Strengthening the management, storage and transport of mercury: Peru’s World Leading Progress

Side event - Fourth meeting of the Conference of Parties

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Strengthening the management, storage and transport of mercury: Peru’s World Leading Progress

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Legal Frameworks and Policies

**International regulation**
- Mercury as a subject of the Minamata Convention
- Mercury as a hazardous material (by MTC)

**Specific regulation**
- Mercury as evidence of environmental crimes (by FEMA)
- Mercury as a controlled chemical (by SUNAT)
The Mercury Material Flow

Raw materials and fuels containing mercury

Industrial use of raw materials and fuels

- ASGM
- Limestone - chlor alkali process
- crude oil
- natural gas

Domestic production of raw material and fuels

Mercury recovery

- Waste processing

Mercury import

- Mercury shipping

Mercury export

Mercury alloy import

Hg procurement by domestic manufacturers

Product export

Product import

Global market

Final disposal

Mercury shipping

Disposal in landfills

Waste processing /stabilization

Final disposal

Mercury import

Disposal in landfills

Mercury export

Mercury alloy import

Domestic production / trade of mercury-added products

Mercury-added products in households and offices

Mercury shipped

Hg procurement by domestic manufacturers

Mercury-added products retained in households and offices

Final disposal
Metal mercury Flow

0) Production
- MINEM
- SUNAT

1) Import
- MINAM
- SUNAT
- IQBF and CUSTOMS

2) Transport
- SUNAT
- MTC

3) Trade/Use
- SUNAT
- Regulatory Sector

4) Storage and/or Disposal
- Regulatory Sector
- SUNAT
- IQBF and CUSTOMS

Approves consent according to the agreement.
Validates and gives conformity to the consent, authorizes and controls the entry of mercury into the national territory.
It stores, controls and supervises the entry and exit of mercury.

MINEM
SUNAT

IGA
IQBF

SUNAT

IGA
IQBF Registration, Temporary storage plan, registered in the IGAFOM
Since the convention came into force, Peru has mainly imported from Japan and Mexico.

To consider: Import as mercury compound/ import as mercury-added product

Source: Customs office
Transportation – Fiscal Routes

Source: Prepared by AGC, based on the RM N° 350-2013-MTC-02
ASGM Gold Production Chain and Hg Consumption

Exploitation | Benefit | Commercialization
--- | --- | ---
Hard Rock Mining | Crushing and milling | Exports
Alluvial Mining | Amalgamation with Hg | Gold local traders
Ore | Amalgamation with Hg | Benefit Plants
25% | Tailing with Hg content | Smuggling
80% | 20% | 25% | 75%

Average lost over the last 10 years: **35 tonnes**. of gold annually
Cause: Unregistered production (smuggling),
Cost: USD **1,426 million** / USD 100 million of income tax per year not collected

Source: MEM, BCR, SUNAT.
• The behavior of imports from Peru vs. Bolivia is inversely proportional, after the signing of their respective agreements.
• Lack of control of smuggling at borders
• Evidence of the existence of informal routes and mercury black market

Import of Mercury in Peru and Bolivia
Pre – and Post – Minamata Convention

Estimation of mercury requirements in ASGM (Peru)

Signing of the Agreement for Peru
Ratification of the Convention in Peru

Estimate informal Hg
The Smuggling Routes for Mercury

Source: Chatham House (2018)
# Seizure of Illegal Mercury

<table>
<thead>
<tr>
<th>Institution</th>
<th>Legal Framework</th>
<th>Role</th>
<th>Storage of confiscated mercury</th>
</tr>
</thead>
<tbody>
<tr>
<td>SUNAT</td>
<td>Alleged commission of crime &quot;Clandestine trade&quot;</td>
<td>Administrative actions (control and inspection of the point of entry, permanence, transport or transfer and exit of mercury, as well as the distribution, to and from the customs territory and in the national territory)</td>
<td>Yes</td>
</tr>
<tr>
<td>Public Ministry</td>
<td>Criminal investigation of environmental crime &quot;Illicit traffic of chemical supplies and machinery destined for illegal mining&quot;</td>
<td>Interdiction operations</td>
<td>No</td>
</tr>
<tr>
<td>Police</td>
<td></td>
<td>Support the Public Ministry</td>
<td>No</td>
</tr>
<tr>
<td>Navy</td>
<td></td>
<td>Support the Public Ministry</td>
<td>No</td>
</tr>
</tbody>
</table>
Challenges and Future Approaches

Strengthen intelligence and regional coordination actions to control the flow of illegal mercury across the border with Bolivia; and prevent smuggling.

Increase enforcement, strengthen border controls and train customs officials.

Clarify laws and regulations for mercury and gold.

Develop guidance on temporary storage and final disposal of mercury.

Increase incentives for formalization and access to international and responsible markets.

Regional approach: Harmonization of mercury regulations and policies at national and regional levels.
Future projects and projects in progress

- **PlanetGOLD Perú**
- **RUMMO**

**Proyecto GEF**

**Project "Greater transparency and control of mercury in Peru" project financed by the United States Department of State (USDoS).**

**Regional project "Accelerating compliance with the Minamata Convention through a better understanding and control of mercury trade in Latin America" (Bolivia, Colombia, Ecuador, Honduras, Mexico, and Peru) *Proposal before the GEF-8***

**Prevent Project: Mercury confiscation protocol**

**Environment Background**

**USAID**
PERÚ LIMPIO

planetGOLD Perú

https://www.planetgold.org/es/peru
https://girh-tdps.com/
Guidelines for Interim Storage, Handling and Transportation of Mercury

Peter Maxson
Artisanal Gold Council

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Peru’s situation is typical of many countries

- Authorities often confiscate and handle mercury without proper personal protective equipment (PPE).
- Seized mercury is typically stored in a manner lacking adequate measures to protect human health and the security of the mercury.

There are no generally accepted national guidelines on the storage and handling of mercury.

<table>
<thead>
<tr>
<th>Estimated mercury smuggled into Peru (tonnes/year)</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Means of transport</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heavy duty trucks</td>
<td>360</td>
<td>720</td>
</tr>
<tr>
<td>Couriers on foot</td>
<td>50</td>
<td>75</td>
</tr>
<tr>
<td>Private transport (vans, motorcycles, boats)</td>
<td>N.A.</td>
<td>N.A.</td>
</tr>
<tr>
<td>Public transport (buses)</td>
<td>N.A.</td>
<td>N.A.</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>410</td>
<td>795</td>
</tr>
</tbody>
</table>
General Content of the Guidelines

The guidelines developed by AGC, with funding from the U.S. State Department, are divided into three main sections:

1. The temporary storage of mercury and mercury-contaminated wastes, covering storage containers and facilities, emergency planning, personnel training, documentation and reporting.

2. Mercury handling, including worker protection, spill response and mercury transfers from one container to another.

3. The transport of mercury and mercury-contaminated wastes, including certification, planning, management protocol, monitoring and emergency response.
Temporary Mercury Storage Facilities

Key concerns:

- Storage facility specifications (sealed floor, ventilation, etc.)
- Emergency planning and response (e.g., fire and other risks)
- Worker training
- Mercury storage containers (temporary, longer term)
- Storage areas (further handling, ready for transport)
- Labeling requirements
- Periodic monitoring and inspection of storage areas, PPE, etc.
- Documentation and inventory
- Facility closure procedure
Options: Designed specifically for mercury storage

Image 2: Sample floor plan for a temporary mercury storage facility:
- 01. Administration office
- 02. File and storage
- 03. Equipment storage
- 04. Driveway covered
- 05. Roll-up security / garage door
- 06. Spill kit
- 07. Fire Hose Coll
- 08. EPP Cabinet
- 09. Overpack Barrel
- 10. Workbench with Fume Hood
- 11. Floor containment
- Barrier Enclosures to limit spills
- 12. Hg storage chest coolers
- 13. Ground level ventilation fan
- 14. Chimney
- 15. Centrifugal fan with Hg filters for extractor hood
- 16. Backup generator
- 17. Electrical box
- 18. Sanitary Facilities

A second-hand 10-ft container can be made by cutting a 40-ft container into four parts and adding a back wall or doors as necessary.

Mercury storage unit design discussed at the Simposio del Oro 2020, La Paz, Bolivia.
Mercury Handling Guidance

Key requirements:
• Personal protective equipment
• Mercury spill kit
• Mercury spill clean-up
• Mercury spill reporting
• Protocol for mercury seized in the field
• Procedures for mercury transfer from one container to another (physical transfer, record-keeping, etc.)
Basic Mercury Handling Requirements

- Appropriate work area
- Basic PPE
- Ventilation
- Plastic liner or other sealed work surface
- Labelling materials
- Plastic spill tray
- Mercury transfer tools
- Recording mercury receipts & transfers
- Adequate and clean storage containers
- Spill clean-up materials
- Secure storage area
Mercury Storage Containers

Suitable Containers

Longer term, secure storage, for liquid Hg

Temporary storage for smaller Hg containers and wastes

Another very use piece of mercury storage equipment

Inadequate Containers

Temporary tailings storage at Puerto Belen Concession (Madre de Dios), and Rinconada (Puno) - Peru
Mercury Transport

Key requirements

• Regulations, conditions, licensing required for the transport of hazardous materials

• Contingency plan

• Vehicle specifications

• Transport plan

• Emergency management plan

• Vehicle labeling

• Tracking (check-list, record-keeping)

• Protocol for initiating a shipment of mercury
Applicability of guidelines to GRULAC and other regions
Good Practices Adopted for Mercury Handling and Interim Storage in Peru: Cases in Madre de Dios and Puno

Daniel Merino
Artisanal Gold Council

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Mercury Storage

*Temporary only
*No final disposal or long-term storage (>5 years).

Temporary Storage (mining sites with specific areas)

ASGM

PLACER MINING

The mercury recovered in the "Refogeo" that remains as "black sands or tailings" is stored in rice sacks, ponds or piles. Some of it is lost as vapor.

Temporary storage of black sands tailings in a cement room of the Puerto Belen Concession, Puerto Punkiri, Madre de Dios
Seized Mercury

- Receipt of seized Hg and how to handle Hg that is not in the proper containers
- Personal protective equipment (PPE)
- Preparation of the area before Hg storage (spill prevention)
- Materials to use
- Spill kit (recommended)
**Personal Protective Equipment - PPE**

1) 3M gas respirator  
   US$ 21.52

2) Nitrile glove  
   US$ 2.13

3) Security lenses  
   US$ 2.83

4) Safety shoes  
   US$ 26.92

5) Tyvek suit  
   US$ 10.74

**Total cost**  
US$ 64.14

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**Materials required**

- a) Plastic container  
  US$ 6.70

- b) Ziploc bags  
  US$ 4.01

- c) Absorbent cloths  
  US$ 3.74

- d) Teflon tape  
  US$ 0.59

- e) Anti spill tray  
  US$ 7.51

- f) Airtight buckets  
  US$ 4.28

**Total cost**  
US$ 26.83
• Video