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Regional Pre-Screening and Inspection Guidelines for Customs and Border Control Agencies

A standardized approach to identify and manage trade in hazardous chemicals and products containing hazardous chemicals

Abstract

These Guidelines provide a standardized operational framework for customs and border control agencies to identify, assess, and manage suspicious shipments containing hazardous chemicals and wastes. They consolidate legal, technical, and procedural tools into practical pre-screening and inspection steps aligned with key Multilateral Environmental Agreements.

Prepared by

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23 July 2026

ISLANDS Caribbean | Supported by gef | Led by UN environment programme | IDB | FAO | In partnership with BCRC Caribbean

Disclaimer

This document has been developed under the project *"Identification and Management of Trade in Hazardous Chemicals in the Caribbean"*, within the framework of the Global Environment Facility (GEF) ISLANDS Programme, specifically Child Projects GEF ISLANDS 10279 and 10472.

The Regional Pre-Screening and Inspection Guidelines for Customs and Border Control Agencies are intended to serve as a practical, non-binding operational reference tool. They aim to support customs and border control authorities in identifying, assessing, and managing trade in hazardous chemicals, products containing hazardous chemicals, and related wastes.

These Guidelines do not replace national legislation, administrative procedures, or legally binding obligations under international agreements. In the event of inconsistency between these Guidelines and national law or applicable international treaties, the relevant national legislation and ratified international agreements shall prevail.

The references to specific tools, equipment, commercial products, or methodologies are provided for illustrative and informational purposes only and do not constitute endorsement or recommendation by the Basel Convention Regional Centre for Training and Technology Transfer for the Caribbean (BCRC-Caribbean), the GEF ISLANDS Programme, the United Nations Environment Programme (UNEP), or any partner institution.

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Abbreviations

AFFF	Aqueous film-forming foam
ASGM	Artisanal Small-scale Gold Mining
ASTM	American Society for Testing and Materials
ATSDR	Agency for Toxic Substances and Disease Registry
BAT	Best Available Technique
BCRC	Basel Convention Regional Centre for training and technology transfer for the Caribbean
BEP	Best Environmental Practices
BFRs	Brominated Flame Retardants
BRS	Basel Rotterdam Stockholm
CARICOM	Caribbean Community
CAS	Chemical Abstract Service
CPSIA	Consumer Product Safety Improvement Act (U.S.)
DDT	Dichloro-diphenyl-trichloroethane, insecticide
DNA	Designated National Authority
ELV	End of Life Vehicle
ESM	Environmentally Sound Management
EPA	United States Environmental Protection Agency
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FTZ	Free Trade Zone
GEF	Global Environment Facility programme
GHS	Globally Harmonized System of Classification and Labelling of Chemicals
GPS	Global Positioning System
HBCDD/HBCD	Hexabromocyclododecane
HCH	Hexachlorocyclohexane
HHPs	Highly Hazardous Pesticides
HS	Harmonized System

IEC	International Electrotechnical Commission
ISLANDS	Implementing Sustainable Low and Non-Chemical Development in Small Island Developing States
ISWA	International Solid Waste Association
JMPM	Joint Meeting on Pesticide Management
LOD	Limit of Detection
MAPs	Mercury Added Products
MEAs	Multilateral Environmental Agreements
NAP	National Action Plan
ODS	Ozone Depleting Substances
OECD	Organisation for Economic Co-operation and Development
OSHA	Occupational Safety and Health Administration (U.S.)
PAN	Pesticide Action Network
PBDEs	Polybrominated Diphenyl Ethers
PCBs	Polychlorinated Biphenyls
PCDD	Polychlorinated dibenzo-p-dioxins
PCDF	Polychlorinated dibenzofurans
PFAS	Per- and polyfluoroalkyl substances
PIC	Prior Informed Consent
POPs	Persistent Organic Pollutants
PPE	Personal Protective Equipment
RoHS	Restriction of Hazardous Substances (EU Directive)
SDS	Safety Data Sheet
SIDS	Small Island Developing States
SW-846	EPA Test Methods for Evaluating Solid Waste
UEEE	Used Electric and Electronical Equipment
ULAB	Used Lead Acid Battery
UNEP	United Nation Environment Programme
WCO	World Customs Organization
WEEE	Waste Electric and Electronical Equipment
WHO	World Health Organization
XRF	X-Ray Fluorescence

Document Information

Activity	Improve the capacity of customs and border control agencies for the identification of trade in restricted and prohibited hazardous chemicals, products containing chemicals and waste
Area	Identification and Management of Trade in Hazardous Chemicals in the Caribbean
Programme	Global Environment Facility (GEF) ISLANDS Programme
Projects	Caribbean Child Projects GEF 10279 and 10472
Deliverable	D.5 Develop Regional Pre-screening and Inspection Guidelines
Date	2026
Partners	Ambiendura and Source International ETS
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Online link	QR CODE

1. Introduction

These Regional Pre-Screening and Inspection Guidelines for Customs and Border Control Agencies provide a standardized approach for identifying and managing illegal or non-complaint imports, exports and transshipments of hazardous chemicals and wastes containing or contaminated by Persistent Organic Pollutants (POPs), Mercury, and Highly Hazardous Pesticides (HHPs). The aim is to provide customs and border control officers with practical tools and checklists for inspection and reporting suspicious shipments and evaluation for the confirmed cases of illegal traffic.

The Guidelines were developed under the project "Identification and Management of Trade in Hazardous Chemicals in the Caribbean", within the framework of the Global Environment Facility (GEF) ISLANDS Programme, specifically Child Projects GEF ISLANDS 10279 and 10472. The ISLANDS Programme promotes sustainable, low- and non-chemical development pathways in Small Island Developing States (SIDS), addressing the increasing challenges associated with hazardous chemicals and waste management. Its overall objective is to support SIDS in adopting coordinated, sustainable, and internationally aligned approaches to chemicals and waste management.

The document was prepared by Ambiendura and Source International ETS on behalf of the Basel Convention Regional Centre for Training and Technology Transfer for the Caribbean (BCRC-Caribbean). The consultancy team's mandate includes developing these Guidelines, designing a comprehensive training programme, and coordinating pilot exercises to test and refine the tools produced.

The Guidelines directly support the implementation of key Multilateral Environmental Agreements (MEAs) relevant to hazardous chemicals trade. By consolidating legal and technical references and translating them into practical operational procedures, these Guidelines aim to facilitate compliance with international obligations and promote a harmonized, regionally adapted approach to enforcement.

The development of the Guidelines was informed by an extensive review of international and regional sources, including materials from the World Customs

Organization (WCO), the Basel Convention Manual for Customs Officers, and other references from UNEP, Organisation for Economic Co-operation and Development (OECD), Food and Agriculture Organization of the United Nations (FAO) and World Health Organization (WHO). Regional frameworks such as the CARICOM Customs Handbook and the Green Customs Initiative Guidelines were also used to ensure consistency with existing standards. Further inputs were drawn from the Regional Assessment Report (Deliverable 3), national consultations, and the active engagement of National Working Groups in each participating country.

How to navigate this document

This document is organised to support a decision-based operational approach, guiding officers from risk identification to screening, inspection and reporting. Following the Introduction, **Chapter 2** provides an overview of the hazardous chemicals. **Chapter 3** summarises the relevant legal framework under the four key Multilateral Environmental Agreements — the Stockholm, Minamata, Basel, and Rotterdam Conventions. **Chapter 4** provides convention-specific pre-screening guidelines, including risk indicators and HS code tables to support the identification of suspicious shipments before physical inspection. **Chapter 5** covers the inspection procedure, from pre-inspection checks to physical and chemical analysis using portable tools, sampling, and chain of custody. **Chapters 6, 7, and 8** address the storage and management of shipments under inspection, safety measures for officers, and data recording and risk intelligence.

The Annexes are designed as practical field tools. **Annex A** contains convention-specific pre-screening checklists (Stockholm, Basel, Minamata, and Rotterdam) for use during documentation review. **Annex B** is a quick reference inspection manual providing step-by-step guidance for use directly at the port or border. **Annexes C and D** are standardised forms: the Inspection Sheet and the Sampling Sheet to be filled in during and after each inspection. **Annex E** provides a checklist to support countries in integrating these Guidelines into their national customs procedures.

How to Use These Guidelines

These Guidelines provide a structured, decision-based approach to support customs and border control officers in screening and inspecting shipments that may contain hazardous chemicals, products containing hazardous chemicals, or regulated wastes.

The document is organised in three operational layers:

1. **Legal and technical foundation** – An overview of priority chemicals and wastes and the relevant Multilateral Environmental Agreements (MEAs) to establish the regulatory context for enforcement.
2. **Risk-based pre-screening** – Practical indicators, HS code references, and documentation checks to help officers identify high-risk shipments before inspection.
3. **Inspection and follow-up** – Step-by-step procedures, portable screening tools, sampling guidance on suggested tools, and recommended safety measures supporting safe and consistent field operations.

The annexes provide ready-to-use checklists for the four Conventions in questions, inspection sheets, and sampling templates that can be directly integrated into national procedures, but they can also be easily adapted based on national and local needs.

These Guidelines should be treated as a living tool and adapted as national legislation, HS classifications, or Conventions evolve.

National Adaptation

Lastly, the Guidelines provide a regional operational framework to support customs and border control authorities in identifying and managing trade in hazardous chemicals, products containing hazardous chemicals, and related wastes. While the procedures, risk indicators, and inspection tools presented in this document reflect internationally recognised practices and the requirements of relevant Multilateral Environmental Agreements (MEAs), their practical application requires alignment with national legal and institutional arrangements.

National legislation implementing the Basel, Rotterdam, Stockholm, and Minamata Conventions may differ among countries in terms of regulatory scope, institutional responsibilities, and enforcement procedures. In addition, national customs systems may apply tariff classifications beyond the six-digit Harmonized System (HS) level and maintain national registers or control lists for chemicals, pesticides, and hazardous wastes.

For these reasons, the procedures and tools described in these Guidelines should ideally be adapted, where necessary, to ensure consistency with national legislation, administrative procedures, and existing customs risk management systems. Effective implementation also requires clear coordination between customs authorities and other competent national authorities responsible for chemicals management, waste control, and environmental protection.

The checklist provided in **annex E** offers a practical reference to support countries in aligning these Guidelines with their national regulatory frameworks and operational procedures.

2. Hazardous Chemicals

According to the Regional Assessment Report and consultations with customs and border control authorities in the Caribbean, the substances most frequently encountered in trade flows –including imports, exports, or transit shipments – are:

- **mercury (and its compounds);**
- **persistent organic pollutants (POPs); and**
- **highly hazardous pesticides (HHPs).**

These groups of chemicals pose the greatest concern for customs and border control operations in the region due to their toxicity, persistence in the environment, and the complex regulatory frameworks governing their trade (a summary in table 1.).

This chapter thus focuses on the three priority categories, including products, equipment, and waste that contain or may release them. The following subsections provide a concise overview of each category, explaining what these chemicals are, why they are dangerous, where they are commonly found and how they are regulated.

Table 1. Hazardous chemicals – summary table

Groups of chemicals	Description	Examples of goods and materials containing these chemicals	Relevant Conventions
Mercury (and its compounds)	A heavy metal that is toxic, persistent, and bioaccumulates.	Thermometers, fluorescent lamps, switches, dental amalgam, cosmetics, batteries, mining wastes.	Minamata Convention on Mercury; Basel Convention related to mercury-containing wastes.
Persistent Organic Pollutants (POPs)	Organic chemicals that persist in the environment and accumulate in living organisms, thus posing serious risks to health and ecosystems.	Obsolete pesticides (e.g., DDT, chlordane), electrical transformers containing polychlorinated biphenyls, plastics with flame retardants, waste oils or contaminated equipment.	Stockholm Convention on POPs; Basel Convention related to POPs waste.
Highly Hazardous Pesticides (HHPs)	Pesticides with high acute or chronic toxicity, persistence, or environmental hazard.	Paraquat, organophosphates, carbamates, endosulfan, aldrin, and others. Found in agricultural formulations, containers, or counterfeit products.	Rotterdam Convention; Stockholm Convention.

2.1 Mercury and its compounds

What is mercury?

Mercury is a chemical element, and specifically a heavy metal, represented as "Hg" in the periodic table. It exists in several forms:

- Elemental mercury – In its elemental form mercury is shiny, silver-white and in a liquid state at room temperature, and can form small droplets that have the ability to go through small cracks or adhere strongly to certain materials.

This characteristic is extensively used to extract gold and silver in artisanal and small-scale mines worldwide. Both at room temperature and when heated, elemental mercury evaporates to become an invisible, odourless toxic vapor. Elemental mercury can react with other substances, forming inorganic mercury salts or organic compounds as methylmercury.

- Inorganic mercury compounds – These compounds can be found easily in the environment, primarily as two minerals: cinnabar and metacinnabar.

- Organic mercury compounds – These are chemicals where mercury is part of an organic molecule. Methylmercury compounds are the most known member of this class due to their high neurotoxicity. As shown in Figure 1, once inorganic mercury is released into freshwater and seawater, it can enter the food chain, where it bioaccumulates and biomagnifies, resulting in human exposure mainly through dietary intake, particularly via consumption of large predatory fish.

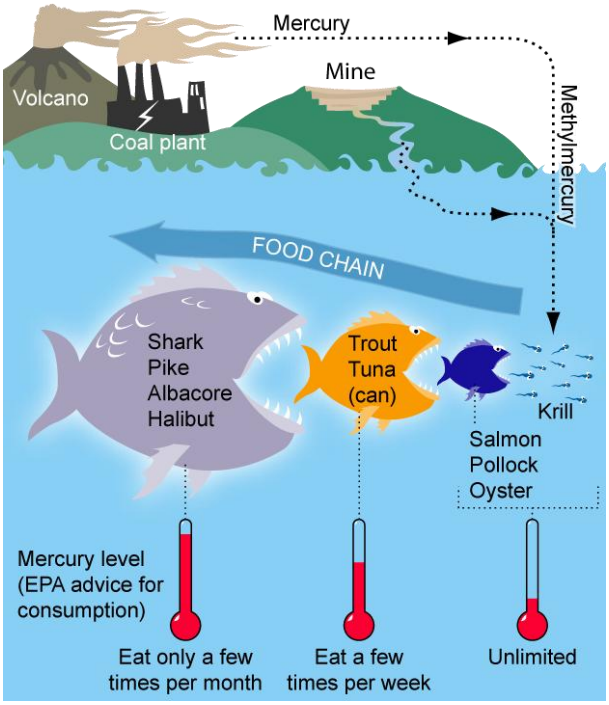

Figure 1. Common sources of mercury, dispersion in the environment and the conversion to toxic methylmercury and the outline of EPA consumption recommendations for certain types of fish based on mercury levels.

(Note. From Wikimedia Commons. (n.d.). Mercury food chain [Image]. Retrieved from: https://commons.wikimedia.org/wiki/File:MercuryFoodChain-01.png)

Although it can be released into the environment through natural processes (e.g., volcanic eruptions), direct and indirect anthropogenic releases far exceed these natural sources. Once in the environment, mercury and its compounds can cycle through air, water, soil and the food chain. It can persist in the environment for a long time and can be transported globally.

Why is it dangerous?

Mercury and its compounds are very harmful to human health because they can cause numerous adverse effects, depending on the form of mercury and the route of exposure. All forms can damage the nervous system and the kidneys, leading to symptoms such as tremors, incoordination, impaired vision, difficulties in learning and memory, and mood alterations. Mercury exposure has also been linked to birth defects, movement problems, high blood pressure, and alterations in the immune system. As other heavy metals, mercury bioaccumulates over time, posing significant risks of chronic exposure[1].

Exposure to mercury and its compounds considering the bulleted routes that follow:

- inhalation of elemental mercury vapours (typically due to the breakage or damage of mercury-containing products)
- dermal contact (for example through dental amalgams or cosmetics)
- dietary intake (through consumption of fish, seafood, or rice with high mercury levels resulting from environmental contamination).

Where can it be found?

Customs and border control should be aware that mercury is often transported in small quantities, sometimes undeclared or concealed within equipment or containers. It can be found in the following forms, as shown in Figure 2.

[1] More information about mercury can be found for example on the site of the Agency for Toxic Substances and Disease Registry (ATSDR): https://wwwn.cdc.gov/TSP/ToxFAQs/ToxFAQsDetails.aspx?faqid=113&toxid=24

- Some commercial products or waste products contain elemental mercury – e.g., batteries, switches and relays, light bulbs and mercury-containing fluorescent lamps (various types), non-electronic measuring devices such as thermometers and sphygmomanometers, paints, amalgam in dental fillings and skin lightening cosmetics. See more here.
- Wastes consisting of mercury or mercury compounds – e.g. excess mercury from decommissioning of chlor-alkali facilities, surplus stock of mercury or mercury compounds. See more here.
- Mining wastes and other residues containing mercury, especially in gold and silver mines. Mercury has been historically used for gold amalgamation and extraction and is still used in some artisanal and small-scale mines.

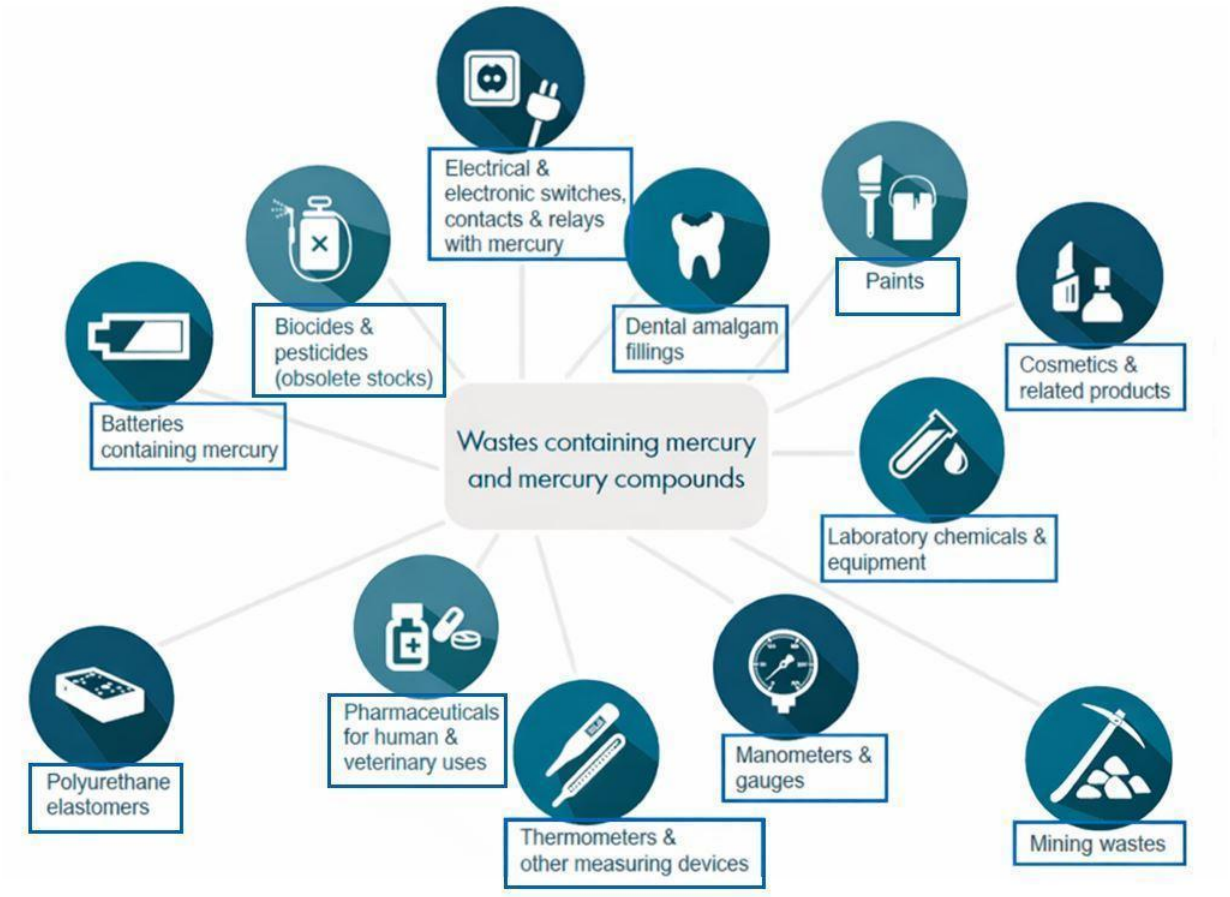

Figure 2. Products and wastes containing mercury or mercury compounds.

Note. Adapted from United Nations Environment Programme. (2015). Practical sourcebook on mercury waste storage and disposal. Retrieved from https://www.unep.org/resources/report/practical-sourcebook-mercury-waste-storage-and-disposal-2015

Regulation

Mercury production, trade, and use are restricted under the Minamata Convention on mercury. This Convention prohibits mercury mining operations and establishes that Parties may only export mercury to other Parties or non-Parties with written consent, subject to certain prerequisites and practices. Annex A includes a list of mercury-added products subject to the Minamata Convention.
Of the 12 countries participating in this project, 9 are in the list of countries that have ratified or acceded to the Minamata Convention: Antigua and Barbuda, Bahamas, Belize, Cuba, Dominican Republic, Guyana, Saint Kitts and Nevis, Saint Lucia, and Suriname. As of the time of writing, Barbados, Dominica, and Trinidad and Tobago have not yet ratified or acceded to the Convention.

2.2 Persistent Organic Pollutants (POPs)

What are POPs?

Persistent Organic Pollutants (POPs) are a diverse group of organic chemicals that have in common some key properties:

- they are highly persistent in the environment, thus, they last for many years, and can be transported over long distances through air and water;
- they are bioaccumulative, thus, they accumulate in organisms and increase in concentration as you go up in the food chain;
- they are toxic to humans and wildlife.

POPs can be produced intentionally for specific human activities (Figure 3, left) or can be released unintentionally during natural processes (Figure 3, right). POPs produced for specific purposes include:

- Some pesticides that were widely used up to the early 2000s, such as lindane, dieldrin, DDT, and endosulfan.

- Per- and polyfluoroalkyl substances (PFAS), chemicals that are used in many products, including non-stick cookware, waterproof outdoor gear, food packaging, medical devices, and fire-fighting foams.
- Several brominated flame retardants (BFRs), chemicals added to electrical equipment like plastic components, textiles, and domestic furniture, to slow down the spread of fire.
  They include: hexabromocyclododecanes (HBCDDs) – used in thermal insulation in the building industry; polybrominated diphenyl ethers (PBDEs) – used in plastics, textiles, electronic castings, circuitry; tetra bromobisphenol A (TBBPA) and other phenols – used in printed circuit boards, thermoplastics (mainly in TVs); polybrominated biphenyls (PBBs) – used in consumer appliances, textiles, plastic foams.
- Polychlorinated biphenyls (PCBs), a group of chemicals that can occur in various physical forms – from thin, light-coloured liquids to yellow or even black waxy solids. Due to their non-flammability, chemical stability, high boiling point, and electrical insulating properties, PCBs were manufactured worldwide for use in a wide range of applications, such as electrical transformers and capacitors, heat exchange fluids, paint additives, carbonless copy paper, plastics, and textiles among others.

Other POPs enter the environment unintentionally as a result of incomplete combustion of fossil fuels or waste. Notable examples include:

- Dioxins and furans, highly toxic substances released when materials such as fossil fuels or waste are burned – this includes burning of solid fuels in homes. Backyard waste burning is illegal because it can produce dangerous levels of pollutants, including dioxins and furans.

The updated list of POPs can be found here.

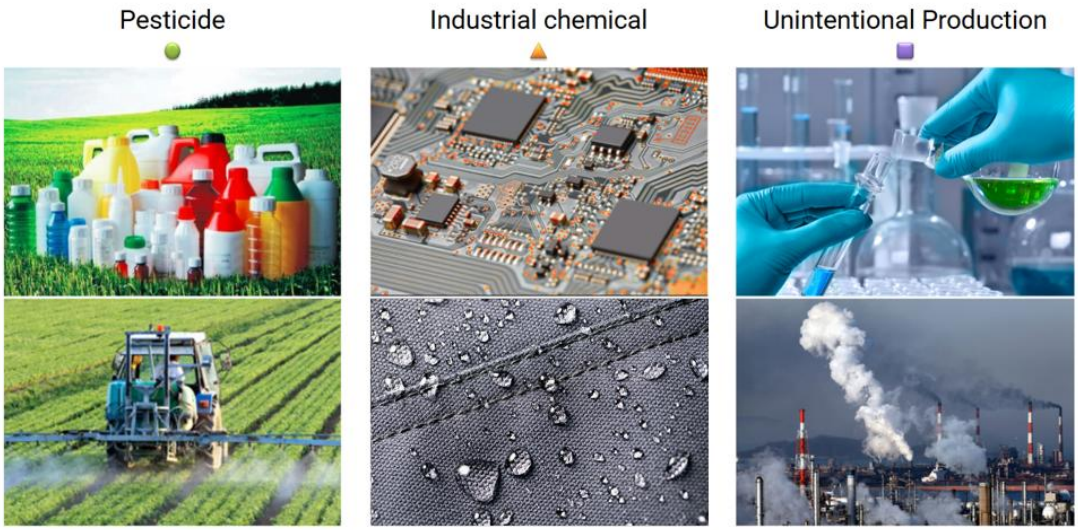

Figure 3. Categories of POPs listed in the Stockholm Convention.
Note. Adapted and modified from Stockholm Convention on Persistent Organic Pollutants. (n.d.). The POPs. Retrieved from https://chm.pops.int

Why are they dangerous?

Exposure to POPs can lead to serious health effects, depending on the substance involved and how much and how long the individual has been exposed. These effects may include nausea, diarrhoea, skin disorders, liver damage, disruption of the endocrine, reproductive, nervous and immune systems, birth defects, cancer, and even death.
For example, health effects in people exposed to large amounts of PCBs are skin conditions such as acne and rashes; and changes in blood and urine that may indicate liver damage[2]. People who on purpose or accidently ate large amounts of aldrin or dieldrin have suffered convulsions and spasms, and some died. Workers who were exposed to lower amounts of these chemicals, but for a longer period of time, had headaches, dizziness, irritability, vomiting, and uncontrolled muscle movement[3].

[2] More information about PCBs can be found for example on the site of the Agency for Toxic Substances and Disease Registry (ATSDR): https://wwwn.cdc.gov/TSP/ToxFAQs/ToxFAQsDetails.aspx?faqid=140&toxid=26

[3] ATSDR: https://wwwn.cdc.gov/TSP/ToxFAQs/ToxFAQsDetails.aspx?faqid=316&toxid=56

Where can they be found?

In products or waste products like:

- pesticides
- plastics
- electrical equipment
- heat exchange fluids
- textiles
- furniture
- paints
- nonstick pans
- carbonless copy paper.

This link includes more information about products containing POPs.

Regulation

POPS are regulated under the Stockholm Convention on Persistent Organic Pollutants (2001), an international agreement that bans or restricts their production, use, and trade. Parties must take measures to eliminate the production and use of the chemicals listed under Annex A, restrict the production and use of the chemicals listed under Annex B, and reduce the unintentional releases of chemicals listed under Annex C.

Wastes containing POPs are managed under the Basel Convention to ensure their safe disposal. Most Caribbean Community (CARICOM) member states are Parties to the Stockholm Convention , with Haiti being the only exception.
Most CARICOM are in the list of Parties to the Basel Convention.

2.3 Highly Hazardous Pesticides (HHPs)

What are HHPs?

Highly Hazardous Pesticides (HHPs) are pesticides known for their high acute or chronic toxicity, persistence, or environmental hazard. HHPs are controlled, restricted or phased out.
The criteria for identifying HHPs presented below were defined in the 2008 FAO/WHO Joint Meeting on Pesticide Management. Any pesticide meeting one or more of these criteria is considered an HHP:

1. Pesticide formulations that meet the criteria of the WHO Recommended Classification of Pesticides by Hazard- Classes Ia or Ib.
2. Pesticide active ingredients and their formulations that meet the criteria of carcinogenicity or mutagenicity or reproductive toxicity of the Globally Harmonized System of Classification and Labelling of Chemicals (GHS) - Categories 1A and 1B.
3. Pesticide active ingredients listed by the Stockholm Convention - Annexes A and B, and paragraph 1 of annex D (thus, active ingredients that are POPs).
4. Pesticide active ingredients and formulations listed by the Rotterdam Convention - Annex III (thus, active ingredients that are subject to the PIC procedure).
5. Pesticides active ingredients listed under the Montreal Protocol - Annexes A,B,C (thus, active ingredients that are classified as ozone depleting substances; as of now, this category includes only methyl-bromide).
6. Pesticide active ingredients and formulations that have shown a high incidence of severe or irreversible adverse effects on human health or the environment. As of now, there are no international databases of pesticides meeting this criterion. More information here.

The Pesticide Action Network PAN provides a complete list of HHPs based on the criteria defined by the FAO/WHO JMPM.

Why are they dangerous?

These pesticides are defined as highly hazardous because they have shown a high incidence of severe or irreversible adverse effects on human health or the environment.

They include substances that are extremely toxic, carcinogenic, mutagenic, or harmful to reproduction; that persist in the environment and accumulate in the food chain, linked to major poisoning incidents and compounds that deplete the ozone layer. Their risks range from acute poisoning and long-term diseases, such as cancer, to irreversible environmental damage, biodiversity loss, and contamination of soil and water.

Where can they be found?

Agricultural imports, obsolete or banned pesticide stockpiles often "recycled" in other countries or for disposal.

Regulation

Under the Rotterdam Convention (Prior Informed Consent – PIC procedure), certain hazardous pesticides listed in Annex III may not be traded internationally without the explicit prior informed consent of the importing Party. Exporting countries are required to respect the import decisions communicated by the Designated National Authority (DNA) of the importing country.

In addition, many Caribbean countries have enacted national pesticide control legislation that bans, severely restricts, or conditions the import, sale, and use of specific HHPs. Customs and border control authorities must therefore verify compliance not only with international PIC requirements but also with applicable national registration and licensing systems.

3. Legal Framework

3.1 Stockholm Convention

The Stockholm Convention on Persistent Organic Pollutants (POPs) is a multilateral environmental agreement aimed at protecting human health and the environment from chemicals that are:

- Persistent (do not readily break down in the environment)
- Bioaccumulative (accumulate in living organisms)
- Toxic
- Capable of long-range environmental transport

Adopted in May 2001 and entering into force on 17 May 2004, the Convention currently addresses industrial chemicals (figure 4)), pesticides, by-products, and unintentional emissions. The Convention complements the Basel Convention on hazardous waste and the Rotterdam Convention on PIC chemicals, forming a framework for global chemical safety.

Figure 4. Expired chemicals
Note. Photograph by Jan Oomen, Dutch Customs.

Objectives

1. Eliminate or restrict POPs production and Use of listed chemicals Annex A and B of the Stockholm Convention.
2. Reduce unintentional releases of POPs listed in Annex C of the Stockholm Convention.
3. Protect human health and the environment by preventing contamination through long-range environmental transport and bioaccumulation.

The list of POPs can be found here.

Compliance and Enforcement

- The Convention does not impose punitive measures.
- Compliance relies on national legislation and enforcement mechanisms, supported by technical assistance and capacity-building programmes.

Customs and Border Control

- Use HS codes, permits, and inspection protocols to prevent illegal trade in POPs and POPs-containing products.
- Collaboration between environmental authorities and customs is critical for enforcement.

Relationship with Other Conventions

- Basel Convention: Manages disposal and transboundary movement of POPs-containing waste.
- Rotterdam Convention: Manages PIC chemicals, some of which are also POPs.
- Minamata Convention: Overlaps with POPs containing mercury (e.g., certain industrial by-products).

3.2 Minamata Convention

The Minamata Convention on Mercury (2013) is a global, legally binding treaty designed to protect human health and the environment from anthropogenic emissions and releases of mercury and mercury compounds. It is named after the Minamata tragedy in Japan, where severe mercury poisoning from industrial discharge caused widespread health damage for decades. Examples of mercury

exposure to health are in figure 5. The Convention entered into force in 2017 and now serves as the primary international legal mechanism for reducing the production, use, trade, emissions, and disposal of mercury.

The Convention establishes a comprehensive framework targeting the entire mercury life cycle—from primary mining to final waste disposal—while encouraging countries to adopt best practices, promote safer alternatives, and strengthen institutional capacity.

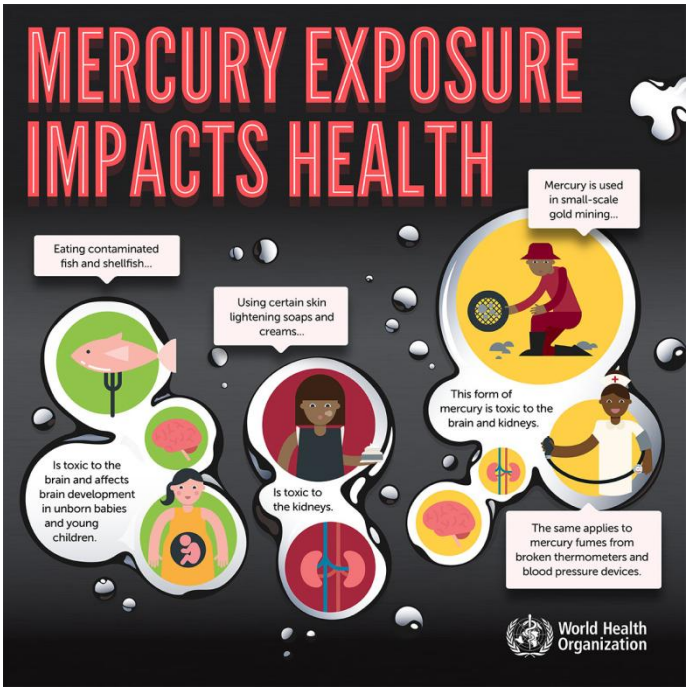

Figure 5. Mercury exposure and health impacts

Note. From World Health Organization. (n.d.). Mercury exposure impacts health. Retrieved from https://www.who.int/multi-media/details/mercury-exposure-impacts-health

Objectives

1. Control of Mercury Supply and Trade
2. Reduce and Eliminate Mercury Use in Products
3. Reduce Mercury Use in Industrial Processes
4. Reduce Mercury Emissions to Air
5. Reduce Mercury Releases to Land and Water

The Convention seeks to reduce the global supply of mercury by:

- Prohibiting new primary mercury mining.
- Requiring Parties to phase out existing primary mining within 15 years.
- Regulating international trade through a Prior Informed Consent (PIC) system:
  - Exporting states must obtain prior written consent from importing states.
  - Trade is authorized only for legitimate uses allowed under the Convention.

The Convention establishes mandatory phase-out schedules for specific mercury-added products and processes:
Products to be phased out by the years mentioned in Annex A of the Convention include:

- Batteries (excluding certain button cells),
- Switches and relays,
- Mercury-containing fluorescent lamps (various types),
- Cosmetics with intentional mercury,
- Non-electronic measuring devices such as thermometers and sphygmomanometers.

Parties must also take measures to phase down dental amalgam, promote alternatives, and improve waste management in dental facilities.

Artisanal and Small-Scale Gold Mining (ASGM)

ASGM is the largest global source of mercury emissions. Parties with significant ASGM activities must:

- Develop and implement a National Action Plan (NAP).
- Eliminate worst practices, such as whole-ore amalgamation and open burning of amalgam.
- Promote mercury-free technologies and formalize ASGM sectors.

The Convention requires the application of Best Available Techniques (BAT) and Best Environmental Practices (BEP), with flexibility for national circumstances.

Mercury in cosmetic products
This poses significant risks to human health and the environment. Mercury compounds have historically been used in certain skin-lightening creams, anti-aging products, and facial treatments because they inhibit the production of melanin, resulting in lighter skin. Exposure to mercury can damage the nervous system, kidneys, and immune system, and may cause skin rashes, discoloration, anxiety, memory loss, and developmental problems in unborn children and young children.
Examples of cosmetic products found to contain unsafe levels of mercury include: (1) skin-lightening creams marketed under various brand names in Africa, Asia, and the Caribbean, some containing mercury concentrations thousands of times above regulatory limits;
(2) facial bleaching creams such as "Goree Beauty Cream," which has repeatedly been recalled in several countries after testing revealed high mercury content; and (3) anti-freckle and whitening creams sold online and through informal markets, which have been found to contain mercury despite being labelled as natural or herbal products.
These products not only endanger consumers but can also contaminate households and wastewater systems, contributing to broader environmental pollution.

Mercury waste must be managed in an environmentally sound manner, consistent with Basel Convention principles. Requirements include:

- Identification and classification of mercury wastes,
- Safe handling and transportation,
- Secure long-term disposal options,
- Prohibition of recovery, recycling, or reuse that leads to renewed global mercury flows.

3.3 Basel Convention

The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal (1989) is the primary international legal instrument governing the generation, transboundary movement, and environmentally sound management (ESM) of hazardous and other wastes (figure 6). It was developed in response to rising global concern over the export of toxic wastes particularly from industrialized to developing countries and seeks to protect human health and the environment through legally binding obligations on Parties.

The Convention entered into force in 1992 and today forms the cornerstone of international hazardous waste governance. Its legislative framework establishes rules for controlling waste movements, ensuring transparency, enhancing state sovereignty over waste import decisions, and promoting ESM at national and regional levels.

Objectives

1. Minimize the Generation of Hazardous Waste
2. Ensure Environmentally Sound Management (ESM) of Waste
3. Control Transboundary Movements of Hazardous Waste

Prior Informed Consent (PIC)

At the heart of the Convention is the Prior Informed Consent procedure. Before hazardous or controlled wastes can cross international borders:

- The exporting state must notify the importing state (and any transit states).
- Shipments may proceed only after written consent.
- States may refuse imports for any reason, reinforcing their sovereign right to control waste entry.

The PIC procedure ensures accountability, traceability, and informed decision-making, reducing illegal or undocumented shipments.

Environmentally Sound Management (ESM)

Parties are obligated to manage hazardous and other wastes in ways that protect human health and the environment over the entire waste lifecycle. ESM obligations require:

- Adoption of national legislation and standards for safe handling.
- Development of adequate disposal facilities.
- Use of cleaner production methods to minimize waste generation.

Prohibition of hazardous waste from developed to developing countries

The Basel Ban Amendment which entered into force in 2019 prohibits the export of hazardous waste from OECD/EU countries to non-OECD countries for final disposal

or recycling. This amendment strengthens global environmental justice and reduces the burden on developing states.

Figure 6. Inadequate storage conditions of chemical drums. *Note. Photograph by Huib van Westen.*

Scope of the Convention

The Convention governs:

- Hazardous wastes, as defined by Annex I categories and exhibiting hazardous characteristics in Annex III.
- Other wastes, such as household waste incinerator ash, certain plastics and certain mixtures of plastics as well non-hazardous e-waste. (Annex II).
- Disposal operations, including both final disposal (Annex IV A) and recovery or recycling operations (Annex IV B).

An overview of the Annexes including types of waste and information about codes are in figure 7.

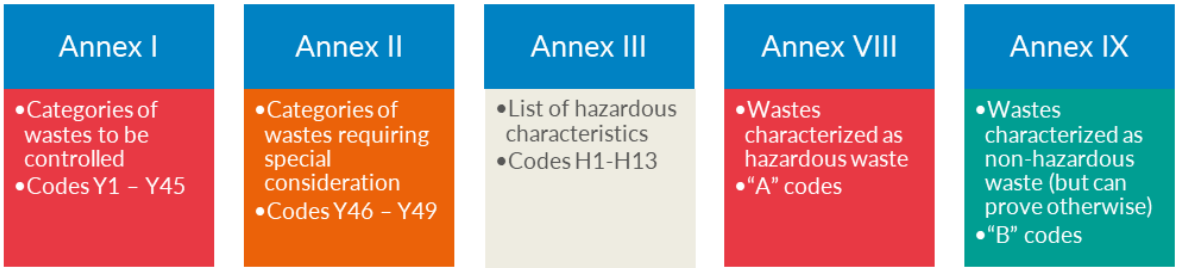

Figure 7. Overview of Basel Convention annexes relevant for waste classification
Note. Visual prepared by Nancy Isarin

Certain materials such as radioactive waste or wastes from ship operations covered by other treaties fall outside the Convention's scope.

Transboundary movements of hazardous waste and other waste which are under the scope of the Convention must be accompanied by a movement document.

Illegal Traffic

The Convention defines illegal traffic as a criminal act, including shipments conducted without consent, obtained through falsification, or executed in violation of national laws. Parties must prevent and penalize illegal traffic and ensure the waste is returned to the exporter in case the exporter is responsible or otherwise managed safely.

3.4 Rotterdam Convention

The Rotterdam Convention on the Prior Informed Consent (PIC) Procedure for Certain Hazardous Chemicals and Pesticides in International Trade is a multilateral environmental agreement that regulates trade in hazardous chemicals to protect human health and the environment. Adopted in 1998 and entering into force on 24 February 2004, the Convention facilitates information exchange and informed decision-making on the import and export of certain hazardous chemicals and pesticides.

The Rotterdam Convention complements other treaties, including the Basel Convention on hazardous waste and the Stockholm Convention on POPs.

Objectives

1. Promote Shared Responsibility and Cooperative Trade Controls
2. Enable exporting countries to notify importing countries of chemicals banned or severely restricted domestically.
3. Provide importing countries with the necessary information to make informed decisions.
4. Protect Human Health and the Environment
5. Prevent Illegal or Unsafe Trade (figure 8)
6. Reduces the risk of unregulated trade in hazardous pesticides and industrial chemicals.

Scope of the Convention

The Convention covers:

- Pesticides and Industrial Chemicals Listed in Annex III which are subject to the PIC procedure
- Chemicals not yet listed in Annex III but identified by Parties for domestic regulatory actions may also be notified.
- Mixtures and Formulations, includes preparations or mixtures containing Annex III chemicals above threshold concentrations.

Figure 8. Expired chemicals
Note. Photo credit: Huib van Westen.

Prior Informed Consent (PIC) Procedure

The PIC procedure requires that:

- Exporting Parties notify the Secretariat before exporting chemicals that are banned or severely restricted.
- Importing Parties may consent or refuse import based on national decisions.
- Decisions and notifications are communicated through the Rotterdam Convention Secretariat.

Note: the PIC procedure under the Rotterdam Convention differs compared to the PIC procedure under the Basel Convention. Under the Rotterdam Convention for instance there is no notification for each movement done and there are no movement documents accompanying the transport.

Exporting Countries

- Ensure chemicals are accompanied by proper documentation (PIC form).
- Notify importing Parties about any bans or severe restrictions.

Importing Countries

- Communicate their consent or refusal through the Secretariat.
- Ensure safe handling, storage, and disposal of imported chemicals.

Customs and Border Control authorities are key to enforcing the PIC procedure. Use of HS codes, documentation checks, and inspection protocols helps monitoring cross-border chemical trade. HS codes assigned to chemicals listed in Annex III to the Rotterdam Convention is here.

There is no punitive enforcement by the Convention itself; it relies on national legal measures.

Relationship with other Conventions

- Basel Convention: Ensures safe handling of hazardous waste and complements PIC controls.
- Stockholm Convention: Works with the Rotterdam Convention for POPs that are also PIC chemicals.

4.Pre-Screening Guidelines

This chapter provides risk-based pre-screening guidance to assist customs and border control officers in identifying high-risk shipments of hazardous chemicals, products containing hazardous chemicals, and regulated wastes prior to physical inspection.

The risk indicators presented in this chapter are supported by practical checklists provided in **Annex B**. These checklists are designed for direct use during the pre-screening phase and help officers systematically verify documentation, HS codes, trader profiles, routing patterns, and compliance with Convention-specific requirements.

Each checklist corresponds to one Convention (Stockholm, Basel, Minamata, and Rotterdam) and follows a structured step-by-step format. Officers should complete the relevant checklist during desk-based review before deciding whether to release, select for inspection, or detain a shipment.
The completed checklist serves as:

- a structured decision-support tool,
- a record of the screening process, and
- supporting documentation in case of further inspection, sampling, or enforcement action.

Where possible, the criteria and risk factors contained in the checklists should be integrated into national customs risk management systems to support automated profiling, consistent targeting, and data-driven enforcement planning.

4.1 Risk indicators for Custom controls under the Stockholm Convention

In this paragraph the most relevant HS codes and a practical set of risk indicators are listed that Customs authorities can use to control chemicals regulated under the Stockholm Convention on Persistent Organic Pollutants. The Stockholm Convention restricts or eliminates POPs, including pesticides, industrial chemicals, and unintentional by-products. Customs risk indicators therefore target mislabelling,

illegal trade, undeclared POPs, POP-containing products and consider trader profiles, routing patterns and document inconsistencies.

4.1.1 HS Codes

There is no single HS code for all the chemicals in the Stockholm Convention: just like with other multilateral environmental agreements, different POPs have their own HS (Harmonized System) subheadings, and some also have specific codes for mixtures or formulations. Below is an overview of how HS codes relate to Stockholm Convention chemicals, plus some key examples.

List of POPs (2025)
The Secretariat of the Stockholm Convention maintains an updated list of all POPs in its annexes. As of 2025, these include the "12 initial POPs" plus "new POPs" added over time. The new POPs (added most recently) include e.g. Methoxychlor, Dechlorane Plus, UV-328, among others.

The World Customs Organization (WCO) publishes a list of "Substances and their preparations controlled under the Stockholm Convention" with their HS 2022 classifications[4].

According to the WCO list, table 1 lists some examples of POPs with their respective HS codes:

[4] Link to WCO document "Substances controlled under certain Convention" (2022): https://www.wcoomd.org/-/media/wco/public/global/pdf/topics/key-issues/customs-laboratories/materials-for-the-classification-of-chemical-products/substances-controlled-under-certain-conventions.pdf

Chemical	CAS No.	HS 2022 (pure)	HS 2022 (Preparations)
Aldrin	309-00-2	2903.82	3808.59 / 3824.84
Chlordane	57-74-9	2903.82	3808.59 / 3824.84
Chlordecone	143-50-0	2914.71	3808.91 / 3824.84
Dicofol	115-32-2 10606-46-9	2906.29	3808.99 / 3824.99
Dieldrin	60-57-1	2910.40	3808.59 / 3824.84
Endosulfan	115-29-7	2920.30	3808.59 / 3824.84
Endrin	72-20-8	2910.50	3808.91 / 3824.84
Heptachlor	76-44-8	2903.82	3808.59 / 3824.84
Hexabromobiphenyl	36355-01-8	2903.94	3824.82
Hexabromocyclododecane (HBCD)	25637-99-4 3194-55-6 134237-50-6 134237-51-7 134237-52-8	2903.99	3824.82
Polychlorinated dioxins (PCDD)	various congeners	2932.99	3824.99
Polychlorinated furans (PCDF)	various congeners	2932.99	3824.99
Polychlorinated naphthalenes (PCN)	mixtures	2903.99	3824.99

Table 1 Examples of substances controlled under the Stockholm Convention with the respective HS 2022 codes

The WCO list does not cover every single POP in the Stockholm Convention annexes, especially newer ones (e.g., some PFAS-related POPs).

Some HS assignments are for broad “preparations” or “mixtures,” making them less precise for customs control.

The WCO note warns that “HS codes of some of the substances have not been officially decided by the Harmonized System Committee” and recommends national customs administrations check local implementation.

National HS (tariff) systems often extend beyond 6 digits, so the 6-digit HS from WCO may not fully reflect how a POP is classified in a particular country.

Practical Use for Customs / Regulatory Authorities

- Customs authorities use these HS codes to monitor and control trade in POPs, since many Stockholm Convention obligations involve import/export controls.
- These HS subheadings are not exhaustive; many POPs will fall under more than one HS line, especially when in mixtures, formulations, or articles containing them.

The WCO table is indicative, not legally binding.

Key Take-Aways

- There are specific HS codes for many of the Stockholm Convention chemicals, especially under HS 2022.
- The WCO "Substances under Conventions" table is the authoritative reference for linking HS codes to Stockholm POPs.
- For regulatory or customs purposes, you should consult national tariff schedules, because countries may extend or subdivide HS codes beyond the 6-digit level.

4.1.2. Risk Indicators

These examples of risk indicators can be used both in the pre-screening and inspection phase. Check all the indicators to evaluate discrepancies. Check lists are in Annex A of this document.

Documentation & Compliance Indicators in the pre-screening phase

A. Incomplete, inconsistent, or suspicious paperwork

- Missing required import/export permits for POPs (e.g., exemptions, acceptable purposes and absence of or inaccurate CAS numbers).
- Safety Data Sheets (SDS) inconsistent with declared chemical composition.
- Conflicting information across different documents such as Bill of Lading, Commercial invoice, Packing list, SDS, etc.
- Documents that appear altered, duplicated, forged, or recently reissued.

B. Misclassification or deceptive labelling

- Use of broad or vague product descriptions (e.g., "pesticide formulation," "industrial chemical mixture").
- Labelling that hides POP presence (e.g., using trade names without chemical names and use of generic mixtures where composition is confidential or undisclosed).

C. HS code anomalies

- Using HS codes for general chemicals to conceal POPs.
- HS code not aligned with known POP identity (e.g., pesticide code used for an industrial chemical containing POPs).
- Switching between HS 29/38 categories to avoid detection.

Actors / Trader Profile Indicators

A. High-risk company characteristics

- Recently created companies with no previous chemical trade history.
- Traders known for illicit pesticide or hazardous chemical shipments.
- Front companies or brokers used instead of direct manufacturers.

B. Suspicious business behaviour

- Low transaction prices inconsistent with market values (dumping of banned chemicals).
- Payment routed through unrelated third countries.
- No verifiable manufacturing facilities or storage sites.

Transport & Routing Indicators

A. High-risk routes, suspicious trade routes and logistics patterns

- Shipments passing through transshipment hubs with known chemical diversion issues.
- Export from countries where banned pesticides/chemicals are still produced.
- Routing through countries with weak chemical control enforcement.

B. Logistics red flags

- Frequent rerouting or last-minute changes of destination.
- Overuse of Free Trade Zones to obscure origin.

- Mixed cargo shipments that combine chemicals with unrelated goods.

Chemical Composition or Safety Documentation Indicators

A. Missing or suspicious declarations
- SDS missing CAS numbers or listing vague categories (e.g., "halogenated compound").
- Technical sheets that omit concentration of regulated POPs.
- Presence of intermediates known to degrade into POPs.

B. Known alternative trade names.
POP chemicals often appear under synonyms:
- "Arochlor," "Clophen" → PCBs
- "Octa-BDE / Deca-BDE substitutes" → often still contain PBDEs
- kepone → Chlordecone
- "HCH mixture" → may contain lindane

Product Category–Specific Indicators

A. Pesticides
- Containers labelled as "old stock," "legacy formulation," or "not for sale domestically."
- Concentrations unusually high for legitimate agricultural use.

B. Industrial chemicals
- Shipments of flame retardants in plastics destined for refurbishing markets.
- "Used" electronics or textiles imported for recycling but carrying POP-containing materials.

C. Electrical equipment
- Used transformers/capacitors older than 1980 (likely containing PCBs).
- Equipment with unverified decontamination certificates.

Quantitative, Pattern, and Behavioural Indicators

1. Sudden spikes in import/export volumes of a specific pesticide or additive.
2. Many small shipments instead of one large one (concealment tactic).
3. Repeated discrepancies between declared and analysed contents.

Facility and End-Use Indicators

A. Suspicious facilities
- The declared importer does not have a chemical storage license.
- The destination facility lacks capacity to lawfully use or dispose of POPs.
- Facility located near sensitive environments (water sources, schools, residential areas)

B. End-use mismatch
- Industrial POPs imported for "laboratory use only" in unrealistic quantities.
- Pesticides imported into countries where their agricultural use is banned.

4.2 Risk indicators for Custom controls under the Minamata Convention

4.2.1. Risk indicators

The Minamata Convention regulates elemental mercury, mercury compounds, and a wide list of mercury-added products (thermometers, lamps, batteries, switches, cosmetics, dental amalgam, etc.). Customs risk indicators for pre-screening aim to detect illegal trade, misdeclared mercury substances, and non-compliant mercury-containing products.

Documentation & Regulatory Indicators

A. Missing or Non-Compliant Documentation
- No import/export authorization (where required under national Minamata laws).
- No declaration of mercury content in products (mandatory for many categories).
- SDS missing CAS numbers or mercury concentration.
- Certificates of analysis absent for mercury mixtures (≥95% mercury).
- Laboratory test reports not provided for mercury-added products, when required.

B. Inconsistencies Across Documents

- Conflicting information between: Bill of Lading, Commercial invoice, Packing list, Product specification / SDS and HS code.
- Use of vague descriptions such as “metallic compound,” “instrument,” “scrap devices,” “medical equipment,” or “lighting devices.”

C. Suspicious Labelling

- Product name or label does not list mercury content.
- Use of trade names that hide mercury (e.g., “quicksilver mixture,” “amalgam paste,” “mercury glass”).
- Misleading claims like “eco-friendly thermometer” but containing Hg.

Trader / Actor Risk Indicators

A. High-Risk Company Profiles

- New traders with no history in chemical or instrumentation trade.
- Exporters/importers linked to previous chemical control violations.
- Companies without proper national licenses for handling hazardous chemicals.

B. Suspicious Commercial Behaviour

- Extremely low declared price (common in illegal mercury trade).
- Involvement of brokers rather than direct manufacturers.
- Payment routed through unrelated third countries.

Routing & Logistics Indicators

A. High-Risk Routes

- Shipments originating from or transiting through countries known for illegal mercury mining or informal mercury markets.
- Transshipment through Free Trade Zones to obscure origin.
- Routing through countries with weak enforcement of mercury trade bans.

B. Logistics Red Flags

- Sudden last-minute change of consignee or destination country.
- Shipments are declared as “used devices,” “used medical equipment,” or “scrap electronics” destined for developing countries.

Chemical Identity Indicators

A. CAS Number Issues
- CAS numbers missing, altered, or inconsistent with declared chemicals.
- SDS listing generic terms like "heavy metal mix" without specifying mercury.

B. Mercury Concentration Problems
- Mixtures declared as "alloys," "amalgams," or "metal compounds" without the required mercury content disclosure.
- Suspiciously low declared mercury concentration that contradicts known product composition.

End-Use and Facility Indicators

A. End-Use Mismatch
- Importers without a legitimate industrial need for mercury (e.g., dental clinics importing large amounts of amalgam).
- Factories receiving mercury-related goods but lacking environmental permits.
- Mercury exports to countries that have banned mercury-added products completely.

B. Destination Facility Capacity
- The declared facility lacks equipment to handle or store mercury safely.
- Warehouse address is a small office or non-industrial area.

Pattern & Quantitative Indicators

- Sudden increase in imports/exports of mercury-containing goods by a trader.
- Many small shipments instead of one large shipment (common tactic to avoid detection).
- Regular shipments declared as "samples" or "laboratory use" in unrealistic quantities.
- Recurring discrepancies between lab analysis and declaration.

4.2.2 HS Codes

HS CODES

As the Minamata Convention on Mercury regulates mercury (elemental), mercury compounds, and mercury-added products. There is no single HS code that covers all these, but several important Harmonized System codes are commonly used. Here are key HS codes linked to the chemicals under the Convention, plus important caveats:

Key HS Codes Relevant to the Minamata Convention

Elemental Mercury

- HS 2805.40 — Mercury (elemental), including mixtures with other substances and alloys, where mercury concentration is ≥ 95%.

Mercury Compounds

- HS 2852 — Inorganic or organic compounds of mercury (excluding amalgams).
- Specific sub-codes include 2852.10 for certain mercury compounds.
- HS 2843.90 — Amalgams.

Mercury-Added Products

- There is no universal 6-digit HS code distinguishing all mercury-added products from similar non-mercury products, which is a challenge.
- For example, liquid-filled thermometers (which may contain mercury) are under HS 9025.11.

Key Notes & Caveats

- The Minamata Convention itself defines "mercury" to include elemental mercury plus mixtures with a high concentration of mercury.
- National customs administrations often add more digits (beyond the standard 6-digit HS code) to better distinguish mercury-added products.
- Because many HS codes are not mercury-specific (especially for mercury-added products), using HS codes to track trade in mercury-containing goods can be difficult.

B. HS Codes Not Matching the Goods

- Shipment is declared under general metal/chemical HS codes, but the product is clearly mercury-containing.
- Electronic or medical instruments classified under broad HS codes that do not distinguish mercury content.
- Batteries, lamps, or switches coded under generic product categories, but packaging indicates mercury.

C. High-Risk HS Codes Frequently Misused

Examples include:

- 2805.40 – Mercury (elemental)
- 2852 – Mercury compounds
- 9025.11 – Thermometers (may contain mercury)
- 8506/8507 – Batteries (sometimes contain mercury)
- 8536 – Switches & relays (some contain mercury)
- 8539 – Lamps (fluorescent lamps using mercury)
- 9018 – Medical instruments (sphygmomanometers, thermometers)

Customs should flag any shipment using these codes without clear mercury-free certification.

4.3 Risk Indicators for Custom controls under the Basel Convention

The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal is a global environmental treaty to protect human health and the environment from the harmful effects of hazardous and other wastes. The Convention establishes a framework to minimize the generation of hazardous waste, ensure its environmentally sound management, and strictly control its international movement through a system of prior informed consent (PIC)

4.3.1. Risk Indicators

Below is a consolidated list of risk indicators which can be used by customs authorities for waste inspections under the Basel Convention. These pre-screening indicators are based on common enforcement practices, Basel Convention technical guidelines, and international customs environment cooperation models

(e.g., WCO-BRS tools). They help identify suspicious waste shipments, potential illegal traffic, and non-compliance with transboundary movement rules.

Documentation-Related Indicators

These red flags emerge when reviewing paperwork.

A. Incomplete or missing documents
- Missing Prior Informed Consent (PIC) notification[5]
- Lack of written consent from importing or transit countries.
- Missing movement document, permits, or contracts with disposal facilities.

B. Inconsistent or contradictory declarations
- HS codes do not match the shipped or declared waste.
- Written description contradicts packaging (e.g., lead scrap but it appears to waste lead acid batteries).
- Declared as by-product, end-of-waste or second-hand goods but in reality, it is a waste.

C. Unusual routing
- Shipments taking indirect routes through multiple transit countries.
- Waste destined for countries which do not have disposal facilities.
- Frequent use of free trade zones known for limited environmental controls.

D. Misclassification or "greenwashing"
- Declaring hazardous waste as non-hazardous waste or waste as a product or used/ second hand goods (including e.g donations).
- Using generic codes without detail like mixed metals, plastic scrap, used goods.

[5] Standard notification document
https://www.basel.int/Portals/4/Basel%20Convention/docs/techmatters/forms-notif-mov/vCOP8.pdf

Commodity-Related Indicators

These relate to the nature and type of material shipped.

A. High-risk waste streams
Certain wastes are historically associated with illegal traffic:

- E-waste / used electrical and electronic equipment (UEEE)
- Plastics (especially mixed, contaminated, or unsorted)
- Waste tires (declared as used tires)
- Used lead-acid batteries (ULABs)
- End-of-life vehicles (ELVs)
- Medical or clinical waste
- Waste oils / ship bilge waste
- Textiles/second-hand clothing that are actually waste

B. Declared as "second-hand goods" but in poor condition

- Electronics visibly non-functional.
- Vehicles not compliant with safety/roadworthiness standards.
- Equipment without test certificates or refurbishment documents.

C. Waste unlikely to be economically recyclable

- Mixed plastic waste without clear polymer separation.
- High levels of contamination (soil, organic matter, sludge).
- Low-value scrap unlikely to cover transportation costs.

Trader & Shipment Profile Indicators

These indicators relate to behaviour and history of involved actors.

A. New or unknown exporters/importers

- Recently registered companies with limited operational history.
- Companies without environmental licenses or recycling facilities.

B. High-risk sectors

- Scrap dealers without formal recycling operations.
- Informal e-waste collectors exporting (to developing countries).

C. Suspicious pricing

- Unrealistically low or negative declared values (be keen on delivery conditions).
- Transactions inconsistent with market prices for recyclable materials.

D. Frequent amendments to shipping documents

- Last-minute changes to consignee, country of destination, or waste type.

Country-Specific Risk Indicators

Those linked to geopolitical or regulatory context.

A. Export from jurisdictions with low environmental controls

- Known hubs for waste misclassification or re-export without PIC.

B. Import into countries with waste import bans

- Many SIDS, African nations, and Asian countries prohibit certain wastes.

C. Shipments from/through countries with major illegal waste traffic cases

- Historic patterns of repeat offenders.

Basel Convention–Specific Compliance Indicators

These relate directly to Basel requirements.

Violating the Basel Ban Amendment

- OECD/EU countries exporting hazardous waste to non-OECD destinations for disposal or recycling.

Absence of evidence of environmentally sound management (ESM)

- No contract with an ESM-certified facility in the country of destination.
- Waste shipped for temporary storage without details of the final disposal or recycling facility.

Shipments of wastes requiring special prior notification

- All hazardous and other waste under the scope of the convention including for instance persistent organic pollutants (POP) wastes, waste lead-acid batteries, mercury wastes, certain mixtures of plastics and all e-waste.

Waste normally prohibited by national legislation

- If import is not legally allowed under receiving state's waste laws.

4.3.2. HS Codes

Many wastes have their specific HS Codes but they are also known for high risk of misuse. Which means that HS codes for non-hazardous waste are being used while hazardous waste or contaminated mixed waste is being shipped. Common categories where misdeclaration occurs:

- Plastic waste (HS 3915)
- Paper waste (HS 4707)
- Metal scrap (HS 7204, 7404)
- Used electrical/electronic equipment (HS 84, 85 series)
- Used lead-acid batteries (HS 8507)
- Used tyres (HS 4012)

Summary: Indicators for Customs

The strongest red flags involve combinations of indicators, such as:

- Misdeclared plastics + mixed contents + unknown exporter
- Used Electrical and Electronic Equipment (UEEE) declared as "working" but no test certificates and no appropriate packaging to prevent damage during transport, loading and discharge.
- Hazardous waste with missing PIC documentation (Movement document)
- Route deviations + suspicious pricing + new importer

These combinations often signal attempted illegal waste traffic.

4.4 Risk indicators for Customs control under the Rotterdam Convention

4.4.1. Risk indicators

Risk indicators for Customs control of chemicals regulated under the Rotterdam Convention. The Rotterdam Convention controls trade in certain hazardous pesticides and industrial chemicals through Prior Informed Consent (PIC). Customs must ensure that:

- the chemical is correctly declared,
- the importing country has consented to receive it, and
- shipments comply with labelling, SDS, and packaging requirements.

The pre-screening indicators below help detect illegal, misdeclared, or non-compliant shipments of PIC chemicals.

Documentation & Regulatory Indicators

Missing or inconsistent PIC documentation:

- No evidence of importing country consent (No PIC decision from Designated National Authority (DNA)).
- Missing export notification from the exporting Party.
- Absence of the mandatory Safety Data Sheet (SDS) or label in the importing country's language.
- Permit or license validity dates inconsistent with shipment dates.

Conflicting or suspicious shipping documents

- Discrepancies between: SDS vs. Bill of Lading, Commercial invoice vs. packing list, CAS numbers vs. chemical name, Product label vs. customs declaration.
- Products described under broad labels like "agrochemicals," "formulation," "industrial fluid," "chemical mixture."

Misleading or vague product descriptions

- Missing concentration declarations for key active ingredients.
- Use of obsolete or banned trade names (common for hazardous pesticides).

Trader / Actor Risk Indicators

Suspicious exporter or importer profiles

- Newly created companies with little history in chemical trade.
- Companies linked to previous illegal pesticide or industrial chemical cases.
- Exporters refusing to provide SDS or technical documentation.

Problematic commercial patterns

- Very low prices (often a sign of disposal/dumping of banned chemicals).
- Significant discrepancy between declared supplier and actual manufacturer.
- Payment routed through third countries with no involvement in the transaction.

Routing & Logistics Indicators

High-risk routing patterns and Logistics anomalies

- Transshipment through countries not Party to Rotterdam Convention.
- Re-routing through Free Trade Zones to obscure origin.
- Routing to countries that have banned or refused consent for the chemical.
- Last-minute changes in consignee or final destination.
- Cargo moving under vague descriptions in transit (e.g., "chemicals for storage").
- Small, repeated shipments designed to avoid attention.

Chemical Identity Indicators

CAS number inconsistencies

- CAS number missing, mismatched, or altered.
- SDS listing a general chemical name without specifying active substance.

Industrial chemicals with known PIC restrictions
Examples:

- Asbestos (certain varieties)
- Certain industrial chlorinated compounds
- Severely hazardous solvents

End-Use, Facility, and Capacity Indicators

End-use incompatibility

- The importing company does not have proper chemical handling or storage permits.
- Quantity inconsistent with stated use (e.g., massive pesticide imports by companies not involved in agriculture).
- Industrial chemicals imported by companies without relevant production lines.

Declaration that masks actual purpose

- Shipments declared for "research," "testing," or "samples" in unrealistically large amounts.
- "Returned products" or "old stock" being shipped to countries that have not consented.

Quantitative & Pattern-Based Indicators

- Sudden, unexplained increases in exports of specific PIC chemicals.
- Import volumes that exceed national consumption patterns.
- Traders using multiple HS codes for the same product across shipments.

4.4.2. HS Codes

HS codes inconsistent with the chemical identity

- Using general HS codes (e.g., for solvents or organic compounds) to hide listed PIC chemicals.
- Applying pesticide HS codes for industrial PIC chemicals, or vice versa.
- HS codes that change frequently for the same trader.

5. Inspection Guidelines

5.1 Pre-Inspection

When faced with a possible illegal trade, after the pre-screening procedure, proceed with the inspection of the shipment. Officers should implement this procedure to assess the shipment's compliance with MEAs, permits, import/export licenses, and PIC.

Quick-reference checklist (same as Annex B)

Start the inspection

- Take an Inspection Sheet (Annex C).
- Fill all required fields.
- Move the shipment to an appropriate inspection area (in a well-ventilated place or open air) to ensure safety of personnel and avoid contamination or release of hazardous substances.
- Wear appropriate personal protective equipment (PPE). For routine inspection: at least nitrile gloves (they are very cheap and can be found in pharmacies!); long-sleeved protective clothing or coveralls; safety shoes; high-visibility vest; safety goggles. Check chapter 7 on safety measures.

Prior safety assessment

- Evaluate the presence of dangerous volatile substances → use the commercial solutions for rapid air screening if available (gas detectors listed in paragraph 5.3.1.) to test air around door seals (if it's a truck or a container).
- Record the results on the Inspection Sheet.
- Are the readings concerning?
- ├── YES → Stop process → Notify Competent Authority or Focal Point designated under the Basel Convention (country contacts can be consulted at this link) → Stock in a dedicated area if available or move to an importer's facility (see more details at Chapter 6.)
- └── NO → Continue → Open containers.
- Open the container slowly and allow for air exchange. Keep your head away from the opening. Do not enter immediately. Let the container ventilate for several minutes.
- Repeat this evaluation of volatile hazardous substances with a gas detector inside the container.

Visual verification of the shipment.

- Verify packaging: does it match the declared type of waste, HS, or CAS numbers?
- Verify labelling: ensure that the containers/packages/boxes/barrels are appropriately labelled and that labels correspond to the documents presented.

<table>
<tr><td colspan="2">

- Verify that hazard symbols (e.g., GHS symbols) match the declared substances. →The GHS Classification Summary (2025) is available at this link.
- Verify number and volume of containers and packages: confirm that the number and volume correspond to what was declared in the movement documents. Consignments may contain more items than declared, resulting in excess quantities entering the domestic market.
- Verify integrity: unsealed or unusually packaged must be treated as suspicious.

</td></tr>
<tr><td>

→ Case A. Customs and the Competent Authority are satisfied with the validity and legitimacy of the shipment.

- The shipment may be released for onward movement and disposal.

</td><td>

→ Case B. Discrepancies between documents, or between the documents and the actual shipment may be evidence of illegal trafficking.

- Stop the movement of the waste and contact the national Competent Authority as soon as possible for further investigations.
- If the Competent Authority grants permission, proceed to the next steps → 5.2 Physical Chemical Inspection.

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5.2 Physical Chemical Inspection

If risk indicators, documentation issues, anomalies or suspicious signs are identified during pre-screening and pre-inspection, officers should conduct a physical–chemical inspection following standardized procedures to characterize the material and identify potential hazardous chemicals.

Quick-reference checklist

Open packages

- Always appropriate PPE (check Chapter 7 on safety measures)
- Follow national safety protocols.
- Visual evaluation of content.
- Compare appearance with declared content.
- Could it be a suspicious shipment? Pay attention to all the red flags listed below and check all that apply.

BOX - Key Suspicious Signs:

- Unexpected colour, texture, density, smell.
- Presence of droplets, crystals, or sediments.
- Layered liquids or phase separation.
- Damaged, corroded, or swollen packaging.
- Mixed, repacked, or unlabelled internal packaging.
- Contents severely mismatching the SDS or declared product.
- Any packaging showing signs of concealment.

BOX- Do you suspect that it may be a product or waste containing mercury? Examples of suspicious content include:

- Products or wastes that may contain mercury (chapter 3.1).
- Electronics such as batteries, switches, thermometers, barometers, fluorescent lamps, etc.
- Electronics containing unlabelled small vials with silvery liquid.
- Fluorescent lamps with broken tubes.
- Broken equipment (e.g., lamps, relays, etc.) leaking metallic spheres or powder.
- Shipments of "cosmetics" with jars showing phase separation or metallic sediment.
- Sediment or powder.
- Cosmetics or skin-lightening creams.
- Batteries or electronic parts repackaged or without proper labelling.
- Small metallic droplets visible inside containers, on surfaces, or at the bottom of boxes.

BOX - Do you suspect that the shipment may contain POPs or HHPs? This includes pesticides, industrial chemicals, and unintentionally produced byproducts.

- Check the national list of authorized pesticides. (This link can be useful).
- Check if any ingredient of the formulation is cited in Chapter 3.2.
- Check if any ingredient of the formulation is cited in Chapter 3.3.
- Check any of this possible suspicious content:
- Substances concealed within agricultural shipments or misdeclared as generic "agrochemicals".
- Containers of mixed sizes or brands repacked together.
- Labels in different languages, altered or partially scratched off.
- Bottles without safety seals or with improvised caps.
- Boxes of "plant stimulants" containing unlabelled plastic bottles with liquids.
- Agricultural products mixed with unmarked small containers of concentrated pesticide.
- Old stockpiles of banned pesticides (e.g., parathion, monocrotophos, etc.) in deteriorated packaging.
- Mixtures of liquids labelled vaguely as "industrial chemicals," "solvents," or "oils.

Proceed

- Report on the Inspection Sheet all the red flags encountered.
- Proceed with portable gas detectors and XRF Analyser.

5.3 Portable Tools

This section presents a selection of useful, portable, rapid, and easy-to-use tools for qualitative or semi-quantitative analysis. They can be used to inspect unknown shipments and quickly assess the presence of hazardous substances. The availability of portable detection tools may vary between countries, and their use requires appropriate training.

5.3.1 Portable gas analysers for mercury vapours

Portable gas analysers for mercury vapours provide real-time, quantitative measurements of elemental mercury in air, thus allowing inspectors to understand if the air inside or around a container is safe. These instruments are especially important when opening shipments that may contain mercury-contaminated equipment, broken devices, or unknown chemical materials. Using these analysers before entering a container reduces the risk of inhalation exposure and helps determine whether additional protective equipment or specialized intervention is required.

One example of such commercial solutions is shown in Figure 9, the Jerome Mercury Vapor Analysers, a portable tool for the detection of mercury vapor in the concentration range 0.5 µg/m³ to 999 µg/m³. It is designed for field use, with simple controls and minimal warm-up – thus, practical for customs officers working in ports or border checkpoints. The Occupational Safety and Health Administration (OSHA, USA) sets a ceiling limit for mercury vapor of 0.1 mg/m³, equivalent to 100 µg/m³. This value represents a maximum instantaneous concentration that must not be exceeded during occupational exposure.

Figure 9. Portable Jerome® Mercury Vapor Analyser.

5.3.2 Rapid kits for detecting multiple gases

Commercial kits for generic gas detection help determine whether a container may release dangerous gases such as mercury vapor, volatile organic compounds, hydrogen sulphide, benzene, toluene, ethylbenzene, and xylene, etc. This allows inspectors to evaluate:

- whether a container is safe to open – thus, reducing the risk of inhaling harmful substances; and
- the type of chemicals present, if any.

They provide fast, approximate measurements without needing laboratory equipment, supporting immediate on-site decisions.

One example of such devices is the Nextteq Detection System, which combines a manual sampling pump with detector tubes that provide rapid colour-based readings of a wide variety of pollutants. The Nextteq HazMat Kits procedure begins with two qualitative tubes that help determine within minutes whether a substance is organic or inorganic, guiding further action. More advanced kits include a larger set of chemical-specific tubes, enabling users to identify individual contaminants. Compared to similar products, these tubes typically require shorter sampling times, fewer pump strokes, and longer shelf life.

5.3.3 Rapid kits for pesticides

A pesticide rapid test kit is a fast test device designed to semi-quantitatively detect pesticide in liquid or solids. It can perform a screening analysis prior to sending it to the lab for further verifications.

One example of such commercial solutions is the TraceCheck™ rapid kit. It can detect pesticides groups, such as, but not limited to:

- Organophoshate pesticides: e.g., Acephate, DDVP, Monocrotophos, Fenitrothion, Terbufos, Methamidophos, Trichlorfon, Isocarbophos, Mevinphos.
- Thiophosphates: e.g., Chlorpyrifos, Diazinon, Parathion, Methyl Parathion, Fenthion, Malathion, Dimethoate, Phosmet, Phorate, Ehtion, Terbufos, Disulfoton.
- Carbamates: e.g., Aldicarb, Carbaryl, Carbofuran, Carbosulfan, Propoxur, Oxamyl, Terbucarb, Methomyl, Pirimicarb.

5.3.4 Portable XRF Analyser

Portable and handheld X-Ray Fluorescence (XRF) Analysers are compact spectrometers designed for the analysis of elemental composition in materials (Figure 10a).

How does it work?

These instruments use X-rays to excite atoms in a solid or liquid test item, which start fluorescing (emitting light), as shown in Figure 10b. This fluorescence is unique to each chemical element and is detected and analysed by the instrument. The instrument is interfaced with an internal computer that provides information on the composition of the item, displaying a table listing all elements that the analyser detected and their concentration.

XRF analysers can analyse a wide variety of items, including solids such as metals, consumer goods and plastics; powders like mining waste; and, in some cases, liquids like oils, pesticides and chemical solutions. Gases cannot be detected.

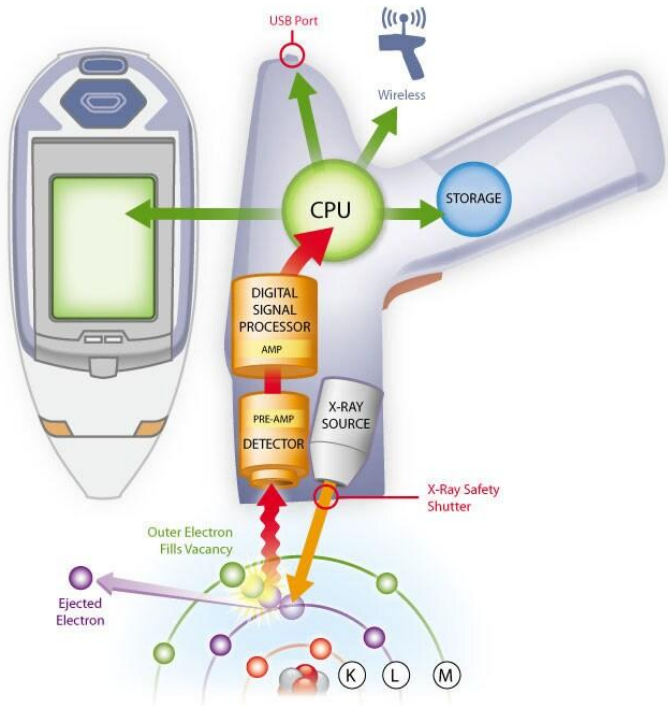

Figure 10a on the left. The handheld XRF analyser is being operated directly on a metal surface to measure its chemical composition. Figure 10b on the right. A

schematic diagram illustrates the internal components and operating principle of the instrument.

These instruments allow one to detect the presence and concentration of individual elements, the ones in the periodic table (Figure 11), including mercury, arsenic, bromine, lead, cadmium, chromium. They perform best when measuring metals and other heavier elements, while they are generally less effective for lighter elements such as sodium, magnesium, aluminium, phosphorus, sulphur, chlorine, potassium, and calcium.

However, they cannot distinguish among specific compounds or chemical forms in which they occur.

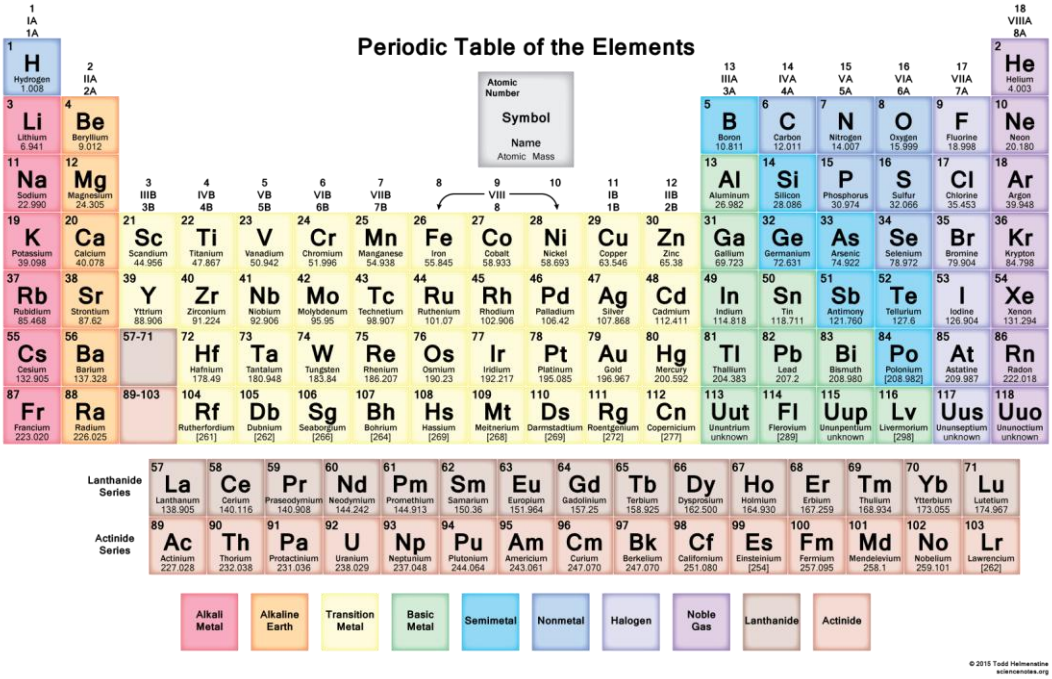

Figure 11. The periodic table of the elements. An element is a chemically pure substance composed of atoms of the same type. Elements are the fundamental building blocks of all matter. The elements are arranged in order of increasing atomic number (the number of protons in the nucleus of an atom). *Note. From Science Notes. (n.d.). Periodic table of elements. Retrieved from* *https://sciencenotes.org/periodic-table-of-elements-hd/*

For further information, we recommend this e-booklet.

Why is it useful?

XRF analysers can perform the first on-site screening of suspicious items, help flagging potentially non-compliant items for further laboratory testing. It is user-friendly (essentially point-and-shoot) and rapid, with analysis times typically between 30 and 120 s. It is a non-destructive method and has a broad applicability since it's suitable for metals, polymers, ceramics, glass, soils, and consumer goods.

Several international standards recognize handheld XRF as a screening method for restricted elements:

- *IEC 62321 - Determination of certain substances in electrotechnical products. Part 3-1: Screening - Lead, mercury, cadmium, total chromium and total bromine by X-ray fluorescence spectrometry.* The International Electrotechnical Commission outlines XRF screening as a method to determine the presence or absence of restricted substances in electrotechnical products. It's often used with EU RoHS values as a technical benchmark.
- *ASTM F2617-15 – Standard Test Method for Identification and Quantification of Chromium, Bromine, Cadmium, Mercury, and Lead in Polymeric Material Using Energy Dispersive X-ray Spectrometry.*
- *US EPA SW-846 Method 6200 – Field Portable X-Ray Fluorescence Spectrometry for the Determination of Elemental Concentrations in Soil and Sediment.*

Regulatory agencies such as the US Consumer Product Safety Commission and Europe's Product Safety Forum use handheld XRF analysers to screen for conformity with specific regulations, the most relevant are:

- CPSIA (USA, 2008) – establishes limits for lead content in children and consumer products.
- RoHS (EU, 2011) – The EU RoHS Directive restricts hazardous substances, including Pb, Hg, Cd, Cr^{6+}, and brominated flame retardants, in electrical and electronic equipment, setting a maximum concentration for each substance, generally 1000 ppm, except for cadmium, which is limited to 100 ppm ().The EU RoHS Directive does not apply outside the EU, but its reference limits are used internationally as a technical benchmark for screening hazardous elements in electrical and electronic products.

Figure 12 shows the screening logic with XRF analysis for a sample of a homogenous product part, according to standard IEC 62321 and RoHS directive. Based on the concentration level of the detected elements, samples are classified as compliant (pass), non-compliant (fail), or inconclusive.

→ Compliant (pass):

If the measured concentrations of all restricted elements meet the pass criteria, the sample is considered compliant with the RoHS Directive.
If any element does not meet the pass criteria, the sample cannot be considered compliant. However, if the measured value falls within the inconclusive range, further confirmatory testing using laboratory instrumentation is required, as the sample may still prove compliant.

→ Inconclusive:

Results are typically considered inconclusive when they fall within a ±30% range of the regulatory limit.

For example, cadmium has a RoHS limit of 100 ppm. Therefore, measurements within the range of 70–130 ppm are considered inconclusive and require laboratory analysis.

→ Non-compliant (fail):

If the measured concentration of any restricted element falls within the fail range (i.e., clearly above the regulatory limit beyond the uncertainty margin), the entire sample is classified as non-compliant and shall be sent to the lab for confirmatory analysis.

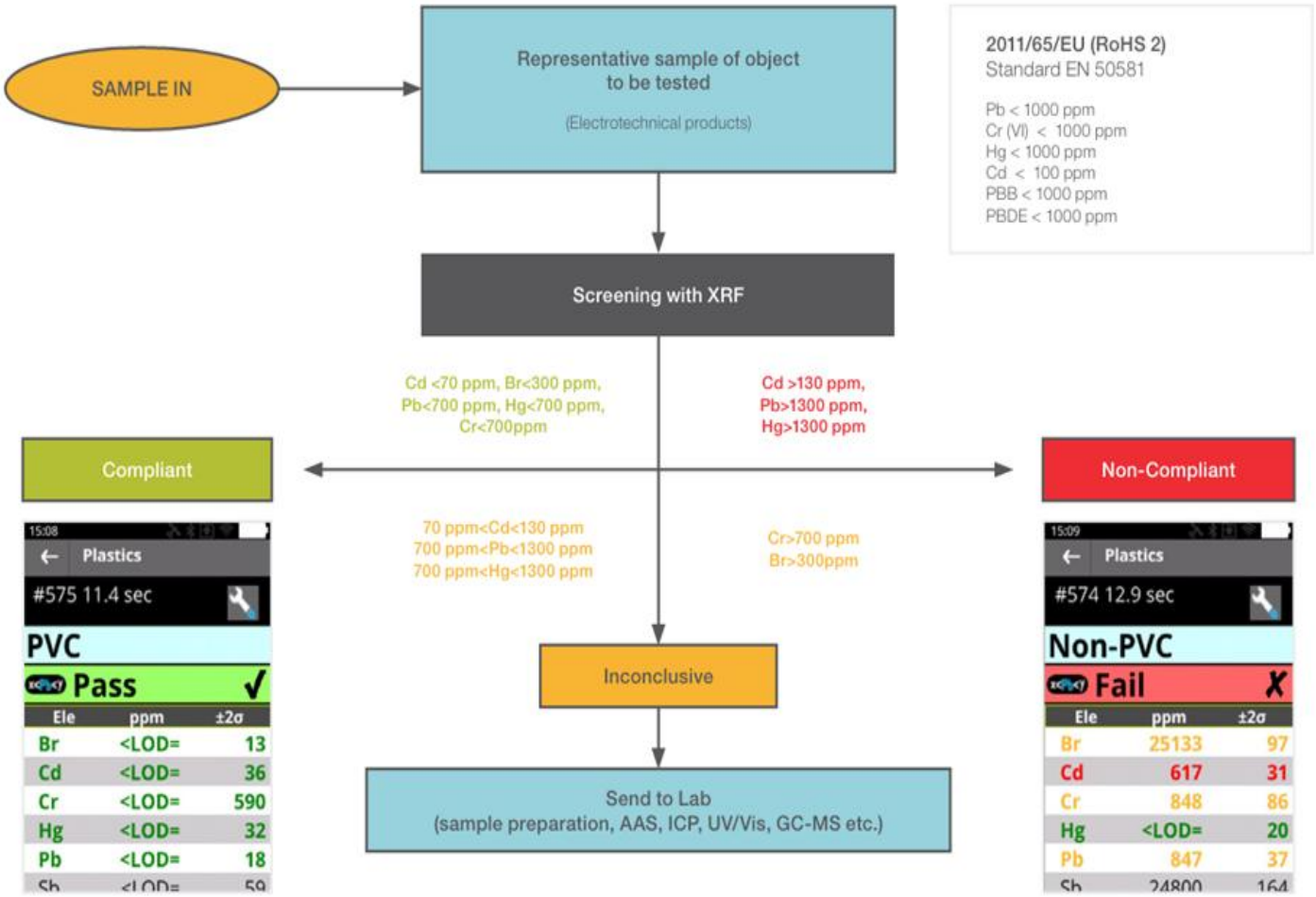

Figure 12. Screening logic with XRF analysis

Note. From Thermo Fisher Scientific. (n.d.). RoHS compliance: Halogen screening by handheld XRF analysis (Application Note AN1181). Retrieved from https://documents.thermofisher.com/TFS-Assets/CAD/Application-Notes/rohs-compliance-halogen-screening-handheld-xrf-analysis-an1181-en.pdf

Limitations

While highly useful, XRF analysers have important limitations:

- They analyse the surface layer, with penetration depths varying by the model and the material (typically ~1–50 µm). The surface composition may not reflect the bulk, especially if the material is heterogeneous, coated, contaminated, or weathered.

- They detect total element concentrations but cannot distinguish chemical states or compounds (e.g., Cr^{6+} vs. total Cr, or specific brominated flame retardants).
- Many handheld systems cannot reliably detect elements below atomic number 11.
- They provide preliminary screening results, but confirmatory laboratory analyses are required for regulatory compliance.

Possible relevant applications include:

- Detection of mercury in electronics, mining waste, and products.
- Detection of heavy metals like arsenic and lead in pesticides, some of which are HHPs. For example, detection of lead and arsenic in a pesticide shipment could help spot lead arsenate, an HHP.
- Detection of bromine in brominated flame retardants (a class of POPs, see paragraph 3.2).
- Detection of fluorine in PFAS, (a class of POPs, see paragraph 3.2), though only some handheld XRF analysers can detect this element.

An interpretation card (decision key + action-oriented matrix) is attached in Annex B to help interpret the XRF results.

Is it safe to use?

The instrument generates X-rays if its trigger is pulled but if it is used properly X-ray radiation from the instrument poses no potential for harm to the user or others. Do not place any part of your body near the examination window and point it directly to the material or item being analyzed.

How to use it?

There are many types of XRF portable analysers with characteristics and operational procedures that vary depending on the brand and model. This is a general quick-reference checklist. For a more precise indication it is necessary to consult the proper user manual.

Quick-reference checklist

Requirements

- A trained and authorized operator is needed.
- Review and apply all safety protocols. The instrument generates X-rays and should be operated by only users trained in radiation safety. To refresh safety measures it is possible to access online training and manuals, for example on the ThermoFisher website at this link. In case of emergency or if your analyser is lost, stolen, or damaged, immediately notify the appropriate regulatory and law enforcement agencies in your state or country.
- Check the original manuals and guidance.

Below are links to manuals of the three most widely used XRF analysers:

- Bruker TRACER 5
- SPECTRO xSORT
- Niton™ XL5 Plus

Preparation

- Select samples to analyse: identify representative items from each shipment or lot.
- Prepare samples: remove surface dirt, labels or coatings if they could affect readings. For thin/flexible samples (textiles, foams), improved contact improves accuracy — fold/stack or compress if allowed and safe.
- Switch on and warm up the XRF analyser, according to manufacturer's specifications.
- Login and insert the password, if requested.
- Application settings: select the correct application mode (matching the sample type), method, settings and display options.
- Check the calibration.

Test

- Press the analyser nose to a sample thick enough to absorb X-rays and hold it there. Ready to Test is displayed. Press the trigger: now X-rays are generated (caution!).
- Stop the analysis by releasing the trigger.
- Read the results.
- Report the results on the inspection sheet!
- Repeat as needed.

Results

- All results must be recorded on the inspection sheet

- Are the readings concerning or is additional information needed ?
- ├─── NO → Consider using other portable pre-screening tools if appropriate and available. Otherwise, the inspection is completed, and the negative result is recorded on the inspection sheet.
- └─── YES → Proceed with sampling.

N.B. The XRF is a pre-screening tool. Limits of detection (LODs) and precision vary by model and results are solely indicative . If the XRF result is close to the LOD or to the regulatory maximum concentration limit, confirm with accredited laboratory analysis.

5.4 Sampling and chain of custody

Sampling is conducted when the initial inspection indicates the possible presence of hazardous substances, undeclared materials, or non-compliance, and where laboratory analysis is required to confirm the chemical composition or regulatory status of the shipment. The sampling process consists of collecting a representative portion of a shipment or batch of goods and submitting it to an accredited laboratory for analysis.

The remainder of the shipment must be isolated and stored in a secure, controlled area to prevent tampering, contamination, or environmental release. All relevant authorities — including customs headquarters, the competent environmental authority, the Designated National Authority (where applicable), and supervisory officers — must be notified in accordance with national procedures.

Sampling procedures must be carried out by appropriately trained personnel or under the supervision of a qualified officer, using suitable Personal Protective Equipment (PPE). Strict adherence to chain-of-custody procedures is essential to ensure the integrity, traceability, and legal admissibility of collected samples. Each sample must be clearly labelled, sealed, documented, and accompanied by a completed sampling sheet and inspection record.

Where inspection findings suggest possible administrative or criminal violations, all sampling records, photographs, laboratory results, and related documentation may constitute legal evidence and must be preserved in accordance with national evidentiary requirements.

Quick-reference checklist

Prepare materials needed for sampling

- PPE (check chapter 7 on safety measures)
- Clean, sealable containers (plastic or glass, depending on the product).
- Labels (pre-printed or manual).
- Permanent marker.
- Sampling Sheet (template in Annex D).

Collect the sample

- Use clean tools (e.g. scoop, pipette).
- Take a small but representative amount.
- Depending on the substance and type of analysis you may have to add some reagent to make the sample stable over time. Ask the laboratory for this.
- If the sample is liquid follow the steps shown in Figure 13: wear gloves and PPE, take a small but representative sample of the liquid with a pipette- Generally 50 cc are sufficient but ask the laboratory. If necessary, add a stabilizer (consult the laboratory).
- If the sample is solid (e.g. soil or mining waste) follow the steps shown in Figure 14: wear gloves and PPE and collect a sample of the solid material. For mining wastes, sediments, soil and powders, a procedure known as quartering can be used to obtain a representative sample: thoroughly mix the material, divide it into four equal parts, discard two opposite quarters, then remix the remaining two and repeat the process as needed to reduce the sample while maintaining representativeness. Generally 100 grams of solid are sufficient but ask the laboratory.
- Close and seal the container immediately.
- Write the sample ID and date of collection clearly on the label.
- Take photos of the product and sampling process. Make sure the GPS position is embedded into the metadata on the picture.

Fill in the Inspection AND the Sampling Sheet

- Include sample ID, product name, HS code (if available), date, time, location, officer name, remarks.
- Have the log signed by a second officer as witness.
- Attach a copy of the log to the sample.

Secure the sample

- Apply a security seal with a unique number.
- Store in a safe and locked place.
- Keep it cool and upright if needed (e.g. chemicals, batteries).

Transfer to the laboratory or agency

- Use official handover forms.
- Record date/time and name of receiving officer.
- Keep a signed copy of the full chain of custody.

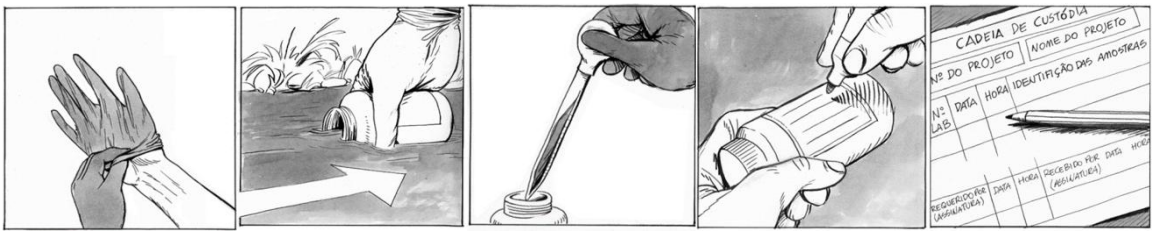

Figure 13. Steps for sampling liquids.

Figure 14. Steps for sampling solids (in this case, soil or mining waste).

6. Storage and management of the shipment under inspection

An inspection must be carried out in a safe, well-ventilated, and controlled area. If the inspection requires sampling, the process will take longer because authorities must wait for laboratory analyses and results.
During this period, the shipment must be stored in an appropriate facility. This means a location that is secure, protected from weather conditions, inaccessible to unauthorized persons, and designed to prevent any risk to human health or the environment. The storage area should also ensure that evidence cannot be tampered with and respects all environmental safety standards. Authorities should refrain from releasing shipments to the premises of importers pending the outcome of inspections and analyses.

Hazardous materials must be stored in properly sealed and clearly labelled containers at all times, including during transport and storage. Appropriate containment solutions should be used to ensure safe handling at every stage. These include, for example:

- IBC totes (Intermediate Bulk Containers) for bulk liquids and semi-liquids;
- UN-certified drums (steel or high-density polyethylene) for chemicals and mercury;
- Jerricans for smaller quantities of liquid hazardous waste;
- Salvage drums for damaged or leaking containers requiring secondary containment.

Evaporation and spillage of chemicals and mercury into the environment have to be minimised or avoided; this includes, for example, properly placing the waste in the truck during transport in order to avoid shifting or sliding or to use plastic bubble wrap or plastic packing foam to prevent breakage of products inside the containers.

Unloading, inspection, and storage will depend on how the container was transported—by ship, truck, or train. Port and rail terminals are expected to provide adequate storage facilities at loading and unloading points, while truck-transported containers may need to be moved, ideally under official escort, to a suitable

inspection location. Insurance bonds or guarantees may also be required when shipments are detained.

The responsible party—either the importer or the exporter—must ensure environmentally sound disposal or recycling. When the exporter is responsible, waste should be repatriated to the country of export; until disposal or take-back occurs, the materials must remain secured.

In all cases, the shipment can only be released with the explicit approval of the authority that ordered the detention and from other affiliated authorities, once the investigation and any related safety measures have been completed.
A special reference is made here for mercury wastes, as they are particularly hazardous and require specific handling, storage, and disposal conditions. For more information on the environmentally sound storage and disposal of mercury wastes, we recommend this UNEP- ISWA booklet.

7. Safety Measures

The health and safety of customs and border control teams is a priority. The first precaution is wearing Personal Protective Equipment (PPE).

Minimum PPE – Routine Inspection:

- nitrile gloves (chemical-resistant);
- long-sleeved protective clothing or coveralls;
- safety shoes;
- high-visibility vest;
- safety goggles.

Advanced PPE - Exposure Risk (damaged packaging or suspected leakage or spills):

- all the minimum PPE listed above;
- chemical-resistant gowns or coveralls to prevent contamination of personal clothing;
- respiratory protection as full-face or half-mask air-purifying respirator, if needed, with the appropriate cartridge (mercury vapor cartridge for potential mercury exposure; A/P3 cartridge for organic vapours and particulates);
- consider the use of alternative chemical-resistant gloves e.g., neoprene, latex/rubber, or butyl rubber depending on the substance handled. For example, nitrile gloves provide protection when working with chlorinated solvents, oils, greases, acids, caustics, and alcohols. However, they are generally not recommended for strong oxidizing agents, aromatic solvents, ketones, or acetates. For detailed glove–substance compatibility table refer to page 28 of the OSHA-*Personal Protective Equipment* guide cited below; and
- ensure that a first emergency response kit is available, including access to an emergency eyewash station in case of splashes.

For further information, please consult the applicable national regulations or refer to the guidance provided by the U.S. Department of Labor, Occupational Safety and Health Administration or guidance by the International Labour Organization (ILO) on PPE.

Common precaution measures apply to all situations, such as:

- Do not assume an exact content based solely on labels.

- Do not open and/or enter drums, trailers, trucks, containers or other confined spaces without appropriate prior assessment → use documents and visual evaluation of the scene.
- Before opening, use rapid kits for gas detection or portable vapor analysers to test air around door seals. If readings are high or uncertain, call trained hazardous-materials personnel.
- When you are ready to open, secure and isolate the area for the inspection and open drums, trailers, trucks, containers, packages only in a well-ventilated place or open air.
- Open the container slowly and allow for air exchange. Keep your head away from the opening. Do not enter immediately. Let the container ventilate for several minutes.
- If the result of the first gas detection is positive, take more air measurements at different points and at different heights, as vapours may concentrate in certain areas.
- Do not touch hazardous materials or specimens with bare hands → wear gloves!
- Report to and engage with appropriate health, safety and regulatory authorities.
- The inspection area must be secure and ventilated!

Stop immediately the inspection and evacuate the area if:

- You detect high concentration of dangerous gases such as mercury vapor, volatile organic compounds, hydrogen sulphide, benzene, toluene, ethylbenzene, and xylene, etc..
- You feel dizziness, headache, or irritation.
- You find a major spill of some chemical or a broken mercury-containing device. Call dedicated personnel or a specialised team.
- Any unknown chemical odour becomes strong or irritating.

For more information about emergency response in case of mercury spill we recommend the National Elemental Mercury Response Guidebook - EPA.

After the inspection:
- remove PPE safely (avoid cross-contamination);
- dispose of single-use PPE according to hazardous waste procedures;
- decontaminate reusable equipment if required;
- wash hands thoroughly.

8. Data Recording, Risk Intelligence and Continuous Improvement

In conclusion, the effectiveness of these Guidelines depends not only on the quality of individual inspections, but also on systematic data recording, analysis, and institutional learning.

All pre-screening decisions, inspection findings, sampling results, laboratory analyses, and enforcement actions should be consistently recorded in national customs or inter-agency databases, in accordance with applicable data protection and retention policies. Accurate documentation ensures traceability of cases, supports accountability, and strengthens institutional memory.

Inspection data should be periodically reviewed to identify recurring risk patterns, including high-risk traders, frequently misused HS codes, emerging trade routes, and chemical categories associated with non-compliance. These insights should feed back into national risk management systems to refine targeting criteria, update risk indicators, and improve profiling methodologies, including automated systems where available.

Regular analysis of aggregated data supports evidence-based enforcement planning, enhances inter-agency coordination, and contributes to national reporting and compliance obligations under the Basel, Rotterdam, Stockholm, and Minamata Conventions.

Ultimately, by linking operational controls with risk intelligence and continuous improvement, customs and border control authorities can strengthen preventive action, improve detection capacity, and promote more consistent and harmonised enforcement across the Caribbean region.

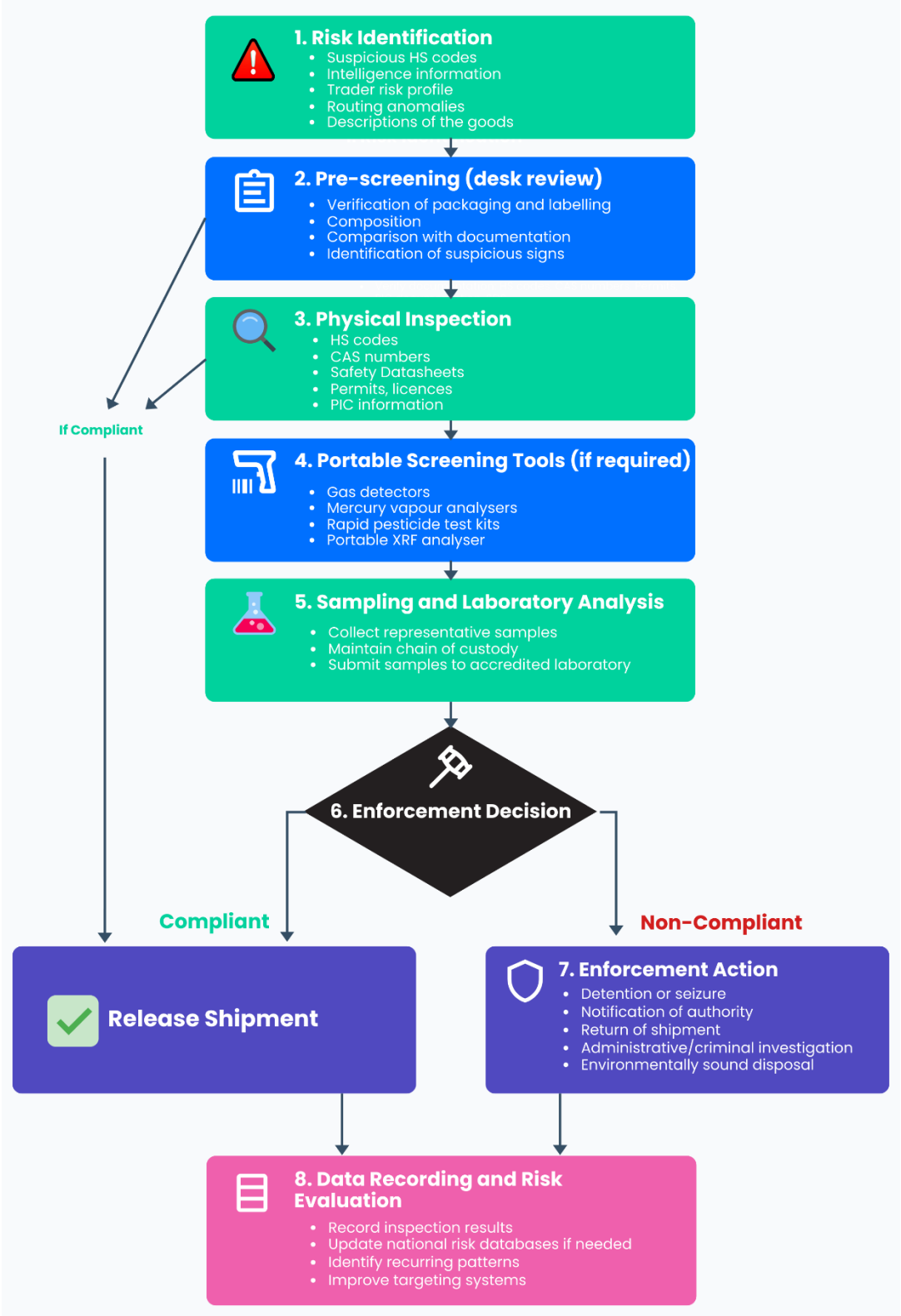

Figure 15. Possible pathways for monitoring steps (credit: Nancy Isarin).

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Annex A

Checklist for Pre-screening

A.1 Stockholm Convention: POP-Specific Customs Inspection Checklist

Pre-Shipment / Documentation Review

Objective: Identify non-compliance before cargo arrival.

Item	Yes / No	Risk Note
Is the shipment declared accurately with the correct chemical name and CAS number?		
Is the HS code consistent with the listed POP?		
Are import/export permits or approvals attached, if required by national law?		
Does the Bill of Lading, commercial invoice, and packing list match the chemical or product description?		
Is there a Safety Data Sheet (SDS) with concentration of POPs or POPs-containing mixtures?		
Has the importing authority consented to receive the POP?		
Is the quantity consistent with permitted use or import limits?		
Are traders (exporter/importer) registered and verified?		
Is the shipment routed directly or via suspicious transit hubs?		

Red flags: Missing documentation, HS code mismatch, unknown traders, unusual routing, undocumented concentrations.

Chemical & Product Identification

Objective: Verify chemical identity and POP-specific characteristics.

Item	Yes / No	Risk Note
Is the chemical/product listed in Stockholm Convention annexes (A, B, or C)?		
CAS number and trade name match the listing?		
Mixtures/formulations declared with correct active POP concentration?		
Product labelling includes hazard symbols, POP content, and GHS compliance?		
Is there evidence of mislabelling or disguised POPs (e.g., as industrial chemicals, plastics, or "recycled" material)?		

Red flags: Mislabelling, false trade names, unreported POP concentration.

Trader / Actor Risk Indicators

Item	Yes / No	Risk Note
Is the exporter/importer unknown or new?		
Previous involvement in illegal POPs trade?		
Use of brokers or third-party intermediaries to obscure origin?		
Unusually low declared price for the chemical/product?		

Red flags: Unknown traders, repeated violations, undervalued shipments.

Routing & Transit Assessment

Item	Yes / No	Risk Note
Shipment transits through high-risk or non-Party countries?		
Last-minute changes in consignee or destination?		
Use of Free Trade Zones or transshipment hubs to disguise origin?		

Red flags: Indirect or opaque routing, multiple transshipment points.

End-Use Verification

Item	Yes / No	Risk Note
Does the importing company have permits/licenses for handling POPs?		
Is the declared quantity consistent with intended use?		
End-use is legitimate (industrial, agricultural, or laboratory)?		

Red flags: End-use inconsistent with imported quantity, importer lacks necessary permits.

Inspection Procedures

1. Desk review: Verify all documentation and PIC/permit compliance.

2. Physical inspection: Focus on high-risk shipments (mislabeling, damaged containers).
3. Sampling and lab analysis: For unverified POP concentrations, mixtures, or products.
4. Cross-check HS codes, CAS numbers, and annex listing.
5. Record inspection results for national compliance tracking.

Risk Scoring / Prioritization

Assign risk scores:

Risk Factor	Weight
Missing import/export permits	High
Misdeclared HS code	High
Damaged or mislabelled containers	High
Unknown exporter/importer	Medium
Suspicious routing / FTZ involvement	Medium
Undisclosed POP concentration	High
Low declared price	Low

Inspection priority:

- **High-risk shipments** are subject to a full physical inspection and sampling to verify compliance with regulatory requirements and to detect potential violations, such as misdeclared goods, hazardous substances, or prohibited materials.
- **Medium-risk shipments** undergo a detailed desk review of the accompanying documentation, with physical inspection conducted selectively when inconsistencies, risk indicators, or intelligence warrant further examination.
- **Low-risk shipments** are generally released after a documentation check confirms that all required permits, declarations, and supporting documents are complete and compliant. This approach enables authorities to focus enforcement efforts on the highest-risk consignments while facilitating legitimate trade and ensuring the efficient use of inspection resources.

Post-Inspection Actions

- Non-compliance: Halt shipment, notify national Stockholm Convention Focal Point, possible seizure or return.
- Documentation issues only: Request corrections or updated permit/PIC.
- Routine compliance: Record in database for trend analysis and risk profiling

A.2 Basel Convention: Risk-Based Inspection Checklist for Waste Control

Pre-Shipment / Documentation Review

Objective: Identify potential non-compliance before physical inspection.

Item	Yes / No	Risk Note
Is there a valid Prior Informed Consent (PIC) from an importing country?		
Is a Basel movement document completed accurately?		
Do the Bill of Lading, commercial invoice, and packing list match the movement document?		
Is the HS code consistent with the declared waste type?		
Are the exporter/importer details verified and registered?		
Are there any discrepancies in declared quantity, description, or weight?		
Are environmentally sound management (ESM) facilities listed for disposal/recycling?		
Is the shipment coming from or destined for a non-party		
Is the shipment routed directly or through suspicious transit hubs?		
Are there multiple small shipments that may indicate concealment?		

Red flags: Missing PIC, inconsistent HS codes, unregistered exporter/importer, unusual routing.

Trader / Actor Risk Indicators

Objective: Identify high-risk exporters, importers, and intermediaries.

Item	Yes / No	Risk Note
Is the exporter or importer new or unknown?		
Have they previously been involved in illegal waste shipments?		
Are there unusual financial arrangements or undervalued shipments?		
Are brokers or third-party intermediaries used excessively?		

Red flags: Unknown traders, prior violations, suspicious pricing.

Route and Transit Assessment

Objective: Identify suspicious routing that may conceal illegal waste movement.

Item	Yes / No	Risk Note
Does the shipment transit through countries with weak waste enforcement?		
Are there last-minute changes in consignee or destination?		
Are free trade zones or re-export hubs involved?		

Red flags: Indirect routing, frequent re-exports, free trade zone detours.

Waste Type / HS-Code Specific Indicators

Objective: Focus on high-risk waste streams.

Waste Type	HS Code / Common Risk	Notes
Used Electrical/ Electronic Equipment (e-waste)	8501–8549	Often contains hazardous metals and POPs; check for misdeclaration as "second-hand electronics"
Batteries (lead-acid, Ni-Cd)	8507	Check for ULAB, lead contamination
Used Tyres	4012	Difficult to recycle, frequently exported illegally
Plastics (mixed, contaminated)	3915	High contamination increases disposal risk
Paper / Cardboard	4707	Mixed with hazardous inks or chemicals
End-of-Life Vehicles	8703	May contain asbestos, mercury switches, or other hazardous components
Clinical / Medical Waste	3001–3006	Requires proper packaging and labelling
Oil / Lubricant Waste	2710, 2712	Check for PCB contamination

Red flags: Misdeclared HS codes, high contamination, banned or controlled substances.

Inspection Procedures

Objective: Ensure proper verification and enforcement.

1. Visual inspection of containers, labels, and packaging.
2. Sampling for laboratory analysis if:
    - Waste is mislabelled
    - Contains hazardous substances not declared
    - Origin or type is suspicious
3. Verify documentation on-site against physical cargo.
4. Check transporter licenses and vehicle compliance for hazardous materials.
5. Record findings using a standardized inspection form.
6. Decide enforcement action: release, hold, or seize shipment depending on compliance.

Risk Scoring / Prioritization

Assign risk scores based on:

Risk Factor	Weight
Missing PIC	High
Misdeclared HS / waste type	High
Leaking or damaged containers	High
Unknown exporter/importer	Medium
Indirect routing / FTZ involvement	Medium
High contamination / mixed waste	Medium
Suspicious pricing	Low

- The risk score as mentioned above determines the inspection priority:
  - High risk → Physical inspection & sampling
  - Medium risk → Partial inspection & documentation verification
  - Low risk → Desk check or release

Post-Inspection Actions

- Non-compliance detected: Notify Basel Competent Authority, halt shipment, initiate enforcement procedures.
- Documentation issues only: Request correction, PIC update, or verification before release
- Routine inspection: Record in national database to monitor trends and identify repeat offenders.

CHECK LIST

A.3 Minamata Convention: Checklist for Mercury and Mercury-Added Products

Pre-Shipment / Documentation Review

Objective: Detect non-compliance before cargo arrival.

Item	Yes / No	Risk Note
Is there a valid import/export permit for elemental mercury or mercury-added products?		
Is a trade declaration or prior informed consent attached where required?		
Do the Bill of Lading, commercial invoice, and packing list match the declared product type and quantity?		
Is the HS code consistent with the chemical/product type (mercury, mercury compounds, or mercury-added products)?		
Are exporter/importer details verified and registered under chemical control systems?		
Are quantities consistent with intended end-use or legal limits?		
Are there any discrepancies across documents?		
Is the shipment routed directly to the destination, avoiding suspicious transshipment hubs?		

Red flags: Missing permits, HS code mismatch, inconsistent documents, unusual routing.

Trader / Actor Risk Indicators

Item	Yes / No	Risk Note
Is the exporter or importer unknown, new, or previously non-compliant?		
Are third-party brokers used excessively?		
Are shipment values unusually low, suggesting illegal trade?		
Is there a history of violations for mercury or hazardous substances?		

Red flags: Unknown traders, repeated violations, undervalued shipments.

HS Code & Product Identification

Objective: Verify correct classification.

Item	Yes / No	Risk Note
HS code matches the product type:		
- Elemental mercury	2805.40	
- Mercury compounds	2852	
- Mercury-added thermometers	9025.11	
- Mercury-added batteries	8506 / 8507	
- Mercury switches and relays	8536	
- Fluorescent lamps	8539	
CAS numbers match the declared chemical/product?		
Mixtures or compounds declared with correct mercury concentration?		
Product labelling includes hazard symbols, mercury content, and GHS compliance?		

Red flags: Mislabelling, incorrect HS code, missing CAS numbers, concealed mercury content.

Routing & Transit Assessment

Item	Yes / No	Risk Note
Shipment transits through countries with weak enforcement?		
Last-minute changes in consignee or destination?		
Excessive use of Free Trade Zones (FTZs) or re-export hubs?		

Red flags: Indirect routing, multiple transshipments, opaque logistics.

End-Use and Facility Verification

Item	Yes / No	Risk Note
Importing company has permits/licenses for handling mercury or mercury-added products?		
Declared quantity matches legitimate end-use?		
End-use is industrial, laboratory, or healthcare relevant?		
Storage and handling facilities comply with safety and environmental regulations?		

Red flags: End-use inconsistent with shipment, importer lacks necessary permits.

Inspection Procedures

1. Desk review: Check all documentation and permits before arrival.
2. Physical inspection: Focus on high-risk shipments, damaged or mislabeled containers.

3. Sampling and analysis: For uncertain mercury concentration or concealed mercury.
4. Compare documentation vs. physical cargo for consistency.
5. Record findings in a national POPs/chemical compliance database.

Risk Scoring / Prioritization

Risk Factor	Weight
Missing import/export permits	High
HS code or CAS mismatch	High
Damaged or mislabelled containers	High
Unknown exporter/importer	Medium
Suspicious routing / FTZ involvement	Medium
Low declared price	Low
Mercury content exceeding limits	High

Inspection priority:

- High risk: Physical inspection + sampling
- Medium risk: Desk review + selective inspection
- Low risk: Release after documentation verification

Post-Inspection Actions

- Non-compliance detected: Halt shipment, notify Minamata Focal Point, possible seizure or return.
- Documentation corrections: Request updated permits or declarations.
- Routine compliance: Record in national database for trend analysis and future risk assessment.

CHECKLIST

A.4 Rotterdam Convention Chemicals: Customs Inspection Checklist

Pre-Shipment / Documentation Review

Objective: Identify non-compliance before physical inspection.

Item	Yes / No	Risk Note
Is there a valid Prior Informed Consent (PIC) from the importing country?		
Is a PIC notification form attached to the shipment?		
Does the Bill of Lading, commercial invoice, packing list match the PIC form?		
Is the chemical correctly named (technical name and CAS number)?		
Is the HS code consistent with the chemical identity?		
Are the exporter/importer details verified and registered under national chemical control systems?		
Is the quantity consistent with the import permit or consent?		
Is the shipment routed directly to the importing country, or through suspicious transshipment hubs?		

Red flags: Missing PIC, HS code mismatch, undeclared chemical names, unknown traders, unusual routing.

Trader / Actor Risk Indicators

Item	Yes / No	Risk Note
Is the exporter or importer unknown or newly registered?		
Do they have a history of non-compliance or illegal chemical shipments?		
Are there unusual payment patterns or third-country intermediaries?		
Is the chemical being exported in unusually low-cost shipments?		

Red flags: Unregistered traders, repeated PIC violations, undervalued shipments.

HS Code & Chemical Identification

Objective: Ensure correct classification for enforcement and tracking.

Item	Yes / No	Risk Note
HS code matches chemical type and PIC listing?		
CAS number consistent with chemical name?		
Mixtures correctly declared (active ingredient %)?		
Labelling follows GHS / national labelling standards?		

Red flags: General or incorrect HS codes, mislabelling, missing CAS number

Routing & Transit Assessment

Item	Yes / No	Risk Note
Shipment passes through high-risk or non-Parties countries?		
Are there last-minute changes of consignee or destination?		
Are free trade zones or transit hubs used excessively?		

Red flags: Indirect routing, FTZ transits, sudden changes in consignee.

End-Use and Facility Verification

Item	Yes / No	Risk Note
Does the importing company have permits/licenses for the chemical's intended use?		
Is the declared quantity consistent with end-use?		
Is the end-use realistic (e.g., industrial or agricultural use) for the imported quantity?		

Red flags: End-use not feasible, importer lacks required permits.

Inspection Procedures

1. Desk review of documents and PIC forms before cargo arrival.
2. Physical inspection of high-risk shipments (broken seals, damaged packaging, suspicious labelling).
3. Sample analysis when chemical composition or concentration is uncertain.
4. Compare documentation vs. cargo for consistency.
5. Record inspection findings in a database for risk profiling.

Risk Scoring / Prioritization

- Assign risk weights to indicators:

Risk Factor	Weight
Missing PIC	High
HS code mismatch	High
Damaged or mislabelled containers	High
Unknown exporter/importer	Medium
Unusual routing / FTZ involvement	Medium
Low declared price	Low

- High-risk shipments → Physical inspection + sampling
- Medium-risk shipments → Desk review + selective inspection
- Low-risk shipments → Release after documentation check

Post-Inspection Actions

- Non-compliant shipment: Halt and notify PIC Focal Point; possible seizure or return.
- Documentation errors: Request corrections or updated PIC.
- Routine shipment: Record and monitor for patterns in the national risk database.

This checklist can be integrated into Customs risk management systems and adapted to national PIC enforcement regulations.

Annex B

Quick reference manual for inspection

1. Start the inspection

- Take an Inspection Sheet (Annex C).
- Fill all required fields.
- Move the shipment to an appropriate inspection area (in a well-ventilated place or open air) to ensure safety of personnel and avoid contamination or release of hazardous substances.
- Wear appropriate personal protective equipment (PPE). For routine inspection: at least nitrile gloves (they are very cheap and can be found in pharmacies!); long-sleeved protective clothing or coveralls; safety shoes; high-visibility vest; safety goggles. Check chapter 7 on safety measures.

Prior safety assessment

- Evaluate the presence of dangerous volatile substances → use the commercial solutions for rapid air screening (gas detectors listed in paragraph 5.3.1) to test air around door seals (if it's a truck or a container).
- Record the results on the Inspection Sheet.
- Are the readings concerning?
- ├── YES → Stop process → Notify Competent Authority or Focal Point designated under the Basel Convention (country contacts can be consulted at this link) → Stock in a dedicated area if available or move to an importer's facility (see more details at Chapter 6.)
- └── NO → Continue → Open containers.
- Open the container slowly and allow for air exchange. Keep your head away from the opening. Do not enter immediately. Let the container ventilate for several minutes.

- Repeat this evaluation of volatile hazardous substances with a gas detector inside the container.

Visual verification of the shipment.

- Verify packaging: does it match the declared type of waste, HS, or CAS numbers?
- Verify labelling: ensure that the containers/packages/boxes/barrels are appropriately labelled and that labels correspond to the documents presented.
- Verify that hazard symbols (e.g., GHS symbols) match the declared substances. →The GHS Classification Summary (2025) is available at this link.
- Verify number and volume of containers and packages: confirm that the number and volume correspond to what declared in the movement documents. Consignments may contain more items than declared, resulting in excess quantities entering the domestic market.
- Verify integrity: unsealed or unusually packaged must be treated as suspicious.

→ Case A. Customs and the Competent Authority are satisfied with the validity and legitimacy of the shipment. • The shipment may be released for onward movement and disposal.	→ Case B. Discrepancies between documents, or between the documents and the actual shipment may be evidence of illegal trafficking. • Stop the movement of the waste and contact the national Competent Authority as soon as possible for further investigations. • If the Competent Authority grants permission, proceed to the next steps → 5.2 Physical Chemical Inspection.

2. Open packages

- Always wear appropriate PPE (check chapter 7 on safety measures).
- Follow national safety protocols.
- Visual evaluation of content.
- Compare appearance with declared content.
- Could it be a suspicious shipment? Pay attention to all the red flags listed below and check all that apply.

BOX - Key Suspicious Signs:

- Unexpected colour, texture, density, smell.
- Presence of droplets, crystals, or sediments.
- Layered liquids or phase separation.
- Damaged, corroded, or swollen packaging.
- Mixed, repacked, or unlabelled internal packaging.
- Contents severely mismatching the SDS or declared product.
- Any packaging showing signs of concealment.

BOX- Do you suspect that it may be a product or waste containing mercury? Examples of suspicious content include:

- Products or wastes that may contain mercury (chapter 3.1).
- Electronics such as batteries, switches, thermometers, barometers, fluorescent lamps, etc.
- Electronics containing unlabelled small vials with silvery liquid.
- Fluorescent lamps with broken tubes.
- Broken equipment (e.g., lamps, relays, etc.) leaking metallic spheres or powder.
- Shipments of "cosmetics" with jars showing phase separation or metallic sediment.
- Sediment or powder.
- Cosmetics or skin-lightening creams.
- Batteries or electronic parts repackaged or without proper labelling.
- Small metallic droplets visible inside containers, on surfaces, or at the bottom of boxes.

BOX - Do you suspect that the shipment may contain POPs or HHPs? This includes pesticides, industrial chemicals, and unintentionally produced byproducts.

- Check the national list of authorized pesticides. (This link can be useful).
- Check if any ingredient of the formulation is cited in Chapter 3.2.
- Check if any ingredient of the formulation is cited in Chapter 3.3.
- Check any of this possible suspicious content:
- Substances concealed within agricultural shipments or misdeclared as generic "agrochemicals".
- Containers of mixed sizes or brands repacked together.
- Labels in different languages, altered or partially scratched off.
- Bottles without safety seals or with improvised caps.
- Boxes of "plant stimulants" containing unlabelled plastic bottles with liquids.
- Agricultural products mixed with unmarked small containers of concentrated pesticide.
- Old stockpiles of banned pesticides (e.g., parathion, monocrotophos, etc.) in deteriorated packaging.
- Mixtures of liquids labelled vaguely as "industrial chemicals," "solvents," or "oils.

Proceed

- Report in the Inspection Sheet all the red flags encountered.
- Proceed with portable gas detectors and XRF Analyser.

3. Inspect with handheld XRF analyser.

- A trained and authorized operator is needed.
- Review and apply all safety protocols. The instrument generates X-rays and should be operated by only users trained in radiation safety. To refresh safety measures it is possible to access online training and manuals, for example on the Termofisher website at this link. In case of emergency or if your analyser is lost, stolen, or damaged, immediately notify the appropriate regulatory and law enforcement agencies in your state or country.
- Check the original manuals and guidance.

Below are links to manuals of the three most widely used XRF analysers:

- Bruker TRACER 5
- SPECTRO xSORT
- Niton™ XL5 Plus

Preparation

- Select samples to analyse: identify representative items from each shipment or lot.
- Prepare samples: remove surface dirt, labels or coatings if they could affect readings. For thin/flexible samples (textiles, foams), improved contact improves accuracy — fold/stack or compress if allowed and safe.
- Switch on and warm up the XRF analyser, according to manufacturer's specifications.
- Login and insert the password, if requested.
- Application settings: select the correct application mode (matching the sample type), method, settings and display options.
- Check the calibration.

Test

- Press the analyser nose to a sample thick enough to absorb X-rays and hold it there. Ready to Test is displayed. Press the trigger: now X-rays are generated (caution!).
- Stop the analysis by releasing the trigger.
- Read the results.
- Report the results on the inspection sheet!
- Repeat as needed.

Results

- All results must be recorded on the inspection sheet
- Are the readings concerning or is additional information needed ?
- ├─── NO → Consider using other portable pre-screening tools if appropriate.
- Otherwise, the inspection is completed, and the negative result is recorded on the inspection sheet.
- └─── YES → Proceed with sampling.

N.B. The XRF is a pre-screening tool. Limits of detection (LODs) and precision vary by model and results are indicative only. If the XRF result is close to the LOD or to

the regulatory maximum concentration limit, confirm with accredited laboratory analysis.

Interpretation chart for XRF results
(Legend: red = hold; yellow = refer)

XRF finding (what you see)	Screening interpretation (what it may indicate)	Main normative references relevant in the Caribbean context	Suggested port decision
Hg detected in "skin-lightening" soaps/creams, or similar cosmetics	Strong indicator of mercury-added cosmetics or contamination. Results near low ppm should be treated as *inconclusive* until confirmed.	Minamata Convention Annex A: cosmetics with mercury content above 1 ppm are subject to phase-out; trace contamination is not intended to be covered. Subsequent Conference of the Parties decisions clarified phase-out timelines(treaties.un.org).	Hold if Hg above background/limits of quantification and product type matches. Collect sample + chain of custody. Confirm Hg with lab analysis before sanctions/disposal; request product composition.
Hg detected in pesticides / biocides / agricultural chemicals	Possible mercury compound pesticide/biocide. Note: XRF cannot identify which mercury compound.	Minamata Annex A lists pesticides, biocides and topical antiseptics for phase-out (treaties.un.org). Rotterdam Annex III includes mercury compounds subject to PIC controls (Pic).	Hold. Verify if the chemical is Annex III / request PIC-related documentation; verify national registration/ban list. Confirm with lab analysis.
Hg detected in batteries / switches / relays / lamps / measuring devices / consumer electronics / used EEE	Likely mercury component (lamp, relay, switch, etc.). Not automatically illegal: depends on product type, mercury content, exemptions.	Minamata Annex A includes multiple mercury-added product categories with phase-out dates and specific exemptions/limits (treaties.un.org).	Refer: detain if goods appear within a phase-out category without exemption (or if national law prohibits). Escalate to competent authority; confirm by product documentation + targeted sampling and lab analysis.

Br detected in plastics/foams/ textiles, especially in EEE, furniture foam, insulation	Br can indicate brominated flame retardants; some are listed POPs (PBDE groups, HBCDD, c-decaBDE). XRF cannot confirm which compounds.	Stockholm lists several brominated flame retardants as POPs under Annex A (pops.int). Rotterdam Annex III includes severals subject to PIC (Pic).	Refer if shipment is waste/plastic scrap or used goods at risk, detain for confirmatory lab analysis. Consider Basel if applicable.
Cl detected in polymers (PVC cables, flooring, sealants), rubbers, metalworking fluids	Cl is non-specific. In some matrices it can be consistent with chlorinated paraffins or other chlorinated organics but cannot be proven by XRF alone.	Stockholm Annex A lists SCCPs and PCNs as POPs (pops.int). Rotterdam Annex III lists SCCPs subject to PIC. (Pic)	Refer only when the commodity profile matches (e.g., suspect industrial additives, oils, certain rubbers). Confirm with lab analysis.
Cl detected in transformers/capacitors/old electrical equipment (and residues/oils)	Cl may correlate with chlorinated dielectrics but is not definitive. Primary concern is Polychlorinated biphenyls PCBs in equipment/oils.	Stockholm Annex A lists PCBs(pops.int). Rotterdam Annex III lists PCBs subject to PIC. (Pic)	Hold if equipment type is high-risk (as legacy transformers/capacitors). Use PCB field screening if available and confirm with lab analysis.

Pb + As detected together in pesticide-type products or powders	Pattern consistent with inorganic arsenicals (e.g., lead arsenate) or contaminated products. Many jurisdictions treat these as obsolete/high concern.	Lead arsenate is identified as highly hazardous under WHO Class IB in WHO-based classifications. (pubchem.ncbi.nlm.nih.gov) Not listed in Rotterdam Annex III as of Dec 2025 (Pic).	Hold. Verify national pesticide registration/ban list; confirm composition with lab analysis.
Pb / Cd / Hg / total Cr / total Br in EEE materials (plastics, solders, coatings, cables)	Useful compliance-style screening for hazardous elements in EEE. Note: XRF reads total Cr, not Cr(VI); and reads total Br, it does not identify brominated substances or phthalates.	RoHS sets maximum concentration values for Pb, Hg, Cd, Cr(VI), PBB and PBDE and certain phthalates. RoHS doesn't apply to Caribbean countries, if not adopted nationally. It can only provide maximum concentration values as a technical reference benchmark.	Check the national legislation if a RoHS-like directive applies.

4. Sample

Prepare materials needed for sampling

- PPE (check chapter 7 on safety measures).
- Clean, sealable containers (plastic or glass, depending on the product).
- Labels (pre-printed or manual).
- Permanent marker.
- Sampling Sheet (template in Annex D).

Collect the sample

- Use clean tools (e.g. scoop, pipette).
- Take a small but representative amount.
- Depending on the substance and type of analysis you may have to add some reagent to make the sample stable over time. Ask the laboratory for this.
- If the sample is liquid follow the steps shown in Figure 13: wear gloves and PPE, take a small but representative sample of the liquid with a pipette- Generally 50 cc are sufficient but ask the laboratory. If necessary, add a stabilizer (consult the laboratory).
- If the sample is solid (e.g. soil or mining waste) follow the steps shown in Figure 14: wear gloves and PPE and collect a sample of the solid material. For mining wastes, sediments, soil and powders, a procedure known as quartering can be used to obtain a representative sample: thoroughly mix the material, divide it into four equal parts, discard two opposite quarters, then remix the remaining two and repeat the process as needed to reduce the sample while maintaining representativeness. Generally 100 grams of solid are sufficient but ask the laboratory.
- Close and seal the container immediately.
- Write the sample ID and date of collection clearly on the label.
- Take photos of the product and sampling process. Make sure the GPS position is embedded into the metadata on the picture.

Fill in the Inspection AND the Sampling Sheet

- Include sample ID, product name, HS code (if available), date, time, location, officer name, remarks.
- Have the log signed by a second officer as witness.
- Attach a copy of the log to the sample.

Secure the sample

- Apply a security seal with a unique number.
- Store in a safe and locked place.
- Keep it cool and upright if needed (e.g. chemicals, batteries).

Transfer to the laboratory or agency

- Use official handover forms.
- Record date/time and name of receiving officer.
- Keep a signed copy of the full chain of custody.

Annex C

Inspection Sheet

Fill in this document during inspections

Take a picture of the shipment

GENERAL INFORMATION

INSPECTION ID

Location	Office	Inspector (s)

Date	Hour	Coordinates

Description of the shipment	Reasons for suspicion

DATA COLLECTION

Complete the following section for each device used

Device type (e.g. XRF analyser, gas detector)	Model	Object of the analysis (e.g. surface of a solid object (what type) /powder/liquid/air inside the container…)
Other notes:		

Parameter	Detected value	Unit	Reference limit	Exceedance
				☐ Yes ☐ No
				☐ Yes ☐ No
				☐ Yes ☐ No
				☐ Yes ☐ No
				☐ Yes ☐ No
				☐ Yes ☐ No

DATA COLLECTION

Complete the following section for each device used

Device type (e.g. XRF analyser, gas detector)	Model	Object of the analysis (e.g. surface of a solid object (what type)/powder/liquid/air inside the container…)
Other notes:		

Parameter	Detected value	Unit	Reference limit	Exceedance
				☐ Yes ☐ No
				☐ Yes ☐ No
				☐ Yes ☐ No
				☐ Yes ☐ No
				☐ Yes ☐ No
				☐ Yes ☐ No

SAMPLING

Sampling performed:

- ☐ Yes
- ☐ No

If yes, record the sample ID and complete ANNEX C

SAMPLE ID (to match with the code on the sample container)

Other comments:

Name	
Signature	

Annex D

Sampling Sheet

Fill in this document when sampling and take a picture of the sample

SAMPLE ID (to match with the code on the sample flask)
INSPECTION ID (same as reported in Annex B)

Location	Officer/s

Date	Hour	Coordinates

Sample type	Volume or Weight	Preservative (if any)	Sampling method

Requested analysis	Receiving laboratory	Other comments

Name	
Signature	

Annex E

Checklist for national integration of the guidelines

The following checklist can assist countries in integrating these Guidelines into their national customs procedures and enforcement systems.

1. National Legal Framework

Confirm that national legislation enables customs and border control authorities to implement the procedures described in these Guidelines.

Key elements to verify include:

- ✓ National legislation implementing the Basel, Rotterdam, Stockholm, and Minamata Conventions
- ✓ Import/export restrictions for hazardous chemicals, pesticides, mercury, and wastes
- ✓ National lists of banned or restricted chemicals and waste
- ✓ National procedures for Prior Informed Consent (PIC)
- ✓ Legal authority for customs to:
    - detain shipments
    - conduct inspections
    - take samples
    - seize or return illegal shipments

2. National Chemical and Waste Control Systems

Countries should ensure that national control systems are clearly identified and accessible to customs officers.

This includes:

- ✓ National chemical registration systems
- ✓ National pesticide registers

✓ Lists of controlled hazardous substances

✓ National waste classification systems
✓ Databases or platforms used by environmental authorities

Customs authorities should have (partly) access to these systems to verify compliance during pre-screening and inspection.

3. HS Codes and Tariff Classification

The Harmonized System (HS) codes listed in these Guidelines are indicative and based on international classifications.

National customs administrations should therefore:

✓ confirm national HS tariff codes beyond the 6-digit level
✓ identify HS codes linked to controlled chemicals and wastes
✓ integrate relevant HS codes into national customs risk profiling systems

Where possible, national tariff systems may introduce additional HS subheadings to better track hazardous chemicals and mercury-added products.

4. Institutional Responsibilities

Clear institutional coordination is essential for enforcement.

Countries should identify and formally designate:

✓ Competent authorities responsible for hazardous chemicals and waste management under the Basel Convention
✓ Designated National Authorities (DNAs) under the Rotterdam Convention
✓ Basel Convention focal points
✓ Stockholm Convention national focal points
✓ Minamata Convention national authorities and Focal Points
✓ Environmental inspection agencies
✓ Laboratories authorised to analyse chemical samples

Contact points and communication procedures should be made available to customs officers.

5. Inspection and Enforcement Procedures

National authorities should ensure that operational procedures are clearly defined for cases where suspicious shipments are identified.

These procedures should include inter alia:

- ✓ detention procedures
- ✓ notification protocols for competent authorities
- ✓ sampling and laboratory analysis procedures
- ✓ chain-of-custody requirements for evidence
- ✓ administrative or criminal enforcement pathways
- ✓ procedures for shipment return, seizure, or environmentally sound disposal

6. Integration into Customs Risk Management Systems

To maximize effectiveness, the risk indicators contained in these Guidelines should be integrated into national customs systems.

Possible actions include:

- ✓ incorporating chemical-related risk indicators into automated risk management systems
- ✓ developing targeting profiles for hazardous chemicals and wastes
- ✓ recording inspection outcomes in national databases
- ✓ analysing inspection data to identify recurring trends

This will allow customs administrations to strengthen risk-based enforcement and improve detection capacity over time.

7. Training and Capacity Building

Effective implementation requires trained personnel.

Countries should consider:

- ✓ training customs officers on hazardous chemicals and wastes
- ✓ providing instruction on portable screening tools (e.g. XRF, gas detectors, rapid test kits)(providing the equipment to detect hazardous Chemicals and wastes.)
- ✓ strengthening cooperation between customs, environmental authorities, and laboratories
- ✓ conducting joint inspections or simulation exercises where appropriate