Workshop Report

POPs and Border Control: HS Code Classification and Practical Application

16 October 2025

Europe, Asia and Africa

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Introduction

Persistent organic pollutants (POPs) are hazardous chemicals that remain in the environment, accumulate in living organisms and pose significant risks to human health and ecosystems. Under the Stockholm Convention, Parties are required to regularly update their National Implementation Plans (NIPs), which depend on accurate inventories of POPs and POPs-containing products.

For many countries, customs import and export data serve as a key source of information for these inventories. However, making effective use of such trade data requires a strong grasp of the Harmonized System (HS) of tariff codes, including how POPs are classified, how they may appear in articles such as electrical equipment, textiles, foams, or vehicles, and how limitations in HS coverage can hinder their identification and control.

To address the importance and practical usage of HS codes, the Green Growth Knowledge Partnership (GGKP), under the GEF-funded and UNEP-led Global NIP Update project (GEF ID 10785), convened a regional workshop to clarify the role of HS codes in implementing the Basel, Rotterdam, and Stockholm (BRS) Conventions, while highlighting both their potential and limitations in tracing chemicals. The workshop, held on 16 October 2025, targeted customs authorities and Stockholm Convention focal points from Europe, Asia and Africa, while inviting other stakeholders from various regions.

Through expert presentations and interactive discussions, the workshop provided participants with practical insights into the intersection of the BRS Conventions and customs operations. It highlighted current and forthcoming HS codes for POPs, illustrated real-world enforcement cases of illegal trade, and introduced tools such as chemical identifiers, labelling systems, and databases that can support border control. By fostering cooperation between customs authorities and environmental agencies, the session aimed to strengthen technical capacity, improve the reliability of POPs inventories, and enhance the integration of trade data into NIP updates.

Featured speakers

- Melisa Tin Siong Lim, Project Management Officer, BRS Secretariat/UNEP
- Daniel Cardozo, Chemical Engineer and International Trade Expert with extensive experience in customs classifications and chemicals management, including service as staff of the World Customs Organization (WCO)
- Phoumee Kanya, Technical Officer, Department of Agriculture of the Lao People’s Democratic Republic (Lao PDR)

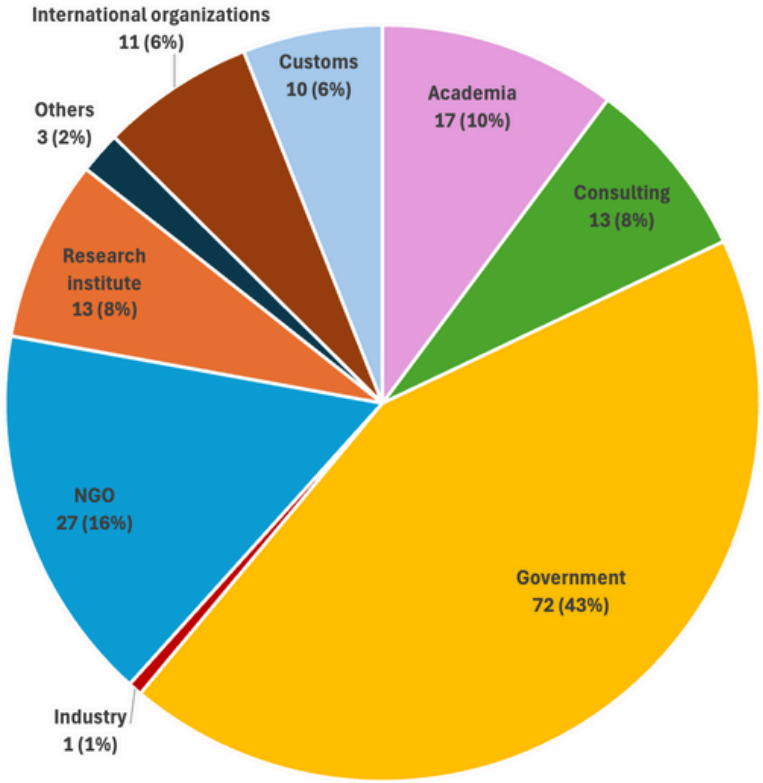
Registration and attendance

Number of registrants: 346 / total attendance: 167
(Approx. 50% female, 50% male)

Participants by country

Country	Attendees	Country	Attendees	Country	Attendees
Nigeria	16	Japan	2	Kenya	1
Botswana	14	Lao People's Democratic Republic	2	Liberia	1
India	6	Morocco	2	Luxembourg	1
Zimbabwe	6	Myanmar	2	Madagascar	1
South Africa	5	North Macedonia	2	Maldives	1
Sierra Leone	4	Pakistan	2	Micronesia	1
Slovakia	4	Peru	2	Republic of Moldova	1
Switzerland	4	Portugal	2	Mozambique	1
Zambia	4	Congo	2	Netherlands	1
Czechia	3	Suriname	2	New Zealand	1
Egypt	3	Thailand	2	Qatar	1
Germany	3	Tunisia	2	Russian Federation	1
Mauritius	3	Australia	1	Rwanda	1
Senegal	3	Barbados	1	Saint Vincent and the Grenadines	1
Sweden	3	Benin	1	Saudi Arabia	1
Uganda	3	Burundi	1	Seychelles	1
Viet Nam	3	Cabo Verde	1	Sri Lanka	1
Albania	2	Cambodia	1	United Republic of Tanzania	1
Armenia	2	Democratic Republic of the Congo	1	Togo	1
Bangladesh	2	Ethiopia	1	Republic of Korea	1
Brazil	2	Finland	1	United States of America	1
Cameroon	2	Gabon	1	Uruguay	1
Côte d'Ivoire	2	Gambia	1	Yemen	1
Eswatini	2	Ghana	1	United Kingdom of Great Britain and Northern Ireland	1
France	2	Jordan	1		
Indonesia	2	Kazakhstan	1		

Participants by sector



Key highlights

Melisa Tin Siong Lim, Project Management Officer, BRS Secretariat/UNEP, opened the session, explaining the critical importance of custom codes for implementing the BRS Conventions. She introduced each convention's purpose, emphasizing their collective life-cycle approach to hazardous chemical management. She explained that the Basel Convention was established to prevent the dumping of waste in countries that do not have the capacity to handle it, while the Rotterdam Convention ensures that information on certain classes of chemicals in international trade is shared with all countries. The Stockholm Convention focuses on POPs, with provisions to restrict production and use, to reduce trade to a minimum and to prevent exposure from mismanagement in the waste phase.

She emphasized that customs are essential for enforcing trade provisions and monitoring trade, and that they rely on the Harmonized Commodity Description and Coding System (HS) as a common language for describing products in trade. HS codes, comprised of six-digit codes, enable uniform classification and ease of understanding across transboundary movements. HS codes exist for most chemicals listed under the Rotterdam Convention, and the majority of POPs also appear on its listings. On obtaining and updating codes, Melisa Lim pointed out that new additions to the HS enter into force every five years. She acknowledged that the process could take time due to the complexity of the classification system and the need for careful review by WCO committees.

Identifying POPs contained in products and articles is essential for traceability and waste management under Article 6 of the Stockholm Convention. While six-digit custom codes are agreed internationally through the WCO, countries can develop longer codes nationally or regionally for more specific product identification, such as the European Union's eight-digit Combined Nomenclature (CN). For the Basel Convention, despite long cooperation with the WCO, few waste streams have one-to-one correspondence with HS codes due to definitional vagueness. Nevertheless, the recent Conference of the Parties (COP) requested the Secretariat to obtain codes for 13 types of waste, and the Secretariat has been successful in obtaining codes for five types of waste (electrical and electronic assemblies, waste lead-acid batteries, plastic waste, waste mineral oils and waste pneumatic tires). Parties were invited to send requests for any types of waste for which codes will be needed by 30 September 2025 and for custom codes to help identify POPs in articles by 31 December 2025.

Daniel Cardozo, an international trade expert and chemical engineer, provided a technical overview of how customs and designated authorities identify, classify and control chemicals listed under the BRS Conventions during international trade. He highlighted the central role of customs officers as gatekeepers, who must correctly identify whether chemicals are listed in convention annexes, verify HS codes against shipping documents, check import decisions on the Convention's database, and ensure labelling and safety data sheet (SDS) requirements are met. For the Rotterdam Convention, designated national authorities must keep updated on listed chemicals by regularly checking the Convention website and verifying that chemicals are properly labelled and accompanied by SDS.

Key highlights

For the Stockholm Convention, although it regulates import and export of intentional POPs (those listed in Annexes A and B), it contains no specific import-export procedure comparable to the Rotterdam or Basel Conventions, and different countries may interpret import and export provisions differently depending on national legislation. Critically, Parties to the Stockholm Convention may only import POPs for environmentally sound disposal or for permitted uses, while all other imports and exports are prohibited. Under the Basel Convention, a formal notification and consent procedure requires exporters and generators to sign contracts specifying environmentally sound disposal, with both exporter and disposer informing national authorities, followed by notification to transit and import countries via documents that must contain information specified in Annex 5A and be accompanied throughout shipment by movement documents complying with Annex 5B.

The identification and classification of chemicals and wastes determine whether prior informed consent (PIC) or other control procedures apply and whether imports and exports are permitted. Because chemicals cannot be reliably identified from packaging or appearance alone, and it is impractical to sample every shipment, customs officers rely on multiple identifiers. Chemicals are named according to different systematic nomenclatures, and they have different and multiple trade names. The official systematic nomenclature is the International Union of Pure and Applied Chemistry (IUPAC) and the International Organization for Standardization (ISO) is used for common names for pesticides. Chemical Abstracts Service (CAS) Registry Number, UN numbers for dangerous goods classification, and most critically, HS codes, are the standard numerical identifiers used by customs.

The HS is a multi-purpose nomenclature developed by WCO. With 163 Contracting Parties to the HS Convention, it covers more than 98% of world trade. The 2022 version of the HS is organized into 21 sections, 97 two-digit chapters, 1,228 four-digit headings and 5,612 six-digit subheadings. Countries use it as a basis for tariffs and trade statistics and may add additional national digits beyond the six. Chapter 29 (organic chemicals) and Chapter 38 (miscellaneous chemical products) are most relevant for POPs and other chemicals controlled by the Stockholm and Rotterdam Conventions, with some chemicals grouped under generic “other” categories due to insufficient six-digit codes for all individual substances. To overcome this limitation prior to the scheduled 2028 HS amendments, Customs administrations can open national or regional eight- to ten-digit subheadings. For instance, the EU expanded 2903.89 to 29038920 to separately identify hexabromocyclododecane (HBCD). Such provisional extensions can be shared with the WCO and the Secretariat, facilitating harmonized monitoring and risk assessment.

In addition, HS codes have limitations in controlling products at import and export, as certain products are classified based on their function and not on their composition. Plastic materials are sorted by polymer content, not by additive content. As a result, it is very difficult to know if polyurethane foam contains a prohibited flame retardant without conducting an analysis. Similarly, electronic products may contain flame retardants in their plastic housings, yet the HS treats them merely as TV sets or computers. However, the additive content of a product is more a production problem than a trade problem. Products should not be produced with certain controlled substances in the first place.

Key highlights

To manage the complexity of modern trade controls, he recommended consulting multiple databases to verify chemical information, including ChemSpider, PubChem (National Library of Medicine database), Emergency Response Guidebook (for UN numbers and hazard procedures) and the European Customs Inventory of Chemical Substances (ECICS) database. Automated customs software systems connected in real time with relevant ministries and authorities are also essential for effective customs control. These systems require declarants to input HS codes — and ideally CAS Registry Numbers — during license applications. Upon receipt, the software identifies controlled goods, checks license status with designated national authorities, verifies company registration and confirms transport authorizations. Once duties are paid and permits issued, the software conducts a risk assessment using a "traffic light" channel system: green for immediate release, yellow or orange for documentary review, and red for physical inspection.

While Article 6 of the Stockholm Convention requires Parties to develop strategies to identify stockpiles, products in use and waste containing POPs, most countries lack them, making it difficult to declare that a product contains POPs during trade. Given the limited time at airports and ports, it is important at the national level to inspect the final use of controlled substances and their preparations to ensure that the substance is not added to products destined for future trade. Daniel Cardozo also emphasized essential safety and procedural steps for customs officers conducting physical inspections of containers involving chemicals or waste. Chemical identifiers should inform the decision to open or sample, always in consultation with specialists and equipped for safe handling.

Phoumee Kanya, Technical Officer, Lao PDR Department of Agriculture, presented on preventing the importation of highly hazardous pesticides (HHPs) and shared the experience from the GEF FARM project. Lao PDR is a landlocked country sharing borders with Thailand, Viet Nam, China, Cambodia and Myanmar, where about 77% of the population depends on agriculture for livelihood and employment. The current challenges include limited production during the rainy season, a lack of market information and comprehensive issues where local vegetables are more expensive than imports. Regarding pesticide use and control, farmers often use HHPs with little or no personal protective equipment (PPE). Although some pesticides like paraquat and methomyl are banned, illegal pesticide imports and uses continue. Since the Lao PDR does not produce any active ingredients or pesticide formulations, it imports from Thailand, China and Viet Nam. The country lacks technology for the safety and disposal of HHPs and agricultural waste, making the enforcement of illegal pesticide confiscation difficult.

To address these key challenges, the FARM project focused on supporting government policy and enforcement, specifically the agricultural law related to pesticides. The project supported knowledge and capacity building for agriculture and customs officers to inspect mechanisms at border checkpoints and manage illegal pesticide enforcement. This included training programmes on HHP identification and awareness campaigns for farmers on Integrated Pest Management (IPM) and Good Agricultural Practices (GAP) to reduce pesticide use for a sustainable and environmentally friendly agricultural economic system. Lessons learned highlight the importance of HS codes for control at border checkpoints to stop illegal pesticide import and smuggling. The way forward focuses on strengthening regional cooperation and information sharing, supporting technical capacity building for HHP identification, and providing practical detection tools for agriculture and customs officers to link border enforcement with safer alternatives.

Questions and Aanswers

Q1. How can we detect chemicals when the label doesn't provide enough information about the product?

Daniel Cardozo: If there is a controlled substance from the exporting country, there should be national cooperation between national focal points, designated national authorities and cooperative authorities to identify whether a restricted chemical has been added to a product in both the importing and exporting countries, as well as from the production side. If it is a pure chemical declared as such, it is straightforward to identify. However, if it is contained within a product, this becomes a challenge. From the production side, there should be control to ensure that no controlled chemicals or POPs are added to products during production. Each country must inspect not only trade but also the production side, and sharing all this information may enable importing and exporting countries to detect these cases. However, it is still not possible to analyze all products.

Q2. How can we identify POPs and chemicals used in manufacturing products?

Daniel Cardozo: It is difficult to identify them using the HS code alone. While HS codes can identify certain goods that may contain POPs, the presence of POPs is a production matter, not a trade matter. If a POP is imported, national authorities or national focal points should trace the final use of that import to determine whether it will be added to a product, which should not occur. This is something that must be addressed within the country before export. If a POP is produced in the country, authorities should ensure it is not included in any products, except in permitted cases such as medicines for lice or malaria. During trade, there are only a few hours to detect such situations, while there is considerably more time if the product remains within the country.

Q3. Is there equipment used by customs officers to identify chemicals in products like an XRF used for certain chemicals? Is it a practice in customs authorities to use some equipment at the border?

Daniel Cardozo: Yes, there are two types of equipment. The most precise equipment is in laboratories, where samples must be taken from containers and analyzed. Portable equipment is less exact, but has the advantage of not destroying samples. It functions like a detection device with a database of products, enabling identification if the product is within that database. Scanning the container only allows to identify the shapes, similar to an X-ray showing bones of the body without revealing their contents or composition. Therefore, laboratory analysis remains necessary for accurate identification.

Q4. How can we check the CAS number? Is there a database?

Daniel Cardozo: The CAS numbers and HS codes of all chemicals controlled by the Rotterdam and Basel Conventions are included in the Quick Reference Pocket List. To identify HS codes for other controlled substances not in the list, the European Customs Inventory of Chemical Substances (ECICS) database can be referred. This is the most recommended database, kept up to date by the European Union and freely accessible. Only the CAS number of the substances is needed as an identifier to find the corresponding HS code.

Resources

- **The concept note and video recording in English, French and Russian are available on the Global NIP Update platform:** https://www.greenpolicyplatform.org/webinar/regional-workshop-europe-africa-and-asia-pops-and-border-control-hs-code-classification-and

French | Russian

- **Quick Reference Pocket List: Chemicals and HS Codes under the Rotterdam and Stockholm Conventions**
  - **English:** https://www.thegreenforum.org/knowledge/quick-reference-pocket-list-chemicals-and-hs-codes-under-rotterdam-and-stockholm
  - **Spanish:** https://www.thegreenforum.org/knowledge/lista-de-referencia-rapida-productos-quimicos-y-codigos-hs-incluidos-en-los-convenios-de

- **Basel Convention resources**
  - UNEP Basel Convention (2025). Call for information in follow-up to the seventeenth meeting of the Conference of the Parties to the Basel Convention. https://www.basel.int/TheConvention/FollowuptoCOP17/tabid/10259/
  - UNEP Basel Convention (2023). Factsheet on Harmonized System codes relevant to plastic waste and their relation to the amendments to the Basel Convention on plastic waste. https://www.basel.int/Implementation/tabid/9909/#
  - UNEP Basel Convention. Country Contacts. https://www.basel.int/Countries/CountryContacts/tabid/1342/Default.aspx
  - UNEP Basel Convention. Guidance on the prosecution of illegal traffic of wastes. https://www.basel.int/TheConvention/Publications/GuidanceManuals/tabid/2364/Default.aspx

Resources

- **Rotterdam Convention resources**
  - UNEP Rotterdam Convention (2025). Harmonized System customs codes for chemicals listed in Annex III to the Rotterdam Convention. https://www.pic.int/tabid/1159/language/en-US/
  - UNEP Rotterdam Convention (2025). Decision Guidance Documents for PIC Procedure. https://www.pic.int/TheConvention/Chemicals/DecisionGuidanceDocuments
  - UNEP Rotterdam Convention. Database of Import Responses. https://www.pic.int/Procedures/ImportResponses/Database/tabid/1370/language/en-US/Default.aspx
  - UNEP Rotterdam Convention. Country Contacts. https://www.pic.int/Countries/CountryContacts/tabid/3282/language/en-US/Default.aspx

- **Stockholm Convention resources**
  - UNEP Stockholm Convention (2025). Report on amending the Harmonized Commodity Description and Coding System to identify substances and products containing the chemicals listed in Annexes A and B to the Stockholm Convention. https://www.pops.int/TheConvention/tabid/9744/Default.aspx
  - UNEP Stockholm Convention (2025). Call for information in follow-up to twelfth meeting of the Conference of the Parties to the Stockholm Convention. https://www.pops.int/TheConvention/FollowuptoCOP12/tabid/10260/
  - UNEP Stockholm Convention. Status of ratification. https://chm.pops.int/Countries/StatusofRatifications/PartiesandSignatoires/tabid/4500/Default.aspx
  - UNEP Stockholm Convention. Specific Exemptions List. https://chm.pops.int/Implementation/Exemptions/RegisterofSpecificExemptions/tabid/1133/Default.aspx
  - UNEP Stockholm Convention. Acceptable Purposes: DDT. https://chm.pops.int/Implementation/Exemptions/AcceptablePurposesDDT/tabid/456/Default.aspx
  - UNEP Stockholm Convention. Acceptable Purposes: PFOS, its salts and PFOSF. https://chm.pops.int/Implementation/Exemptions/AcceptablePurposesPFOSandPFOSF/tabid/794/Default.aspx
  - UNEP Stockholm Convention. Country Contacts. https://chm.pops.int/Countries/Contact%20Points/tabid/304/Default.aspx

- **Other publications**
  - The Green Customs Initiative (2023). Green Customs Guide to Multilateral Environmental Agreements. https://www.greencustoms.org/sites/default/files/2023-05/Green_customs_guide-english.pdf
  - United Nations Economic Commission for Europe (UNECE) (2023). Globally Harmonized System of Classification and Labelling of Chemicals. https://unece.org/transport/dangerous-goods/ghs-rev10-2023
  - United Nations Economic Commission for Europe (UNECE) (2023).Transport of Dangerous Goods Model Regulations. https://unece.org/sites/default/files/2023-08/ST-SG-AC10-1r23e_Vol1_WEB.pdf
  - Transport Canada (2024). Emergency Response Guidebook. https://tc.canada.ca/en/dangerous-goods/canutec/emergency-response-guidebook

Resources

- **Useful links**
  - The Green Customs Initiative. https://www.greencustoms.org/
  - British Crop Production Council (BCPC). Compendium of Pesticide Common Names. http://www.bcpcpesticidecompendium.org/
  - Royal Society of Chemistry. ChemSpider. http://www.chemspider.com
  - National Institutes of Health (NIH). PubChem. https://pubchem.ncbi.nlm.nih.gov/
  - Wikipedia. https://en.wikipedia.org/wiki/Main_Page
  - European Customs Inventory of Chemical Substances (ECICS). ECICS Consultation. http://ec.europa.eu/taxation_customs/dds2/ecics/chemicalsubstance_consultation.jsp?Lang= en
  - European Chemicals Agency (ECHA). https://echa.europa.eu/home
  - EH&S Software. Safety Data Sheets (SDS). https://chemicalsafety.com/sds
  - Ask the Expert: Using HS Code Classification for POPs and Border Control. https://www.thegreenforum.org/blog/ask-expert-using-hs-code-classification-pops-and-border-control

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