Workshop Report

POPs and Border Control: HS Code Classification and Practical Application

18 September 2025

Latin America and the Caribbean

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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 18 September 2025, targeted customs authorities and Stockholm Convention focal points from Latin America and the Caribbean, 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)

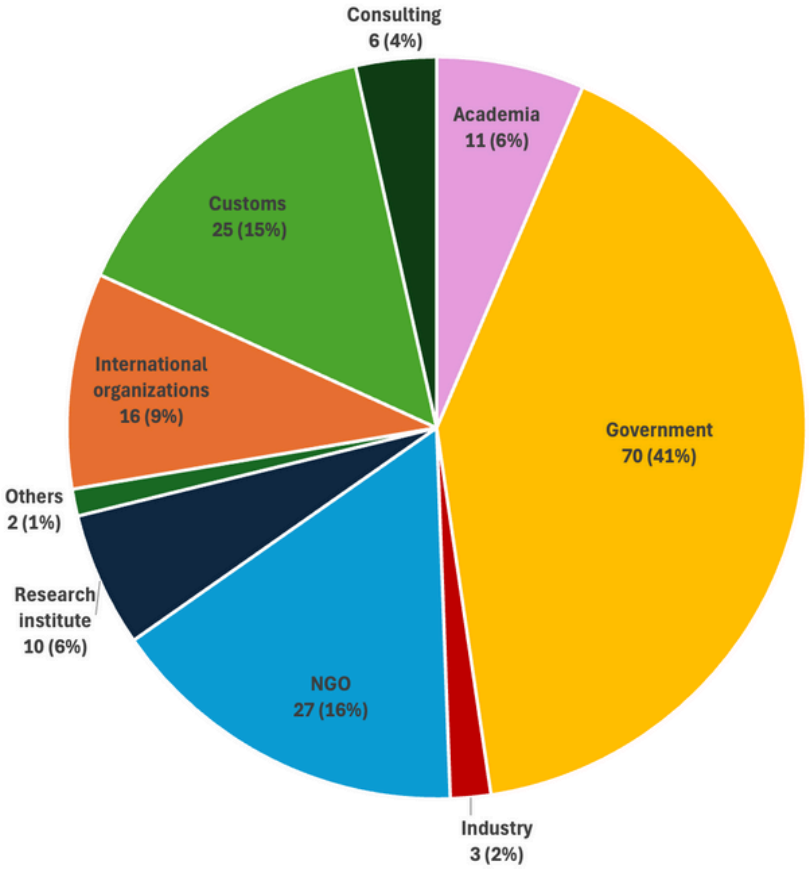
Registration and attendance

Number of registrants: 290 / total attendance: 170
(Approx. 66% female, 33% male, 1% prefer not to answer)

Participants by country

Country	Attendees	Country	Attendees	Country	Attendees
Uruguay	18	Myanmar	2	Japan	1
Bahamas	10	Nigeria	2	Jordan	1
Suriname	10	Saint Vincent and the Grenadines	2	Liberia	1
Trinidad and Tobago	10	Sierra Leone	2	Mauritius	1
Barbados	9	United Republic of Tanzania	2	Republic of Moldova	1
Colombia	7	Uganda	2	Morocco	1
Mexico	7	United States of America	2	Mozambique	1
Switzerland	7	Viet Nam	2	Namibia	1
Brazil	5	Albania	1	Netherlands	1
Dominica	5	Antigua and Barbuda	1	Norway	1
Jamaica	4	Argentina	1	Paraguay	1
Peru	4	Armenia	1	Saint Kitts and Nevis	1
Senegal	4	Bolivia	1	Slovakia	1
Belize	3	Botswana	1	South Africa	1
Portugal	3	Cabo Verde	1	Spain	1
Canada	2	Cambodia	1	Sudan	1
Costa Rica	2	Chile	1	Tunisia	1
Dominican Republic	2	Ethiopia	1	Türkiye	1
Ghana	2	France	1	United Kingdom of Great Britain and Northern Ireland	1
India	2	Greece	1	Zambia	1
Kenya	2	Guyana	1		
Republic of Korea	2	Indonesia	1		

Participants by sector



Key highlights

Melisa Tin Siong Lim, Project Management Officer, BRS Secretariat/UNEP, introduced the purpose of Basel, Rotterdam and Stockholm Convention each and their shared life-cycle approach to hazardous chemical management. She explained that the Basel Convention aims to prevent the dumping of waste in countries lacking the capacity to manage it; the Rotterdam Convention ensures that information on certain chemicals in trade is shared among all countries; and the Stockholm Convention targets POPs by restricting their production and use, minimizing trade and preventing exposure from mismanagement at the waste stage.

She emphasized that customs authorities are central to enforcing trade provisions and monitoring flows, relying on the Harmonized Commodity Description and Coding System (HS) as a common language for traded goods. The six-digit HS codes enable consistent classification across transboundary movements and cover most chemicals listed under the Rotterdam Convention, with the majority of POPs also included. Turning to the process for obtaining and updating codes, Melisa Lim noted that new HS codes enter into force every five years, adding that updates can be slow given the system's complexity and the need for detailed review by World Customs Organization (WCO) committees.

Parties were invited to provide further information to the Secretariat to assess the need for custom codes to better identify POPs in articles. This includes details on which type of chemicals in which articles require codes, any national nomenclature codes extending beyond six digits already in use, specific needs for longer-than-six-digit codes, and supplementary measures to support trade monitoring. Submissions were encouraged to be shared with the Secretariat by 31 December 2025.

For the Basel Convention, despite long cooperation with the WCO, few waste streams align one-to-one with HS codes due to definitional ambiguities. Nevertheless, the recent Conference of the Parties (COP) requested the Secretariat to obtain codes for 13 types of waste, five of which have now been secured - covering electrical and electronic assemblies, waste lead-acid batteries, plastic waste, waste mineral oils and waste pneumatic tires. While more complex than chemicals, obtaining HS codes for waste is feasible, and Parties were invited to send requests for any types of waste for which codes will be needed by 30 September 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 outlined each Convention's trade provisions: the Basel Convention governs transboundary movements of hazardous wastes; the Rotterdam Convention establishes the prior informed consent (PIC) procedure for certain chemicals; and the Stockholm Convention prohibits exports and imports of intentionally produced POPs (Annexes A and B) except for permitted purposes.

He also 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.

Key highlights

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 safety data sheets (SDS). For the Stockholm Convention, while it regulates the intentional production and trade of POPs listed in Annexes A and B, it mostly relies on control procedures under the Basel and Rotterdam Conventions for international movements. Parties may import POPs only for environmentally sound disposal or for permitted uses; 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 PIC procedures or other procedures must be followed, and whether import and export are allowed. As chemicals cannot be identified purely on packaging or physical appearance alone, and it is impossible to sample every chemical product being imported or exported, customs officers use multiple chemical 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 the cornerstone identifier for traded goods, including chemicals, throughout customs procedures. It unifies the classification of goods into a universal six-digit code. Developed by the WCO, the HS serves not only to collect tariffs, but also underpins trade statistics, rules of origin, tax collection, transport tariffs, trade negotiations and the monitoring of controlled goods.

The 2022 version of the HS organizes all traded goods into 21 sections, 97 chapters, 1,228 headings and 5,612 subheadings. 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.

Key highlights

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 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.

To manage the complexity of modern trade controls, Daniel Cardozo 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 emphasized essential safety and procedural steps for customs officers conducting physical inspections of containers involving chemicals or waste. Chemical identifiers such as HS codes, trade names, CAS numbers and UN numbers should inform the decision to open or sample, always in consultation with specialists and equipped for safe handling.

Questions and answers

POPs: HS Codes Classification and CAS numbers

Q: When identifying chemicals, do they have the same CAS number and HS code? Or are these different?

Daniel Cardozo: A CAS number is a unique numerical identifier assigned to a specific chemical substance. Each chemical has only one CAS number, and no two substances share the same one. An HS code, on the other hand, is used in customs and trade classification systems. Ideally, an HS code can also be assigned to a specific chemical, which is the most advisable approach. However, in practice, some HS codes cover groups of substances rather than a single chemical. In other words, one chemical always has only one CAS number; and one chemical may have a designated HS code, but in some cases, an HS code can apply to several different chemicals.

Q: Why are there products that have two or more CAS numbers?

Daniel Cardozo: In theory, one chemical has only one CAS number. However, sometimes the Chemical Abstract Services assigns a different CAS number to an isomer of the chemical. Isomers look similar, they share the same molecular formula and similar names, but different 3D chemical structures. For example, Hexabromocyclododecanes have several CAS numbers, all of which share the same name, but there are isomers that have different chemical structures in which the six bromines are distributed differently in the 3D chemical structure.

Q: The further breakdown of the eight-digit HS code helps to reduce confusion in classifying commodities. Some countries apply the eight-digit level.

Daniel Cardozo: Yes, that is correct. At the international level, the Harmonized System is standardized only up to six digits, and many people expect the Convention to clarify everything at that level. But in practice, additional work must also be done nationally. Countries or regions can add further digits—typically two or more—to create their own tariff lines. For each six-digit subheading, this allows up to 99 additional national subdivisions when using eight digits. This is the level where commodities, including POPs and related articles, can be more precisely distinguished. I will show you some practical examples of how this can be done.

Melisa Lim: Some countries already have eight-digit codes for identifying POPs and articles containing POPs, and others may want to introduce this type of code. That is the direction the work is heading. If you already have such codes in your national nomenclature, please share them with the Secretariat; or, if you think new ones could be developed, please also send us your ideas.

Questions and answers

POPs: HS Codes Classification and CAS numbers

Q: Is it possible for one product to be classified under more than one heading or subheading?

Daniel Cardozo: Yes, sometimes the same product is classified differently according to how it was presented to customs or according to its final use or function. For instance, hydrogen peroxide is classified in heading 28.47. According to Section VI Note 2, when the same product is packaged in measured doses or for retail sale, for example, to be sold as a medicament, then it is classified in heading 30.04.

Chemical Identification in Trade Data

Q: In official customs tariff publications, substances are identified by tariff codes or headings, but CAS numbers are not included. Could CAS numbers be incorporated into these publications to better define POP substances and avoid confusion?

Daniel Cardozo: This is true. In customs documents, the CAS number is not a standard requirement and, therefore is usually not indicated directly. Customs declarations and shipping documents (such as invoices, packing lists, and bills of lading) typically rely on HS codes for classifying goods, not CAS numbers. I also agree that it would be good to include the CAS number as a unique identifier in the customs permit, not into the tariff per se. In the customs permit for import and export, you have a lot of data to introduce, the origin, the weight, one of the fields that could be introduced is a CAS number. However, at this point, if not indicated by the exporter in the invoice and the packing list, it can also be found on the safety data sheets.

Q: In customs publications, the term DCI in Spanish or INN in English (Denominación Común Internacional or International Nonproprietary Name) appears. Could it be that a trade name is being confused with the ISO denomination? What does the INN (International Nonproprietary Name) nomenclature mean, and how does it differ from ISO?

Daniel Cardozo: ISO names are designations established under ISO standards. By contrast, INN (International Nonproprietary Names) are names assigned by the World Health Organization (WHO) to identify certain medicines. For example, instead of using the long chemical name for paracetamol, WHO designates the nonproprietary name “paracetamol” as a standard short form. These INNs are non-proprietary, internationally recognized names that can be used universally in medicine, research, and regulation, avoiding confusion with lengthy chemical names or commercial brand names. The World Customs Organization (WCO), upon request by WHO, also classifies INN medicines once a year, and maintains a list of INNs in its database (WCO Six). This provides customs and regulatory authorities with an authoritative reference to ensure consistency in classification.
INN database link at the WCO:
https://www.wcoomd.org/-/media/wco/public/global/excel/inn-dci-list.xlsx?db=web

Questions and answers

Conventions Compliance and Enforcement

Q: Could you repeat the import procedure under the Stockholm Convention?

Daniel Cardozo: The Stockholm Convention itself does not set out import/export procedures for POPs. Its core function is to ban or restrict the production and use of POPs. However, if a POP is also listed under the Rotterdam Convention, then the PIC procedure must be applied. Similarly, if a POP falls under the Basel Convention, then the Basel procedures for transboundary movement of hazardous wastes apply. For chemicals listed in Annexes A and B of the Stockholm Convention:

- Import is only permitted for the purpose of environmentally sound disposal, and this must be declared in advance.
- Export is only permitted for environmentally sound disposal, or to another Party that is allowed to use the chemical under specific exemptions listed in Annex A or B.

Melisa Lim: To complement:

- The Basel Convention regulates the transboundary movement of hazardous wastes and other wastes, with detailed procedures that Parties must follow.
- The Rotterdam Convention regulates trade in certain chemicals listed in Annex III to the Convention through the PIC procedure.

By contrast, the Stockholm Convention's main purpose is elimination or restriction of POPs. While some exemptions exist, over time, all Parties are expected to stop producing, using, importing, or exporting POPs altogether.

Q: If a pesticide is listed in the Rotterdam Convention but not in the Stockholm Convention, can it still be marketed even though it cannot be moved around the world?

Melisa Lim: Listing a chemical in Annex III of the Rotterdam Convention does not prohibit its use. Instead, it subjects the chemical to the Prior Informed Consent (PIC) procedure, which governs trade but does not ban it. National regulatory provisions must be consulted regarding whether the pesticide can still be used within a given country. In other words, trade is not prohibited, but it is controlled through the PIC mechanism.

Q: What should be done with products or equipment that are classified under unregulated tariff codes but contain controlled substances?

Daniel Cardozo: If such products or equipment are considered waste, the procedures of the Basel Convention must apply. For example, a transformer that contains PCBs would be classified as hazardous waste. If it is properly declared as containing PCBs, it can be managed and disposed of in an environmentally sound manner under the Basel Convention framework. However, if these products are misdeclared (e.g., declared simply as "metallic scrap" when they in fact contain PCBs), this constitutes illegal trade. In such cases, the shipment is treated as illegal traffic under the Basel Convention. Depending on national legislation, this may require: investigating the owner of the cargo; returning the illegal shipment to the country of origin; and managing it in another way consistent with environmental and legal requirements. The key distinction is whether the goods are accurately declared for environmentally sound disposal or misdeclared, in which case enforcement and legal procedures apply.

Questions and answers

Conventions Compliance and Enforcement

Q: What institutional arrangements should be in place to share this information among regulators and other relevant agencies?

Daniel Cardozo: Preventing illegal trade and monitoring legal trade in controlled substances requires the cooperation of several enforcement and governmental agencies with competent, designated authorities or/and national focal points at the national or international level and also a variety of stakeholders, such as traders, customs brokers, NGOs, etc. It is preferable to set up institutional arrangements on a formal basis by signing of a memorandum of understanding, by establishing communication channels and adopting joint guidelines and procedures for action, clarifying the competences of each institution.

Q/Comment: In practice, when managing POPs wastes for safeguarding and disposal, several challenges arise. For example, in West Africa, POPs wastes are typically exported to Europe (e.g., France). In such cases, the waste management company handling the safeguarding usually manages the Basel Convention export procedure, including notifications to each country of transit. Only once all countries along the route approve the import or transit can the waste be shipped from country A to country B.
However, this is not possible in all regions. In Central Asia, for instance, many countries prohibit transit, as indicated on the Basel Convention website. This raises serious questions about options for environmentally sound disposal when transit is blocked. Exporting waste over long distances (e.g., 10,000 km) is not only uneconomical but also carries high risks of accidents during transport. Therefore, it is critically important to develop national or regional disposal options and to enhance cooperation among countries.

Melisa Lim: You have highlighted a well-recognized issue regarding the practical challenges of implementing the PIC procedure under the Basel Convention. These challenges are regularly discussed among Parties, and there are ongoing processes to identify solutions and make the procedure more efficient.

Resources

- **The concept note and video recording in English and Spanish is available on the Global NIP Update platform:** https://www.greenpolicyplatform.org/webinar/regional-workshop-latin-america-and-caribbean-pops-and-border-control-hs-code

Spanish

- **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

If you have any questions or comments, please contact the GGKP team.

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