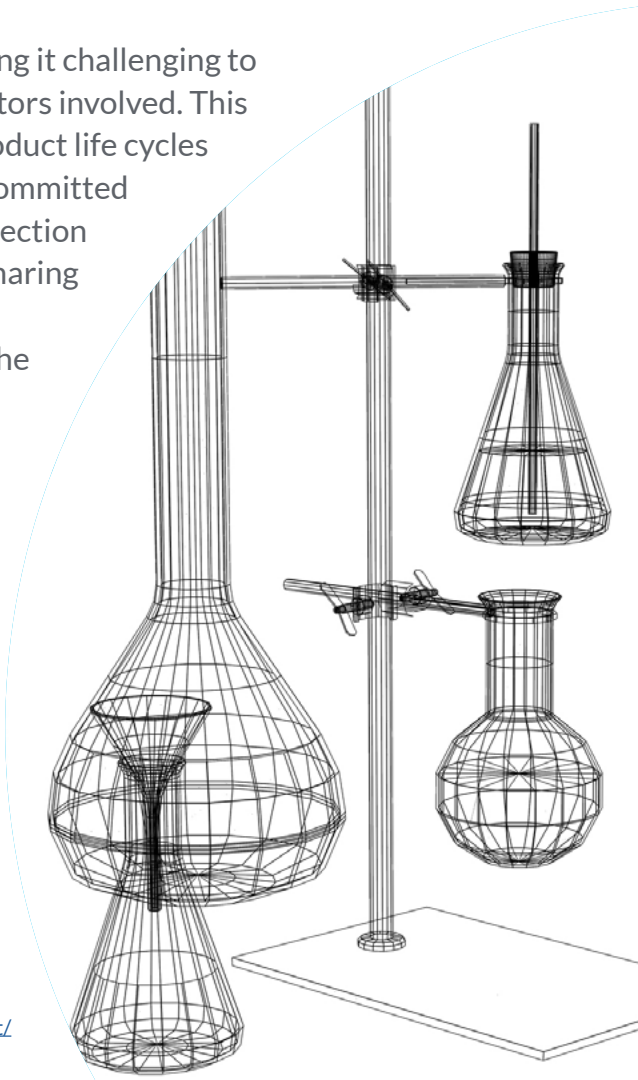
CEC	Commission for Environmental Cooperation
CBI	Confidential business information
EU	European Union
IEC	International Electrotechnical Commission, an international standards organization
IPC	A global trade association in the electronics industry
MRSL	Manufacturing restricted substances list
NGO	Nongovernmental organization
RSL	Restricted substances list
SDS	Safety data sheet
SCT	Supply chain transparency

1. Introduction

Context

Information on the chemical composition of consumer products—including any health or environmental risks related to their production or use and end-of-life considerations—facilitates decision making by regulators, workers, consumers, retailers, and manufacturers.[1] Transparency of chemical content in products and supply chains also helps to advance circular economy approaches and substitution with safer substances, by minimizing the presence of harmful chemicals in waste streams and in products made from recycled materials. Several examples of legislation and other initiatives that require or facilitate chemical content disclosure in consumer products exist in Canada, the United States, Mexico and globally.

However, global supply chains are highly complex, making it challenging to warrant information flow and feedback loops among actors involved. This in turn makes it difficult to ensure that chemical and product life cycles are sustainable. A significant challenge for companies committed to ensure the sound management of chemicals and protection of human and environmental health is identifying and sharing information on chemicals in the components or articles produced by their suppliers. Complete information on the chemical content in articles/products also may not be consistently available throughout the supply chain or to the public for a variety of reasons, including laws related to the protection of confidential business information or intellectual property.



The Commission for Environmental Cooperation (CEC) initiated the project entitled **"Advancing Supply Chain Transparency (SCT) for Chemicals in Products"** to foster collaboration among North American countries to promote SCT and support industry to build resilient supply chains that respond to consumer demand for safer products and

[1] UNEP. 2019. Global Chemicals Outlook II https://www.unep.org/resources/report/global-chemicals-outlook-ii-legacies-innovative-solutions. Accessed July 2023.

information on product chemical composition. This project aimed to identify current and innovative SCT instruments—globally and in North America—that support the disclosure of chemical contents in goods and materials. The project activities began in April 2023 and concluded in December 2024. The implementation involved a literature review, one written stakeholder survey, interviews with experts, as well as two stakeholder workshops held in October 2024.

Objectives of this project

This project aims to ensure a common understanding of current and emerging instruments, transparency (disclosure) provisions, technologies, practices, and methods for implementing chemical SCT in North America and globally, as well as of potential barriers and possible approaches for overcoming them.

Scope of this report

WSP, in collaboration with partners from the Lowell Center for Sustainable Production of the University of Massachusetts, was contracted by the CEC to implement this project. The present document summarizes the main activities, conclusions and recommendations of the project. This report is complemented by:

- an online, interactive table that disseminates the relevant SCT regulations, tools and initiatives, and best practices that have been identified in North America and beyond; and
- three case studies to demonstrate in more detail the different best practices for SCT employed in three sectors (personal care products / cosmetics, electronics, and building materials).

2. National Government Initiatives and Regulations

Canada, Mexico and the United States make substance risk determinations through their domestic, science-based regulatory processes, which can lead to differing priorities. For instance, the three governments may vary in their decisions on whether a chemical should be regulated, and to what extent, based on its exposure levels and specific uses. The CEC acknowledges these differences and highlights that not all materials or examples in this report may be relevant to all three countries. In each country, there are legal requirements[2] for suppliers of chemical products to disclose information about the potential hazards of a chemical or product, including the necessary safety precautions to take when handling, storing, and transporting it. This information, contained in safety data sheets (SDS), is designed for occupational health purposes. In all three countries, there are also laws requiring the disclosure of all or certain ingredients used in specific sectors or products, through product labeling or other notification routes. These legal requirements typically focus on ingredient disclosure for the final product, rather than directly prescribing SCT, although in practice they make SCT necessary for compliance.

In addition, the three North American governments support SCT through initiatives that engage stakeholders to help develop policies, standardize labelling practices, raise awareness, and/or disseminate knowledge. Examples include the national consultations on SCT and labeling for chemicals in products in Canada (also known as the Canadian "policy lab"), the development of the Environmental Health Tracking System for Chemicals (*Sistema de Rastreo de Salud ambiental para Sustancias Químicas, SiRAS*) in Mexico, and the Federal Sustainable Chemistry Strategic Plan in the United States.[3]

[2] Canada: Workplace Hazardous Materials Information System— WHMIS; Mexico: Norma Oficial Mexicana NOM-018-STPS-2015; United States: Hazard Communication Standard—HCS. These national systems are all aligned with the United Nations' Globally Harmonized System of Classification and Labeling of Chemicals (GHS).

[3] Further details and examples can be found via the CEC's online interactive list of SCT regulations, tools and initiatives, and best practices.

3. Supply Chain Transparency Practices

Communication tools

Information about chemical ingredients is communicated through supply chains in North America, mainly through the following ways:

- **Safety Data Sheets (SDS):** SDS are widely used to communicate information on chemical ingredients through the supply chain in North America. As discussed above, SDS are required by law and therefore typically used as the first tool for SCT, with other tools potentially used in addition. Stakeholders have pointed out the limitations of SDS, such as ingredients not being disclosed due to suppliers protecting confidential business information, a lack of standardization across industry for the kinds of data to be shared, and a lack of information on health and environmental hazards.

- **Supplier questionnaires:** Information on chemical ingredients is often solicited from upstream suppliers though supplier questionnaires issued as part of requests for information (RFIs), or as part of the requirements in requests for proposals (RFPs).

- **Declarations:** Suppliers may also provide a declaration stating that products do not contain chemicals on restricted substances lists (RSLs). RSLs are lists of chemicals that are not allowed in products due to regulations, industry standards, or companies' own environmental objectives. These may vary depending on the supplier's customers, or the country in which products are manufactured and sold. Examples include RSLs that restrict the presence of certain chemicals in final products, and manufacturing restricted substance lists (MRSLs) that restrict certain chemicals in manufacturing processes. In addition, some countries outside of North America have requirements for suppliers to provide some (but not necessarily full) information on chemicals in products using environmental product declarations and/or material passports

(including emerging digital product passports). These tools are also used by North American suppliers trading with those countries, such as the Member States of the European Union (EU).

- **Standards, certifications and ecolabels:** There are a several standards, certifications and ecolabels that require suppliers to disclose ingredient information to a certifying organization to assess whether certain criteria are met. By having products certified to meet a certain standard or comply with a certain ecolabel, suppliers communicate that their products do not contain certain restricted chemicals (negative list) or only contain certain chemicals that have been evaluated as safer based on the criteria that have been selected for that particular tool (positive list).

- **Digital systems:** A growing number of third-party service providers offer help with technological solutions for compliance, certification, and other chemical information disclosure solutions. Some sectors have put in place centralised data sharing systems for chemical ingredient information. Notably, the International Material Data System (IMDS) is used by all major Original Equipment Manufacturers (OEMs) in the automobile industry to collect information from the supply chain on chemicals that are present in manufacturing and the finished automobile product—in particular, the chemicals found on the Global Automotive Declarable Substance List (GADSL).

Scope of information disclosed

In most cases, only the presence or absence of certain chemicals is communicated through the supply chain, based on specific lists, such as:

- Restricted substances lists (RSLs/MRSLs)
- Hazardous chemicals lists
- Regulatory lists
- Lists defined by the requirements of certain certifications, standards and ecolabels

RSLs, MRSLs, and hazardous chemicals lists may vary by company, jurisdiction or sector, depending on the types of products they source, manufacture and sell. In some cases, chemicals are disclosed more comprehensively—e.g., disclosing all intentionally added ingredients, and sometimes also impurities and contaminants.

Conclusions on best practices

Common practices for disclosure of product ingredients are usually implemented for meeting regulatory standards. However, certain sectors and companies that are leaders with respect to SCT may exceed the legal requirements by requesting and communicating chemical ingredients more comprehensively using more effective and efficient tools (Table 1).

Table 1. Best practice SCT tools and the scope of information disclosed

Supply chain communication tools	Scope of information disclosed
• Digital tools—e.g., systems and databases for collecting and managing chemicals ingredient information • Ecolabels • Environmental product declarations or material passports • Restricted substance lists (RSL/ MRSL) and positive lists (of chemicals allowed to be used)	• Full disclosure of chemical ingredients • Where this is not feasible, engagement of the supply chain to identify minimum requirements for information needs on chemical composition and determine appropriate reporting thresholds.

These best practices can be complemented through supporting practices, such as proactive supply chain engagement, the creation of a corporate chemicals policy that is public, as well as participation in initiatives or organizations that support SCT. A wide range of international initiatives supporting SCT in the United States and Canada have been identified (some which are likely also operating in Mexico). These are often voluntary, led by stakeholders and focus either on specific sectors, or work with a broad range of participants from various industry sectors, governments, NGOs and civil society organizations.

Sector case studies

Three case studies were developed to demonstrate in more detail the different best practices for SCT employed in three sectors. Each of the three governments takes into consideration available information on chemicals used in products in these sectors, along with information on levels of exposure and specific uses in their country, when making risk determinations on safe levels of chemicals in those products. The complete case studies have been published as separate documents by the CEC, and the main conclusions are summarised below:

Personal care products/cosmetics: The potential for exposure to chemicals is especially high in this sector, because these products are directly applied to the body. This has led to regulations requiring more comprehensive disclosure of ingredients in cosmetics and personal care products than in most other sectors, as well as a relatively high interest and awareness from consumers, NGOs, brands and retailers about the chemical ingredients in these products. Centralized databases have been developed to help consumers better understand the ingredients in personal care products/cosmetics, and for industry to share this information. Ecolabels are frequently used in this sector to help consumers recognize products that are more sustainable and/or safer. Several other industry-developed, voluntary SCT initiatives have also been identified.[4] Together, these regulations, tools and initiatives drive a relatively comprehensive disclosure of chemical ingredients through supply chains for this sector. However, transparency with respect to the chemicals used in fragrances continues to lag, despite recent developments in government-required disclosure of certain allergens in fragrances.[5]

[4] See also the CEC's online interactive list.
[5] Canada Gazette, Part 1, Volume 1, Number 1: Regulations Amending Certain Regulations Concerning the Disclosure of Cosmetic Ingredients. https://gazette.gc.ca/rp-pr/p1/2023/2023-02-11/html/reg4-eng.html. Accessed April 2025.

Electronics: Leading brands have created chemicals management policies that require transparency from their supply chains and they also participate in initiatives to enhance SCT. In addition, the industry has widely adopted standards for materials declaration and data exchange (in particular, the IPC-1752 and IEC 62474). These standards can be useful in enhancing SCT by standardizing the scope and format of ingredient disclosure through the supply chain, and they can potentially be used in other sectors as well. Due to the complexity of the information required to ensure compliance of the many different components in an electronic product, along with many different regulations across international markets, it is considered best practice to use a digital system to communicate chemical ingredient information in the electronics supply chain. Furthermore, the above-mentioned IPC-1752 and IEC 62474 standards cannot be used without digital tools, many of which have been developed specifically to process data based on these standards.

Building materials: The building products sector offers a few model examples of chemical transparency throughout the supply chain. One example that has been highlighted as a best practice by stakeholders is the Health Product Declaration (HPD) Open Standard, developed by the Health Product Declaration Collaborative (HPDC). The Open Standard guides building product manufacturers in reporting product contents and associated health hazards. The Open Standard was developed in the United States, with the goal of it being used by building products manufacturers in the United States, as well as in other countries. The Open Standard also has the potential to be adapted for use in other industry sectors.

4. Drivers and Barriers

By understanding the drivers and barriers relative to the adoption of SCT best practices, potential strategies to enhance SCT in North America can be determined. The following key drivers and barriers have been identified through this project. Additional details about the prevalence of some of these drivers or barriers in certain sectors and/or countries are included in the accompanying case studies; but in general, those included below are expected to apply in Canada, Mexico and the United States (Table 2).

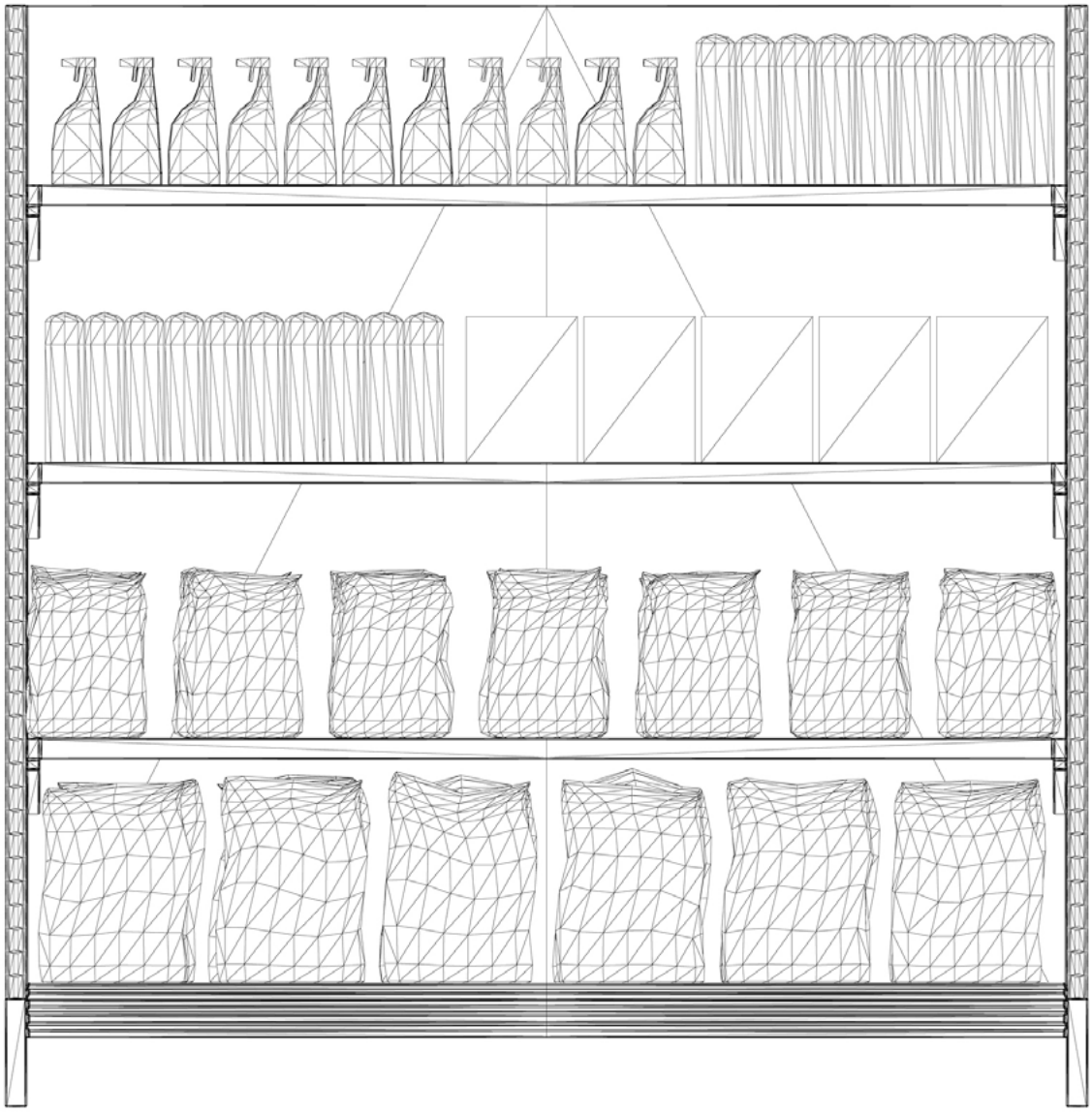
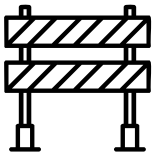


Table 2. Key drivers and barriers for the adoption of SCT best practices in North America

Drivers

- **Regulatory compliance:** Companies need information about chemicals in their products to ensure compliance with existing and evolving regulations in all markets in which they are active.
- **Demand from consumers and downstream purchasers:** Consumers increasingly want to know about chemical ingredients in products. Retailers and brands increasingly require their suppliers to disclose information about chemical ingredients.
- **Business goals:** Many businesses have their own sustainability, health, and environmental goals that may lead them to desire to know and disclose more about the chemicals used in their products and supply chains.



Barriers

- **Non-comprehensive or inconsistent regulations:** Legal requirements for ingredient disclosure are not comprehensive, vary across countries, and are not always sufficiently enforced (especially for imports).
- **Complexity of international supply chains:** Information must be passed down the supply chain through many actors across different countries, which makes supply chain communication, data security and the protection of confidential business information more challenging.
- **Lack of resources:** Smaller companies, in particular, may lack the resources and specialized staff to apply potentially costly best practices such as achieving an ecolabel certification, using digital tools for communicating ingredient information, or engaging third-party service providers.
- **Challenges of protecting confidential business information:** Companies often consider chemical ingredient information to be confidential business information (CBI) to protect their intellectual property and are concerned that disclosing this information could allow their competitors to reverse-engineer their products.
- **Lack of standardization:** The tools and scope for communicating chemical ingredient information through supply chains can vary widely within and between different sectors, which complicates the sharing of information between companies, countries, and especially sectors.

5. Recommendations for Enhancing SCT

The interactive workshops held with stakeholders and project steering committee members yielded recommendations for enhancing SCT that can be grouped into two main categories: enhancing drivers of SCT and reducing barriers to SCT. These areas are further discussed below.

Enhancing drivers of SCT

a) **Enhance regulation and enforcement:** Effective regulation serves as the strongest driver for companies to comply with the best practices that have been identified for SCT; however, regulation must be accompanied by effective enforcement. As noted earlier, in all three countries comprehensive SCT is challenging to achieve. It is recommended that each of the three North American countries undertake efforts to determine where regulation and enforcement can be improved. The government of Canada is actively developing an updated strategy for SCT, to be published in 2025, that is consistent with the findings of this project. In Mexico, there is a need to strengthen regulations and enforcement, particularly relative to key standards such as NOM-018-STPS-2015 (Harmonized system for the identification and communication of hazards and risks from hazardous chemicals in the workplace) and NMX-R-019-SCFI-2011 (Harmonized System of Classification and Hazard Communication of Chemical Products). There is also room to improve the approval processes in Mexico's chemical import and export regulations. In addition, there is a recognized need for improved collaboration among the country's relevant government agencies (e.g., health, environment, labor, and customs).

b) **Raise consumer awareness and education to foster demand:** A second driver that can serve to enhance SCT is to raise consumer awareness about the chemical composition of products through educational programming. This is especially relevant for institutional customers and retailers, who purchase products in large quantities and can therefore have an important impact on SCT developments. A key challenge related to this

recommendation is determining how to share information with consumers that is accessible, easily understandable and not overwhelming. For this reason, many organizations have developed ecolabels that consolidate product information. However, the landscape of ecolabels has become very complex, and consumers may have difficulty distinguishing between legitimate third-party labels and first-party unverified assertions made by companies. Workshop participants suggested that it would be beneficial to educate and raise awareness among consumers about the chemical composition of products. This increased awareness may help to drive demand for increased SCT.

c) **Support leading initiatives and disseminate lessons learned:** The initiatives of companies that are leaders with respect to SCT, such as those described in the case studies for this project, can be shared and promoted to drive further developments in SCT. These include the efforts of the electronics industry to create systems for information sharing across the sector, and leading manufacturers in the building products industry in the United States to develop the Health Product Declaration Standard. Workshop participants from Mexico noted that industry-led SCT initiatives are often more likely to succeed than those imposed by the government. It was suggested that the dissemination of information about these initiatives would be useful.

Reducing barriers to SCT

a) **Increase the accessibility and affordability of SCT tools:** A range of service providers and digital tools is available to improve SCT. Large companies, such as those mentioned in the electronics case study, regularly make use of these tools. However, it can be much more challenging for small and medium-size companies, which lack in-house expertise and do not have the resources to hire outside experts to collect and manage data securely. These tools could be made more accessible, for example by translating them into different languages or providing training to small and medium-size companies.

b) **Raise industry awareness about existing SCT tools and resources:** In some sectors there is limited awareness of best practices for SCT and the availability of digital tools to assist with data collection and management. Moreover, many of the best practices and tools in some sectors, that have been identified through this project, are transferable to other sectors. As mentioned, the CEC has compiled a searchable list of regulatory requirements, tools and best practices for different sectors and product categories, based on the data collected for this project, will be available shortly on the CEC website. This will help to improve consistency of information on SCT tools and the requirements for data collection and management across the three North American countries and support for SCT developments, especially in small and medium-size companies.

c) **Foster consistency:** Promoting consistency in SCT data collection can reduce barriers to implementing best practices for SCT. It could be useful to consider a common voluntary North American chemical ingredient disclosure standard, which could also raise awareness of best practices by outlining key information on chemical composition in different product categories and in sectors important to regional supply chains, while respecting CBI concerns.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