

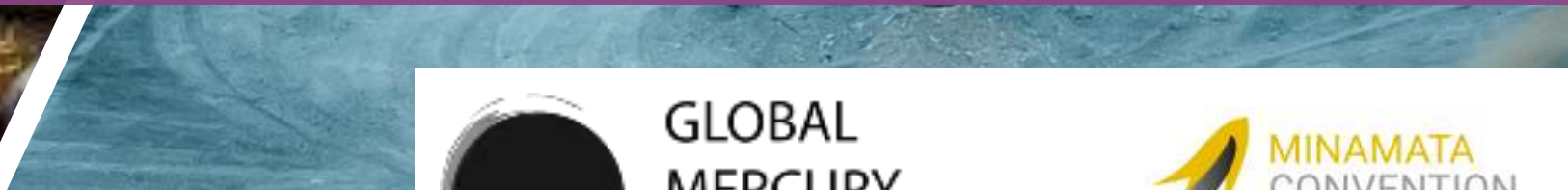


- SIDE EVENT -

“MERCURY WASTES - LATEST DEVELOPMENTS, TOOLS AND PRACTICES FOR THEIR ENVIRONMENTALLY SOUND MANAGEMENT”

organized by the UNEP Global Mercury Partnership and the Minamata Convention Secretariat

**Thursday 9 June 2022, 6:15 pm – 7:45 pm CEST
CICG ROOM 11 & 12 & ONLINE**



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CONVENTION
ON MERCURY**

Views expressed are those of speakers and do not reflect those of UNEP or the Global Mercury Partnership Secretariat

AGENDA

Opening remarks (6:15 pm – 6:25 pm)

- [Koji Ono](#), *Ministry of the Environment, Japan, co-lead of the Mercury Waste Management Area*
- [Eisaku Toda](#), *Secretariat of the Minamata Convention*

1. Available guidance and tools (6:25 pm – 6:50 pm) *Facilitated by Stéphanie Laruelle, Secretariat of the Global Mercury Partnership*

[Technical guidelines on the Environmentally Sound Management of Mercury Wastes under the Basel Convention](#), *by Kaoru Oka, EX Research Institute Ltd.*

[Tools developed in the context of the Global Mercury Partnership Area on Waste Management](#), *by Nicolas Humez, International Solid Waste Association*

- Questions and Answers-

2. Panel Discussion on mercury waste management: perspectives and practices (6:50 pm – 7:40 pm)

Facilitated by Ana Garcia, Ministry for the Ecological Transition and the Demographic Challenge, Spain and Judith Torres, Ministry of Housing, Territorial Planning and Environment, Uruguay, co-leads of the Partnership Area on Supply and Storage

- [Anahit Aleksandryan](#), *Ministry of Environment, Armenia*
- [Carlos M. López Alled](#), *Tragsa-MITERD, Spain*
- [Christian Stiels](#), *Econ Industries*
- [Mohammed Oglah Khashashneh](#), *Ministry of Environment, Jordan*
- [Philippe Zanettin](#), *BATREC*
- [Ram Charitra Sah](#), *Center for Public Health and Environmental Development (CEPHED), Nepal*

- Questions and Answers-

Closing remarks (7:40 pm – 7:45 pm) *by Rodges Ankrah, US-EPA, Co-chair of the Global Mercury Partnership Advisory Group*



OPENING REMARKS

Koji Ono

Ministry of the Environment, Japan, Co-lead of the Waste Management Area



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OPENING REMARKS

Eisaku Toda

Secretariat of the Minamata Convention



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SESSION 1 - Available guidance and tools

Facilitated by Stéphanie Laruelle
Coordinator of the UNEP Global Mercury Partnership



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Technical Guidelines for ESM of Mercury Wastes

Kaoru Oka
EX Research Institute, Ltd., Japan

June 9, 2022



BASEL CONVENTION
TECHNICAL GUIDELINES

Technical guidelines for
the environmentally sound
management of wastes
consisting of elemental
mercury and wastes containing
or contaminated with mercury



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Changes to reflect the developments on mercury wastes under the Minamata Convention

Events relevant to mercury wastes under the Basel and Minamata Conventions

Year	BASEL Convention	MINAMATA Convention
2010	Adopted the TG on mercury wastes	mercury waste is managed in an environmentally sound manner, taking into account the guidelines developed under the Basel Convention
2013	Decided on the programme of work including the update of the TG on mercury wastes	INC agreed on the convention text (Jan.) and the diplomatic conference adopted the text (Oct.)
2015	Adopted the updated TG on mercury wastes	
2017		MC entered into force (Aug.) and held COP1 (Nov.)
2018		(Nov.) COP2: Invited the Basel COP to consider reviewing the TG (MC-2/2)
2019	(May) COP14: Decided to update the current TG, started discussion at SIWG	(November) COP3: Decided to set no thresholds for wastes consisting and containing mercury or mercury compounds and for overburden and waste rock from mining other than primary mercury mining
2022	(Apr.) OEWG12: recommended the COP to consider adopting the draft updated TG (Jun.) COP15: Possible adoption of the draft updated TG	(Mar.) COP4: Decided to set two-tier thresholds for tailings from mining other than primary mercury mining and no thresholds for ASGM tailings, decided to add target mercury-added products, and adopted the guidance on management of ASGM tailings

Contents of Basel TG for ESM of mercury wastes

	Section	Content
I	Introduction	A. Scope , B. About mercury
II	Relevant provisions of the Basel Convention and international linkages	A. Basel Convention B. International linkages (Minamata Convention , UNEP Global Mercury Partnership, Heavy Metal Protocol, SAICM)
III	Guidance on environmentally sound management (ESM)	A. General considerations B. Legislative and regulatory framework C. Identification and inventory D. Sampling, analysis and monitoring E. Waste prevention and minimization F. Handling, separation, collection, packaging, labelling, transportation and storage G. Environmentally sound disposal H. Reduction of mercury releases from thermal treatment and landfilling of waste I. Management of contaminated sites J. Health and safety K. Emergency response ⁹ L. Awareness and participation

Changes to reflect developments under the MC

Item	Existing TG	Draft updated TG
Scope	Hazardous wastes and other wastes as defined by the Basel Convention (BC)	+ Mercury wastes as defined by the Minamata Convention (MC)
Relevant provisions of the MC	Texts of the MC	+ Decisions adopted by the Minamata COP
Identification of sources of mercury wastes	Sources, categories and examples of mercury wastes based on existing documents	+ Examples of waste types based on the lists of mercury wastes adopted by the Minamata COP
Waste prevention and minimization (ASGM)	mercury-free techniques and mercury capture and recycling	+ Requirements under the MC, amended guidance on developing a NAP with a new chapter presenting recommendations to manage ASGM tailings
(VCM production)	mercury-free process, development of mercury-free catalyst	+ Requirements under the MC, update of the mercury-free catalyst
(Chlor-alkali production)	Mercury-free process, the number of existing facilities with mercury cell	+ Requirements under the MC, update of the number of mercury cell plants and the guidance on decommissioning mercury cell plants

Changes to reflect developments under the MC

Item	Existing TG	Draft updated TG
Waste prevention and minimization (coal-fired power plant)	-	+ Coal washing, coal blending
(non-ferrous metal production)	-	+ Use of low-mercury concentrates, blending low-mercury concentrates
(crude oil and natural gas processing)	-	+ Return of spent catalysts and adsorbents to the manufacturers for recycling
(mercury-added products)	Introduction of mercury-free products and banning products containing Hg, setting maximum limits of mercury in products	+ Recent information on mercury-free products, mercury content limits for certain products under the MC
Management of contaminated sites	Identification of contaminated sites and emergency response, environmentally sound remediation	- Reference to the guidance on the management of contaminated sites adopted by the Minamata COP

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Other changes

Section F.

Handling, separation, collection, packaging, labelling, transportation and storage

Changes in Collection and Transportation

Item	Change
Collection	<ul style="list-style-type: none">● Move the contents relevant to establishing collection programmes from the “separation” (para 149)+ Guidance on ventilation at indoor collection stations/places (paras 154 and 155)+ An example of “pre-paid shipping services” (para 160)
Transportation	<ul style="list-style-type: none">+ Guidance on the shipping paper with emergency contact and certificate and on the container with signs (para 163)+ Guidance on an insurance to cover damages from an accident (para 164)

Changes in Transportation and Storage

Item	Change
Transportation	+ Guidance on transport of waste consisting of mercury (para 165)
Storage	+ Guidance to reduce risks of fire at storage facilities (para 170) + Guidance on the specification of containers for wastes consisting of mercury (para 173) + Guidance on the storage facilities for wastes consisting of mercury (para 174)

Section G.

Environmentally Sound Disposal

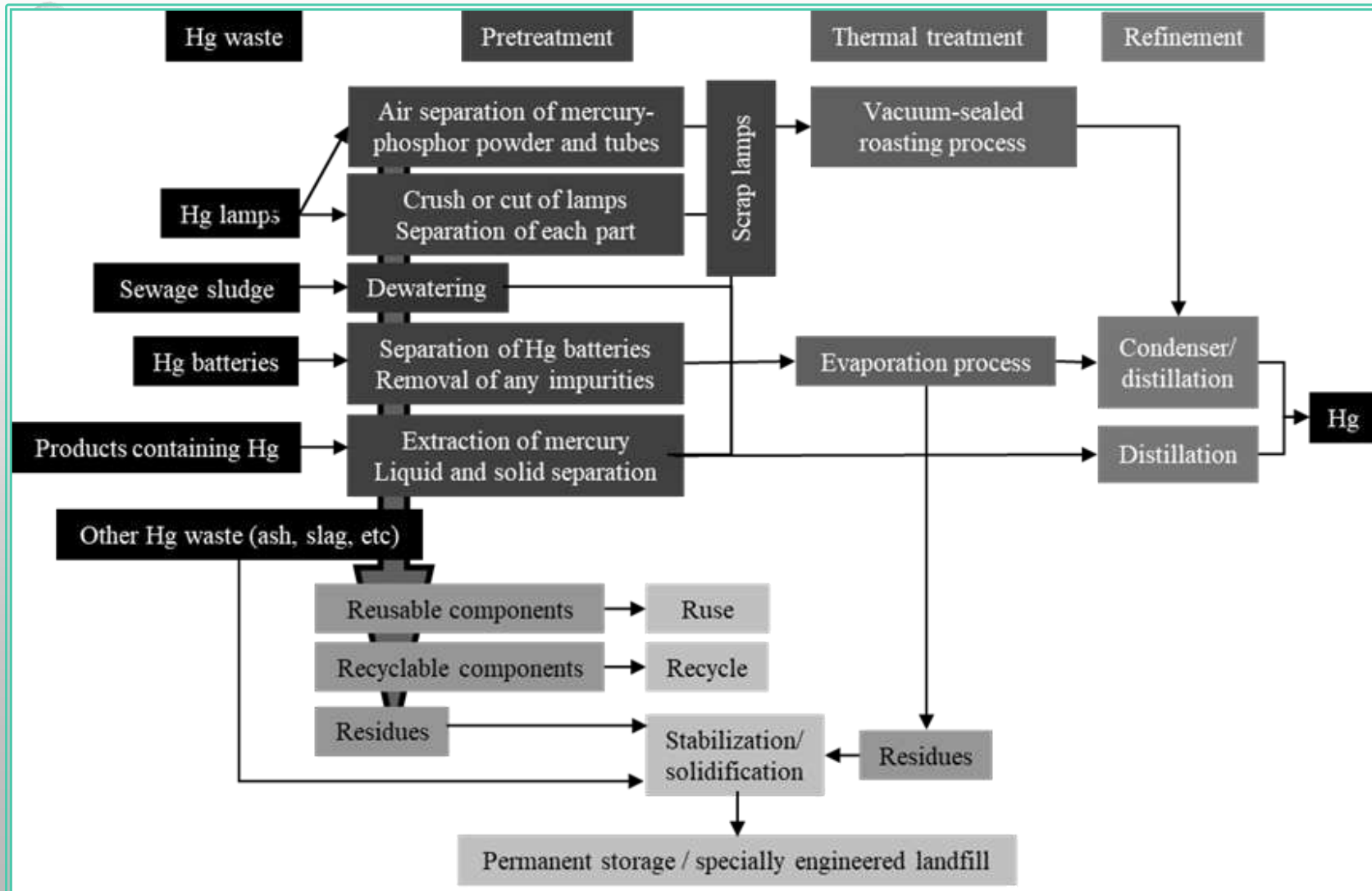
Mercury recovery processes

- Pretreatment
- Recycling/reclamation/removal of mercury or mercury compounds

Operations not leading to recovery of mercury

- Physico-chemical treatment
- Disposal in specially engineered landfills
- Disposal in permanent storage (underground facilities)

Flow of mercury recovery from solid waste



Recovery steps



Pretreatment



Thermal treatment



Refinement

Recycling /reclamation/removal of mercury

Thermal treatment

- Used for wastes containing or contaminated with mercury (lamps, batteries, sludge, soils, activated carbon, catalysts)
- Example methods: rotary kiln distillation, roasting/retorting facilities equipped with mercury vapor collection technology

Chemical oxidation

- Used for liquid/aqueous waste such as slurry & tailings from ASGM
- Example oxidizing agents: sodium hypochlorite, ozone, hydrogen peroxide and chlorine dioxide

Adsorption treatment

- Used for liquid waste
- Example adsorption materials: activated carbon, zeolite

Changes in Mercury Recovery Process

Item	Change
Pre-treatment	<ul style="list-style-type: none">+ Specific mercury levels (e.g. 0.5-5 µg/L) to a receiving water body after appropriate pretreatment (para 185)+ A reference document on mercury reduction from waste pretreatment (para 188)
Thermal treatment	<ul style="list-style-type: none">● Updated information about the rotary kiln distillation process (para 193)+ An example of treating wastes contaminated with mercury in a continuous roasting and reactivation kiln (para 195)

Physico-chemical Treatment

Stabilization and solidification

- Used for wastes consisting of mercury and wastes contaminated with mercury
- Example methods: chemical conversion to mercury sulfide, amalgamation

Soil washing

- Used for soil and sediment contaminated with mercury
- Methods: physical particle size separation + aqueous-based chemical separation

Acid extraction

- Used for solid waste (extract metal contaminants by dissolving them in acid)
- Example extracting chemicals: hydrochloric acid, sulfuric acid

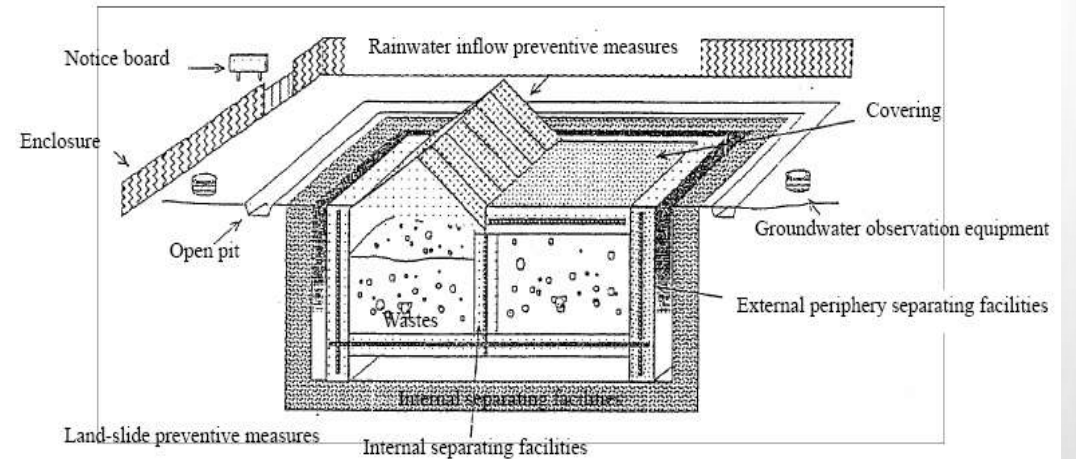
Changes in Physico-chemical Treatment

Item	Change
Stabilization and solidification	<ul style="list-style-type: none"><li data-bbox="766 396 2321 639">+ A note that sometimes S/S (stabilization and solidification) is referred to as “conversion” (para 205)<li data-bbox="766 668 2295 1082">+ Guidance that measures to prevent fire incidents and releases of gaseous mercury should be considered at the stage of planning disposal facilities for wastes consisting of mercury gone through the S/S process (para 212)<li data-bbox="766 1110 2168 1259">+ An example of large-scale S/S process (wet chemical reaction) (para 218)

Disposal

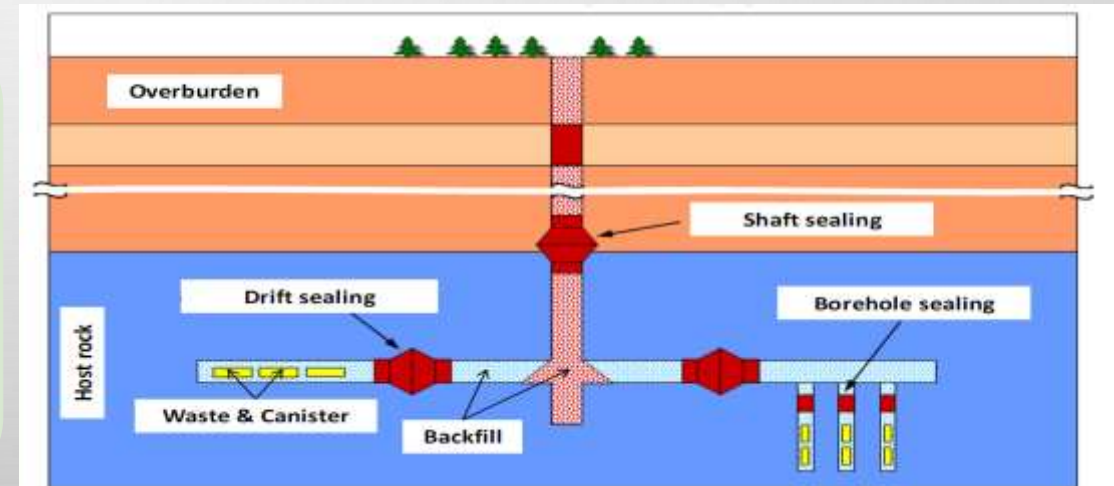
Specially
engineered
landfills

- Accepts wastes consisting of mercury or mercury compounds resulted from stabilization and solidification and wastes contaminated with mercury or mercury compounds that meet acceptance criteria



Permanent
storage
(underground
facilities)

- Accepts mercury wastes that meet acceptance criteria in special containers in designated areas in underground storage facilities such as salt mines



Changes in Disposal

Item	Change
Specially engineered landfill	<ul style="list-style-type: none">+ An example of China's acceptance criteria for hazardous waste landfills (BOX 12)● Streamlined the contents (paras 215 to 218) and referred to the Basel TG on specially engineered landfills (para 236)
Permanent storage	<ul style="list-style-type: none">+ An example of the EU regulation on the disposal of wastes consisting of mercury that underwent the S/S process (BOX 15)

Changes in other sections

Section	Change
H. Reduction of mercury releases from thermal treatment and landfilling of waste	+ SO ₂ concentration as a factor that influences a selection of a process to control mercury flue gas emissions
J. Health and safety	+ Guidance on an exposure assessment and appropriate monitoring and industrial hygiene practices
L. Awareness and participation	+ Guidance on establishing procedures to communicate with local authorities regarding mercury releases from mercury disposal facilities and on hosting community awareness forums

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Thank you for your attention !

UNEP EVENT

BRS COPs Side event: Mercury Wastes - latest developments, tools and practices for their environmentally sound management - 9 June 2022

9 June 2022

Hybrid (Geneva, Switzerland and online), 6:15 pm – 7:45 pm CEST



Tools developed in the context of the Global Mercury Partnership Area on Waste Management

Nicolas Humez, ISWA and Member of the GMP-WMA

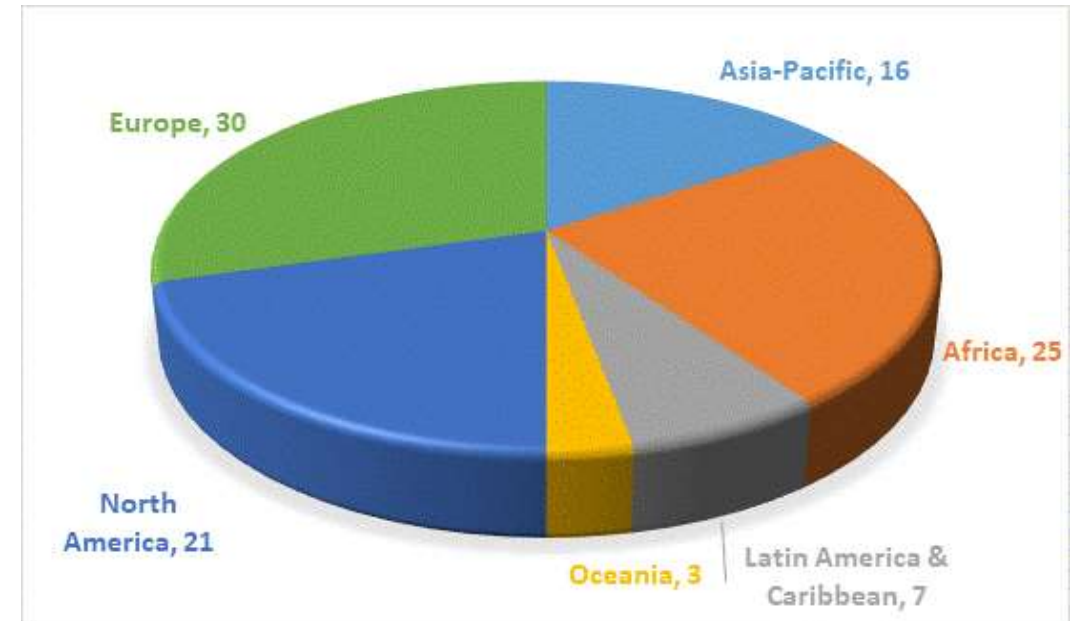
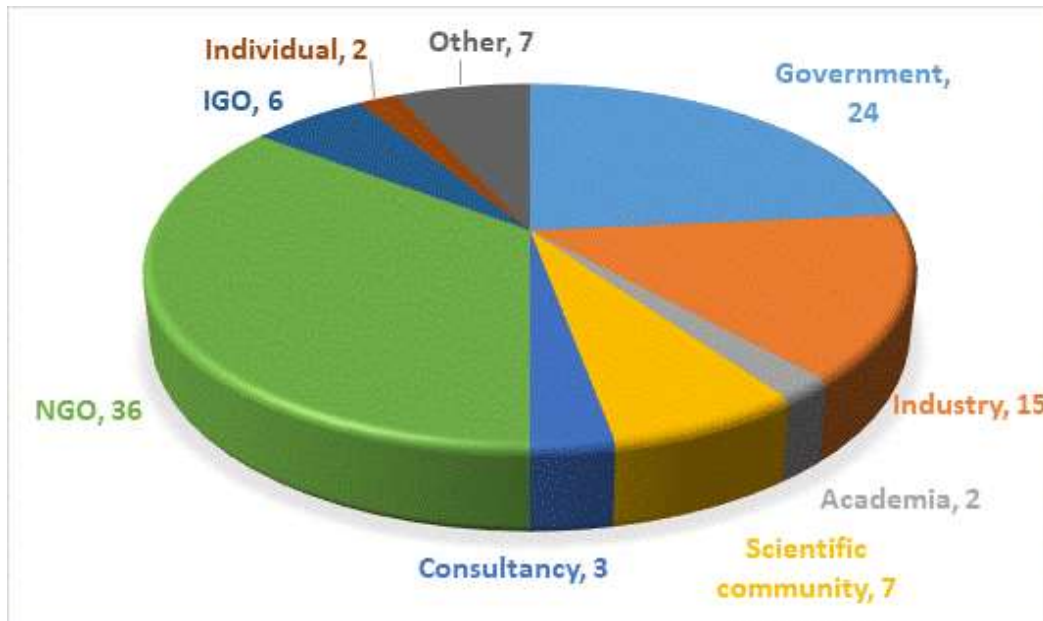
GMP - Waste Management Area (WMA)

- Established in 2008 with over 100 Partners
- Lead: Dr. Misuzu Asari (Associate Professor, Kyoto University)
Ministry of the Environment, Japan (MOEJ)

- Objective:

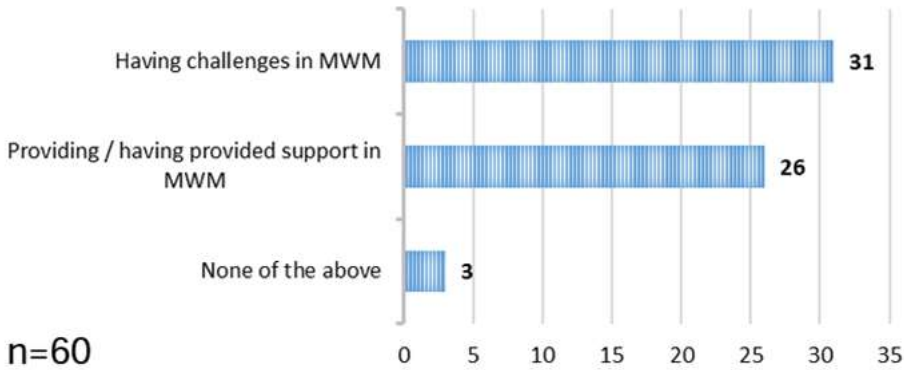
“To promote the environmentally sound management of mercury wastes by developing and disseminating relevant materials, enhancing capacities and awareness and providing specific solutions at the global, regional, national and local levels.”

- Partners:

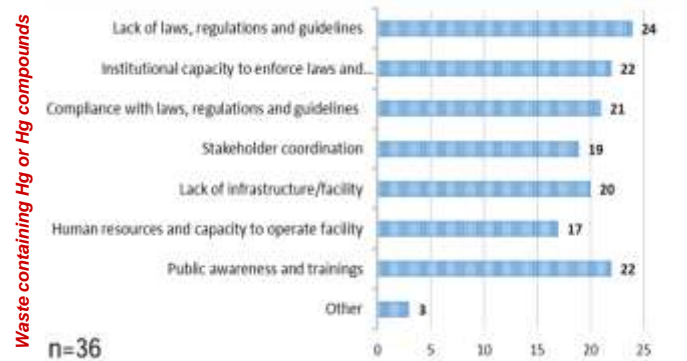


Findings

GMP-WMA Survey (11-2020/03-2021)



There are still obstacles to
ESM of Hg waste



Whatever is the
category of Hg
waste:
Obstacles are in
many different
implementation
areas

In addition, from
ISWA perspectives:
High demand from
developing
countries and
TG is technical but
not practical



Fact Sheets:

To provide
practical & comprehensive
answers
for safe management of
relevant mercury waste
streams

Achievements

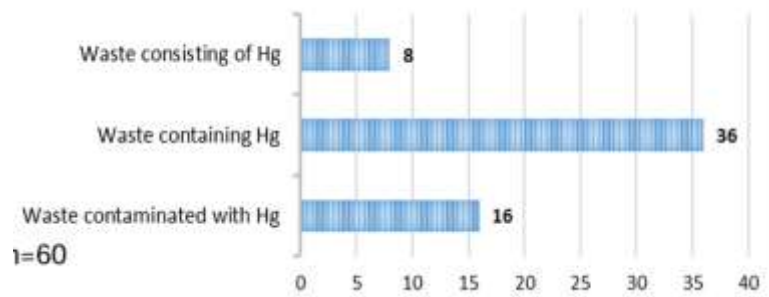
→Join forces from GMP-WMA/WG1 members and ISWA Hazardous Waste WG members

Finalisation of:

- Road Map
- Fact sheet template
- Draft list of Hg waste streams
- Agreement on the first Hg Waste Stream

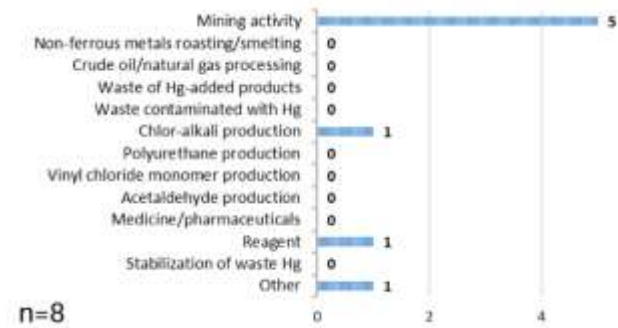
Priority List of Hg waste streams

GMP-WMA Survey (11-2020/03-2021)



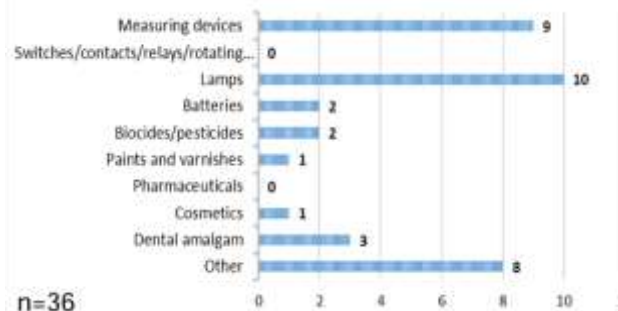
Main concern on
Waste containing Hg
and Hg compounds

Waste consisting of Hg or Hg compounds



Elemental Hg from different
sources &
Specifically mining activities

Waste containing Hg or Hg compounds



Lamps &
Measuring devices

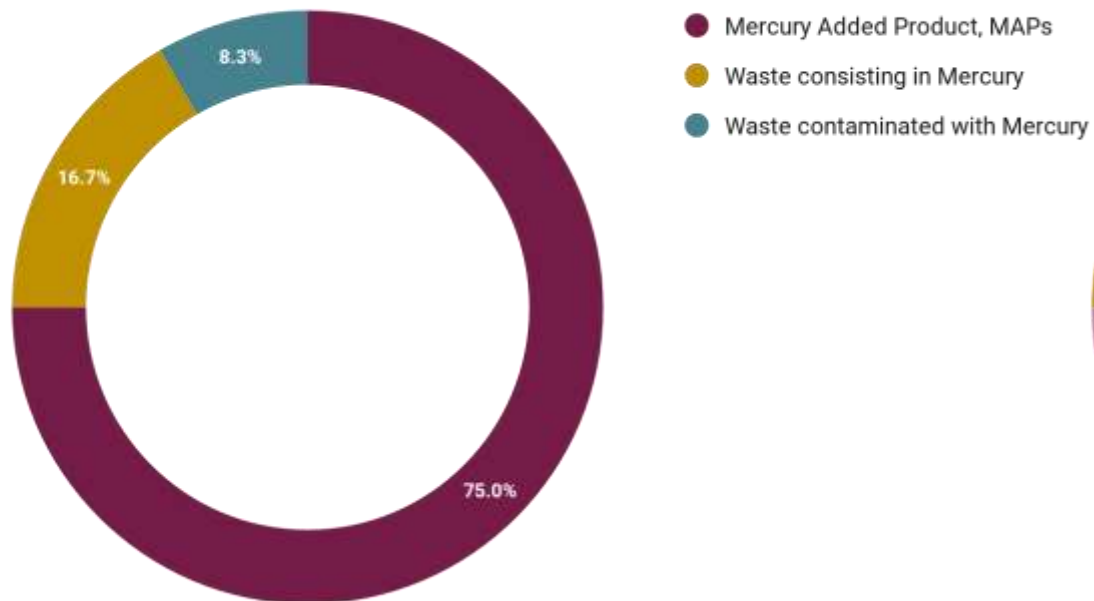
Waste contaminated with Hg or Hg compounds



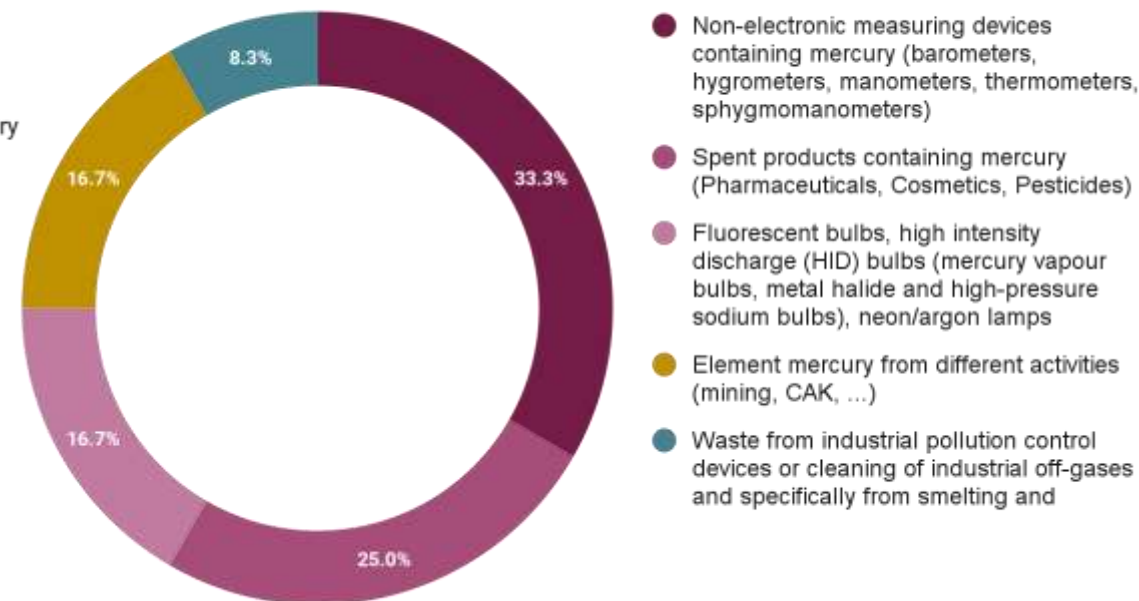
Tailings &
Other waste from
manufacturing processes
(O&G, NFM Production)

Poll, Top 1 priority among the list & Way forwards

Survey, Top 1 priority - Graph 2



Survey, Top 1 priority - Graph 1



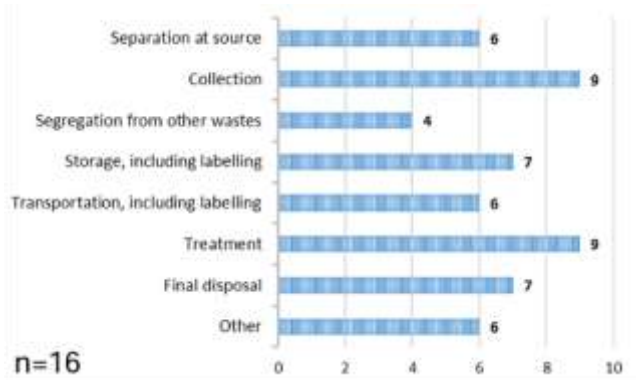
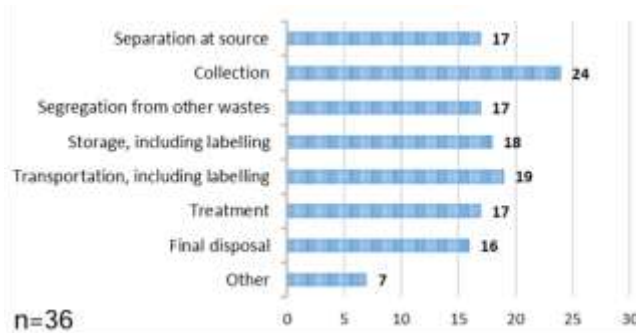
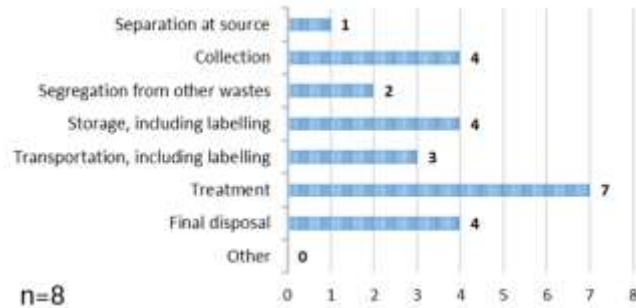
Start with NEMD (consistent with the MIAs from Parties to MC)

- Gather documentation
- Discussion on a first draft in the coming weeks
- Objective: Template completed for the ISWA World Congress, Sept 2022

Expectations for an ESM of Hg waste streams

GMP-WMA Survey (11-2020/03-2021)

Waste contaminated with Hg or Hg compounds



All items of concern will be covered in the Fact Sheets

Information should be presented in such a way as to be understandable and usable by both experts and non-experts, reliable according to the Technical Guidelines and available in several languages such as English, French and Spanish

Catalog of technologies and services on Hg waste management

- The Catalogue contains mercury waste treatment technologies and services owned by 12 Partners of the WMA, including the technologies to treat different types of mercury wastes (wastes consisting of, containing and contaminated with Hg)
- The Catalogues has been updated annually and available at the website of the UNEP-Global Mercury Partnership
- Possible digitalization and mapping of mercury waste treatment facilities will be considered



Available at:

<https://www.unep.org/globalmercurypartnership/resources/to/catalogue-technologies-and-services-mercury-waste-management-2021-version>

Catalog content

Section	No.	Technology/service holder	Keyword
Technologies and services on mercury waste management	1	APPELGLOBAL	Recovery, removal, decontamination, monitoring, amalgam, mining residue, mercury-free gold extraction
	2	Association of Lighting and Mercury Recyclers	Separation, recovery, mercury product waste, engineering design, fluorescent lamps
	3	BATREC Industrie AG	Stabilization, recovery, product waste, adsorbents, amalgams, mining residues, oil & gas, chlor-alkali
	4	ECOCYCLE PTY LTD	Mining residue, recovery, separation, product waste, distillation, crushing, oil & gas
	5	Ecologic, S. A.	Recovery, product waste, disposal, circular economy, e-waste, scrap metal
	6	econ industries services GmbH	Recovery, stabilization, solidification, engineering design, distillation, on-site conversion
	7	International Dental Manufacturer's Association	Amalgam, collection, separation
	8	Nomura Kohsan Co., Ltd	Stabilization, solidification, recovery, disposal, product waste, oil & gas
	9	REMONDIS QR	Recovery, disposal, stabilization, distillation, Basel export license
	10	TerraCycle Regulated Waste, LLC	Separation, recovery, product waste, fluorescent lamps
Related technologies and services	11	CURIUM	Removal, decontamination, engineering design, monitoring, contaminated sites, chlor-alkali
	12	SICK AG	Reduction, removal, adsorbent, mercury compounds, engineering design, monitoring

Thank you for your attention





SESSION 1

Questions & Answers



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SESSION 2: Panel discussion on mercury waste management: perspectives and practices

Facilitated by Ana Garcia, Ministry for the Ecological Transition and the Demographic Challenge, Spain, and Judith Torres, Ministry of Housing, Territorial Planning and Environment, Uruguay, co-leads of the Supply and Storage Area

Panelists:

- **Anahit Aleksandryan, Ministry of Environment, Armenia**
- **Mohammed Oglah Khashashneh, Ministry of Environment, Jordan**
- **Carlos M. López Alled, Tragsa-MITERD, Spain**
- **Philippe Zanettin, BATREC**
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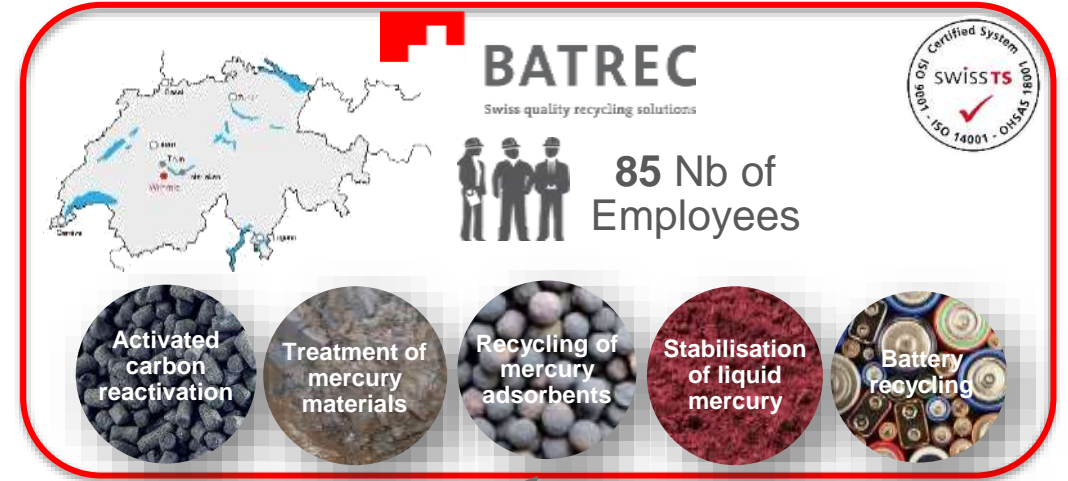
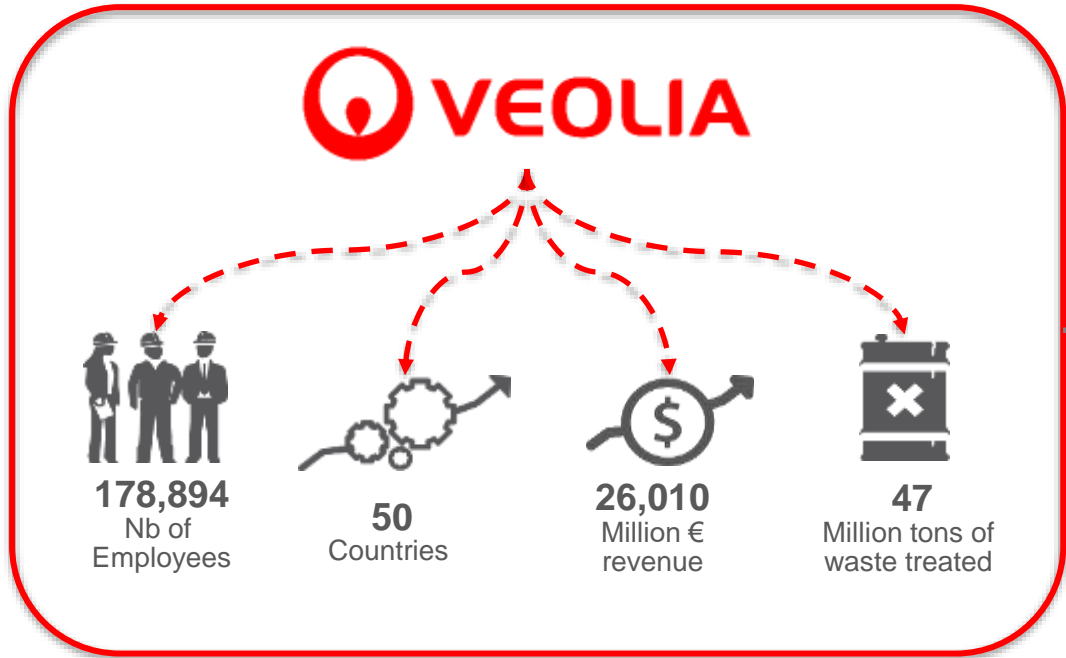
BRS COPs side event - 9 June, 2022

BATREC's experience in Mercury Waste Management

Philippe Zanettin, *Plant Manager*



BATREC and VEOLIA – A global network



Waste received at Batrec

- **Batteries** : >95% are coming from the collection in Switzerland, with a few containing mercury (button cells)
- **Mercury wastes** : >95% are coming from abroad under Basel notifications
 - Hazardous Waste Collectors (all kind of mercury wastes)
 - Chlor alkali (mercury to be stabilized, sludges, devices...)
 - Non ferrous metal industry: Industrial gold mining (mercury to be stabilized, PPE)
 - Oil and gas industry (adsorbents, sludges,...)

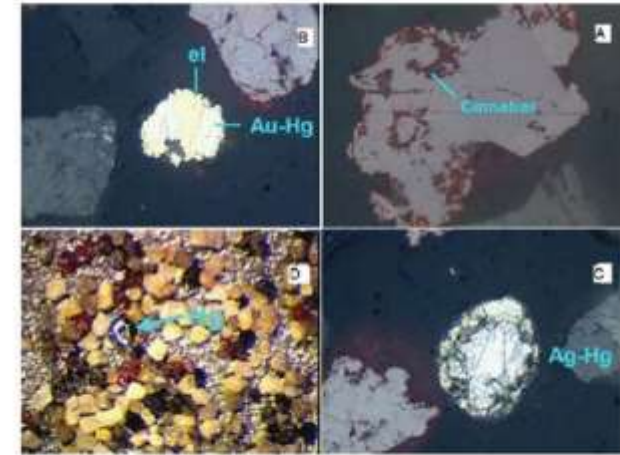


Figure 2—Mercury in form of (A) cinnabar (free and enclosed in other minerals), (B and C) alloys of gold, silver, and mercury, and (D) metallic mercury (AMTEL Institute, 2008)

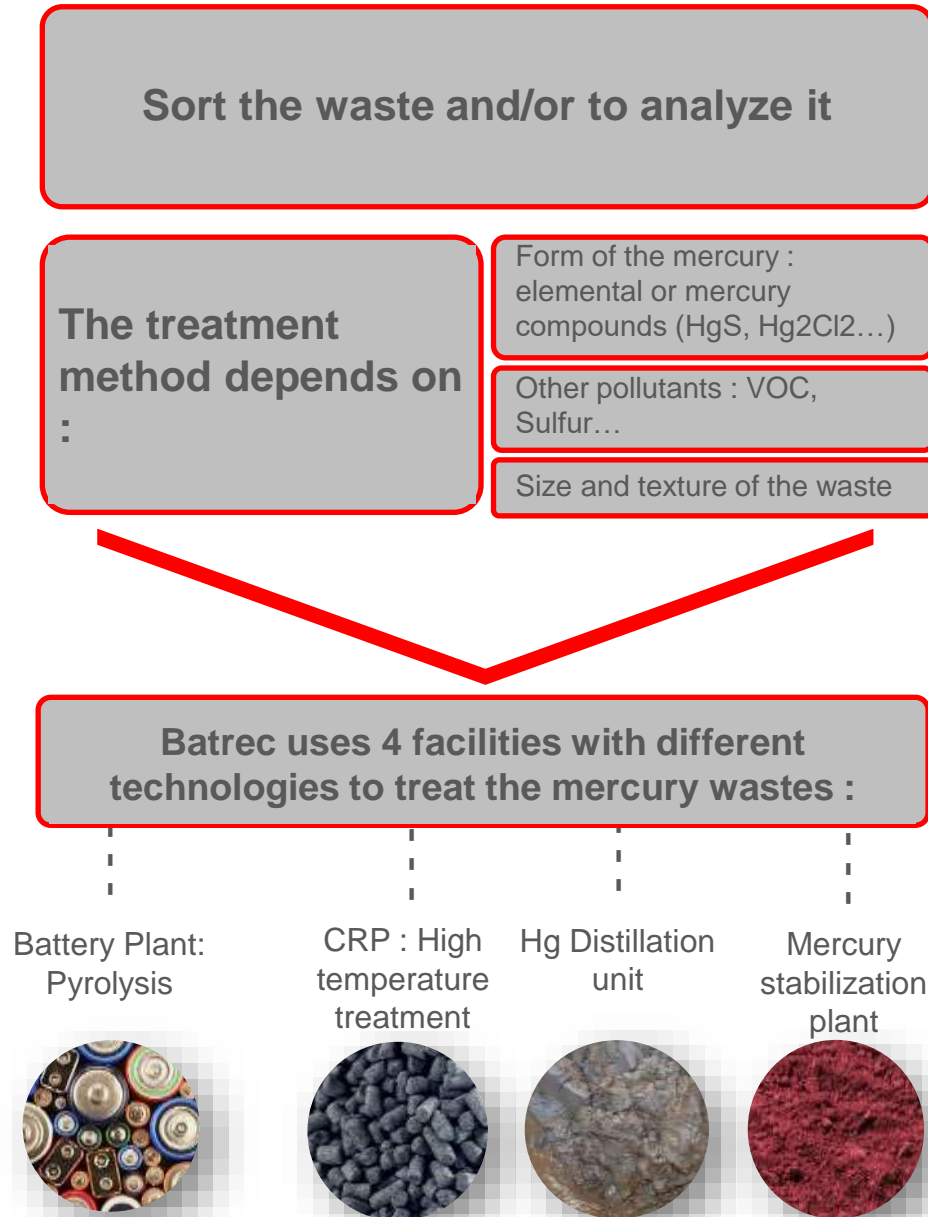
Waste seldom received at Batrec

- Sites remediation: Soils in high volumes with low Hg contamination (on site treatment, landfill or underground storage)
- Fluorescent lamps and energy-saving bulbs (dedicated facilities)
- Oil and gas industry: oily sludges
- Non ferrous metal industry: Zink industry Hg_2Cl_2 (Calomel from the Boliden Norzink Process) or HgSe (Sulfuric Acid Selenium scrubber)

Types of Hg wastes treated at BATREC

The challenge lies in identifying and collecting mercury wastes especially from remote areas and in small quantities





- Homogenous Hg-waste streams like activated carbon or mercury guards can be dealt with using standardised processes
- Hg-Sludge, depending on the origin (pH, organic content..), may need a pre-treatment
- Mixed Hg-Waste, need manual handling and sorting

The challenge lies in identifying the right way to treat the waste and also how to deal with the residues (mercury...)

Wastes from the Oil & Gas – Examples



Sludges



Mercury guards



Activated carbon

Mixed Mercury Waste – Examples



Mixed Mercury Waste – Examples



Mercury in small packaging



Laboratory chemicals

Mixed Mercury Waste – Examples



COD Testing tubes



Laboratory Chemicals

Mixed Mercury Waste – Examples



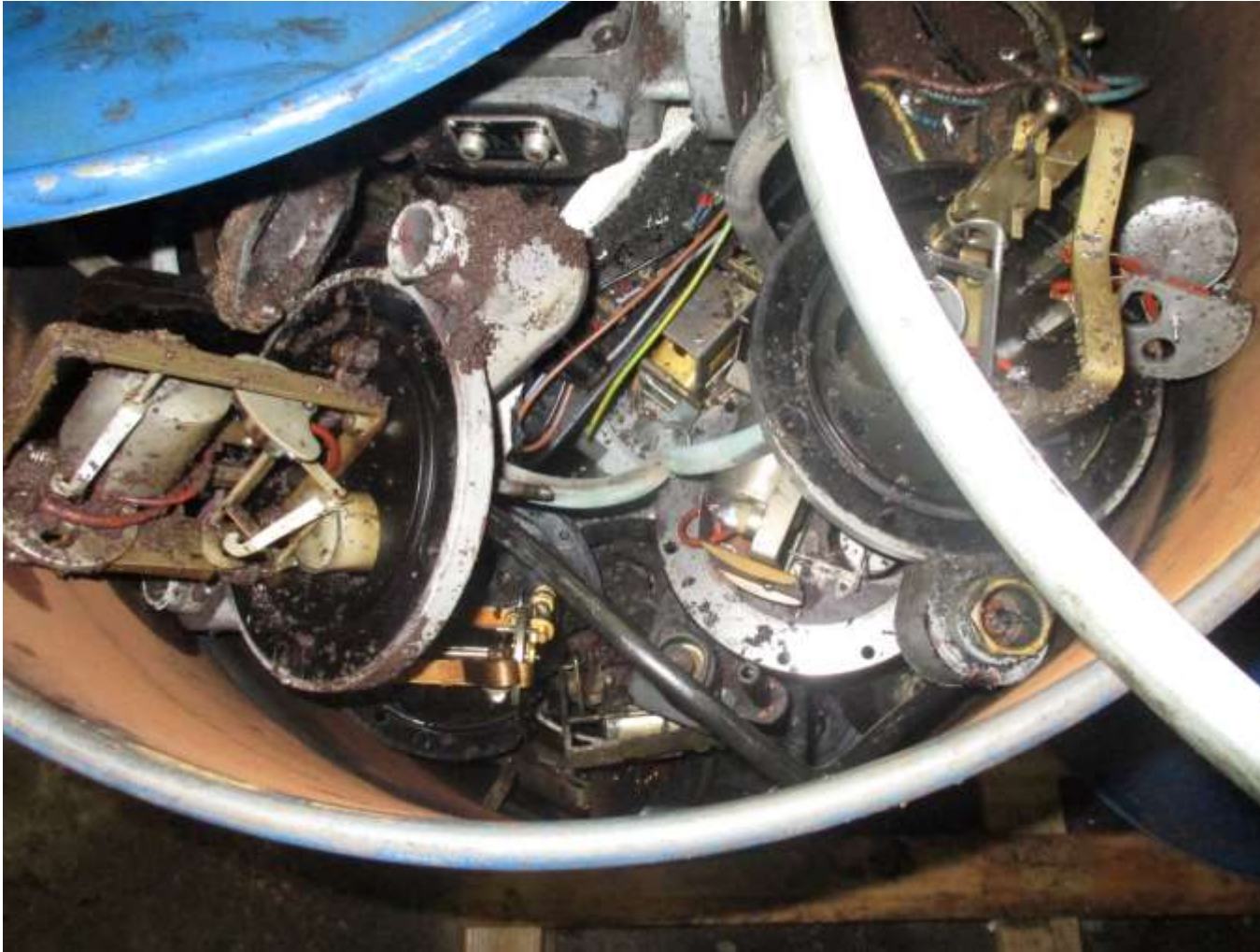
Amalgam separators and amalgams

Mixed Mercury Waste – Examples



**Thermometer, barometer,
blood pressure meter...**

Mixed Mercury Waste – Examples



Switches

Mixed Mercury Waste – Examples



Relay and rectifier

Treatment of Mercury Wastes



Mercury Waste High temperature treatment



Mercury Waste High temperature treatment: Process Flow Diagram

1 THERMAL TREATMENT

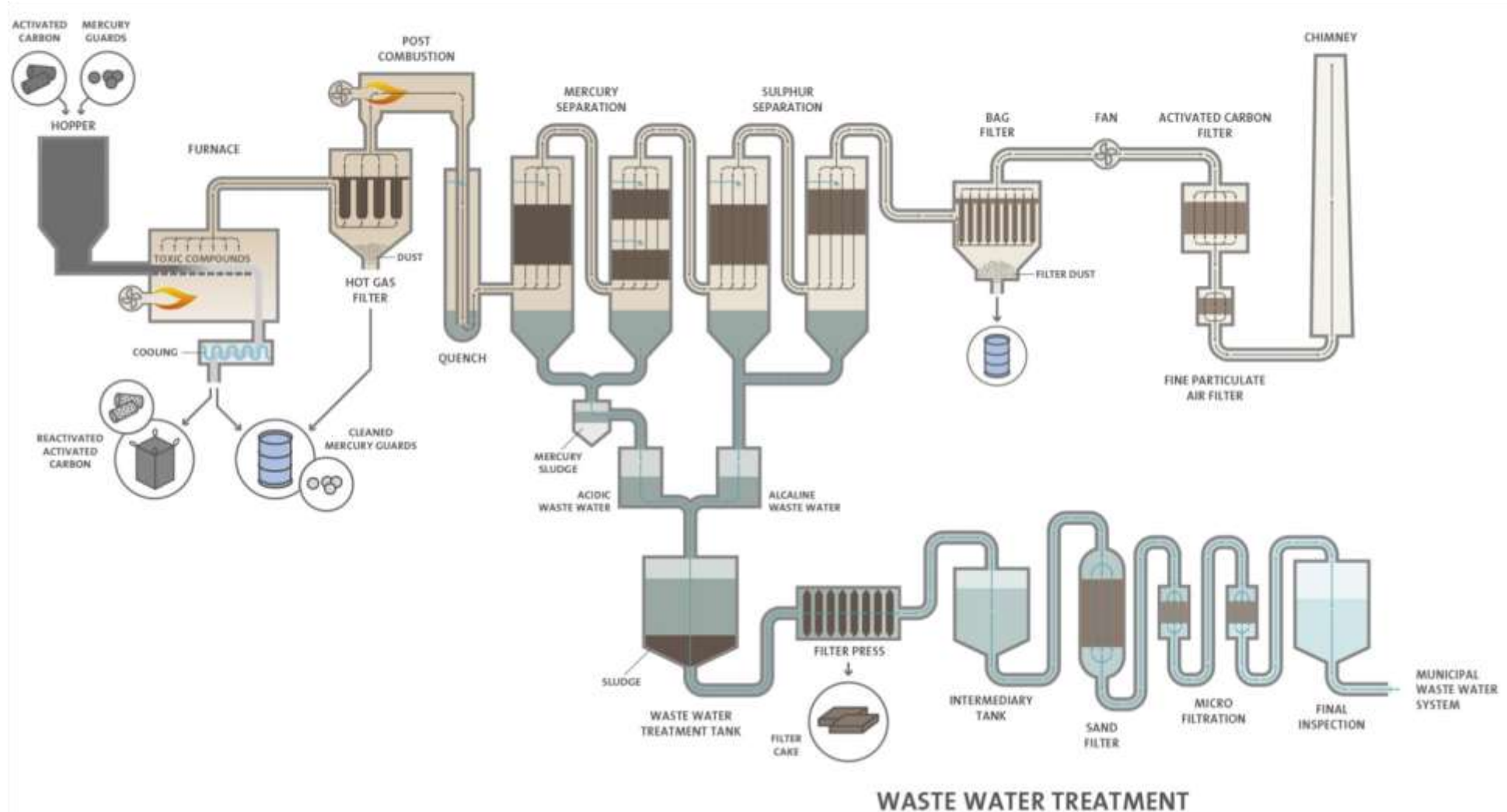
- desorption of the pollutants at 750 – 850°C
- destruction of the organic pollutants in the post-combustion chamber

2 WASTE GAS WET CLEANING

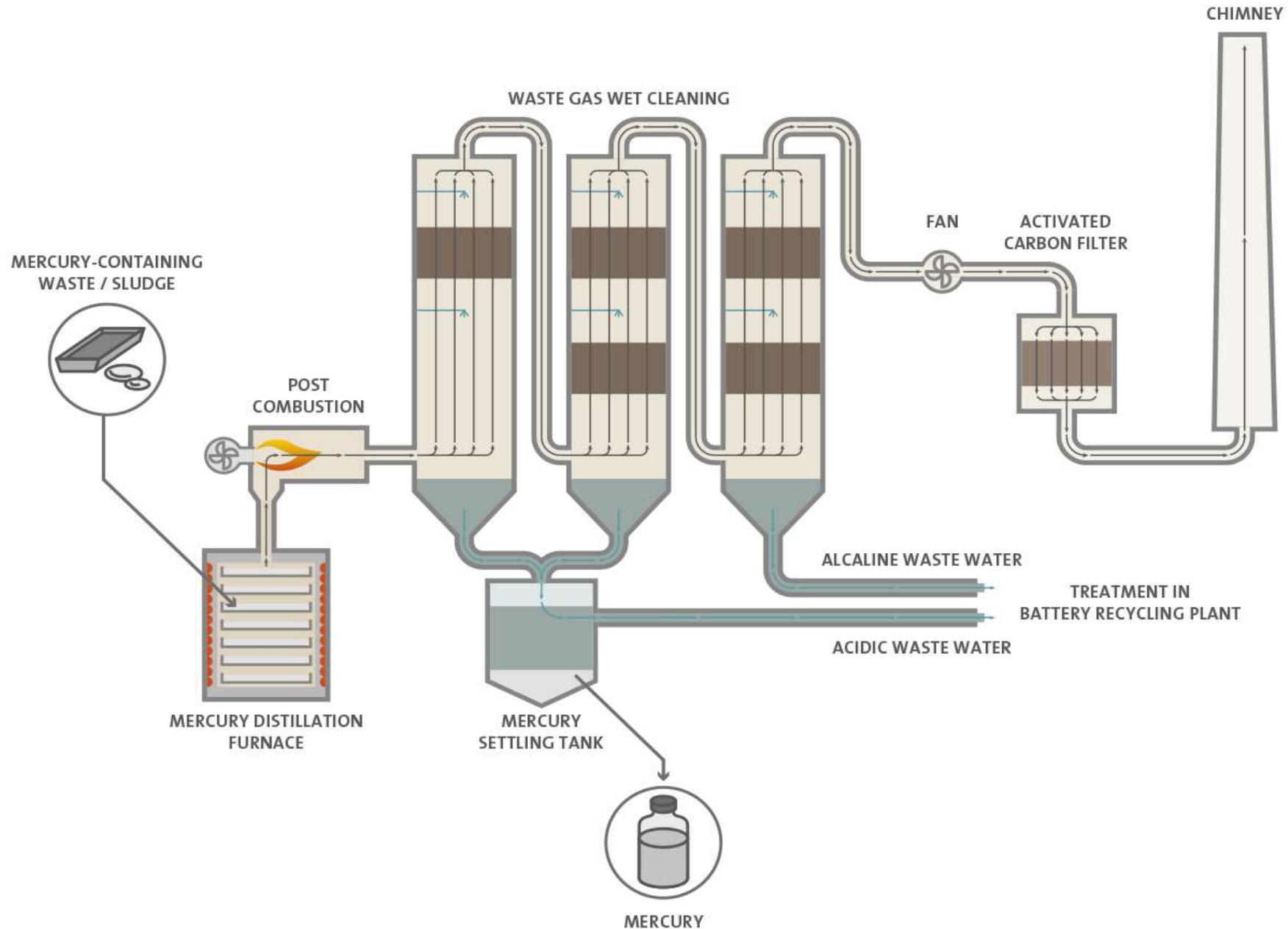
- condensation of Mercury
- removal of Sulfur

3 WASTE GAS DRY CLEANING

- removal of trace level Mercury
- removal of other pollutants and fine dust
- removal HEPA Filter



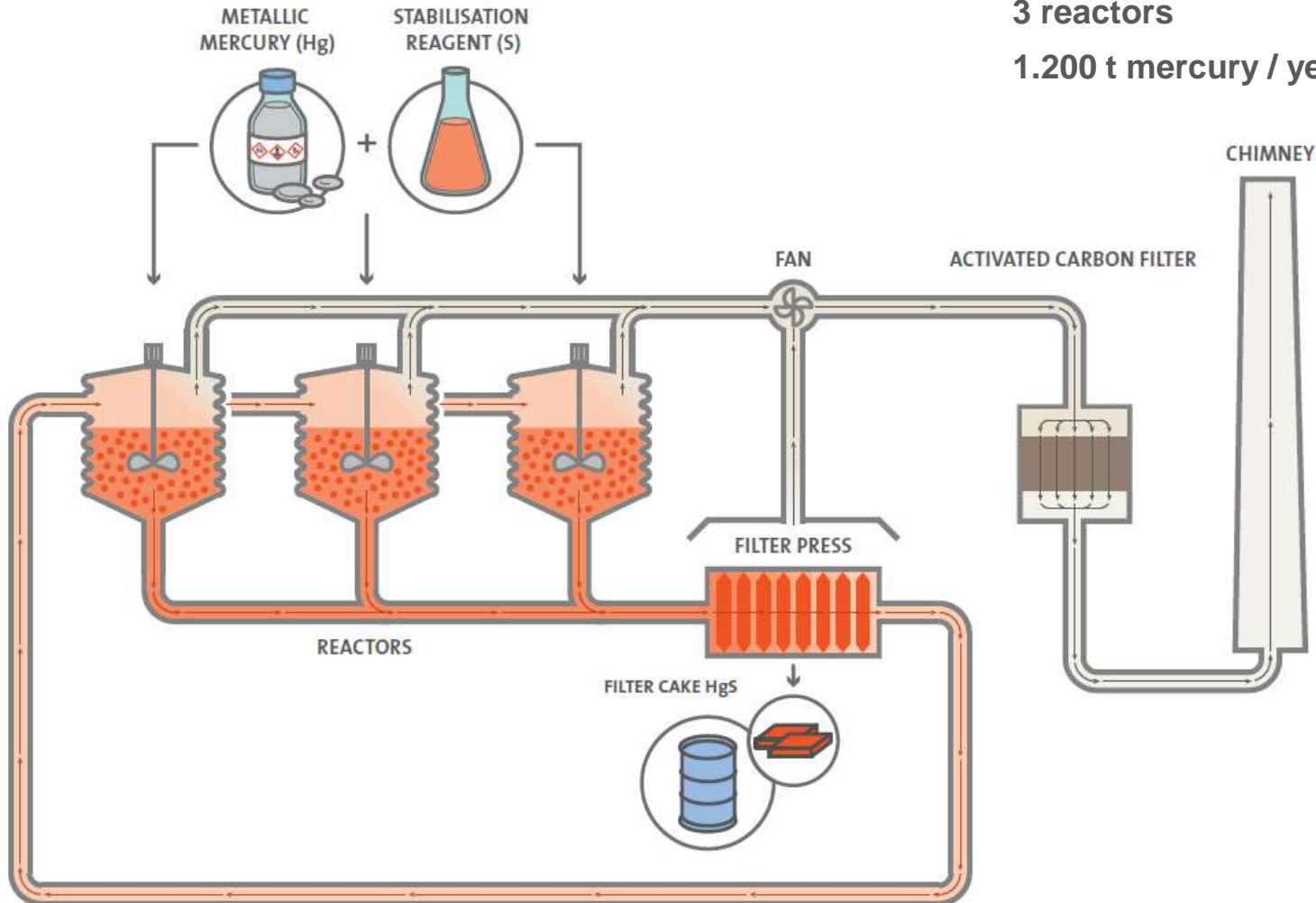
Mercury wastes distillation: Process Flow Diagram



Mercury Stabilisation



Mercury Stabilisation



Capacity:

625 kg mercury / batch

3 reactors

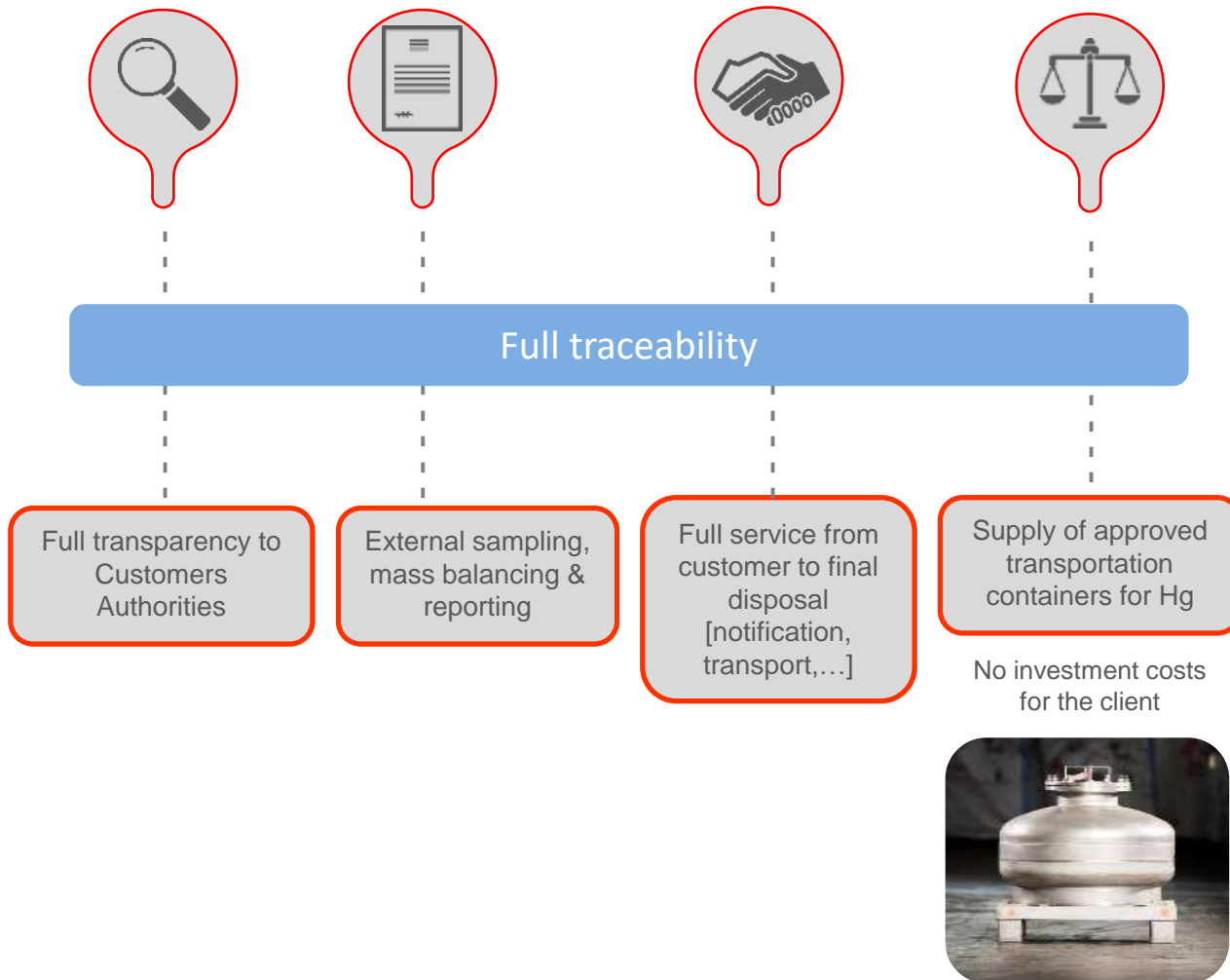
1.200 t mercury / year



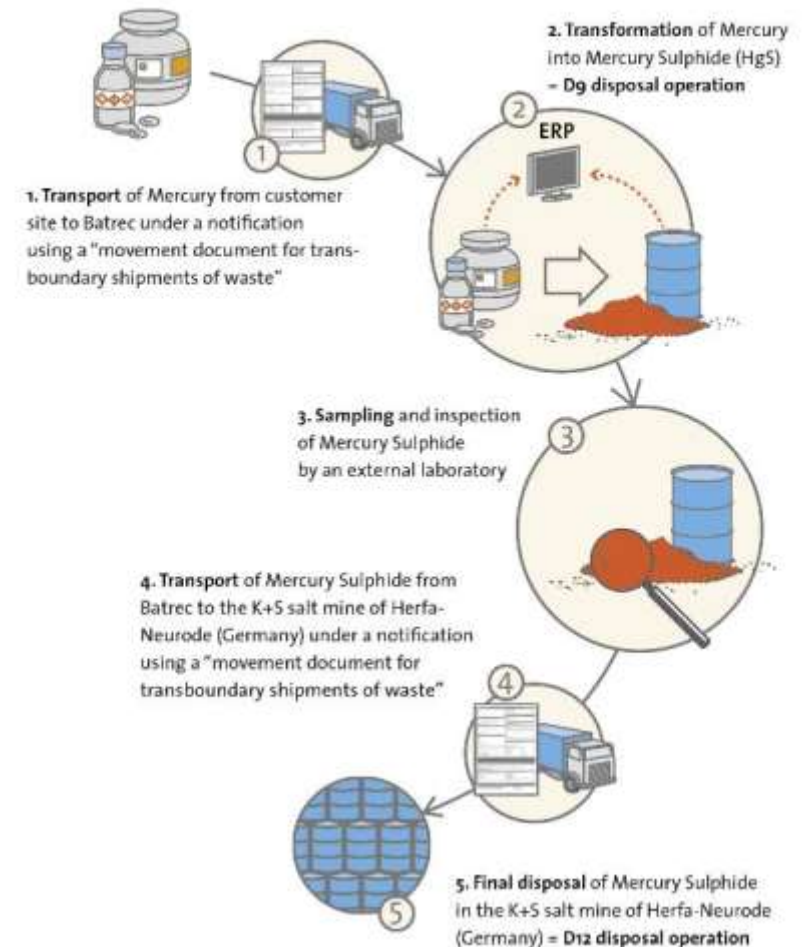
Process characteristics

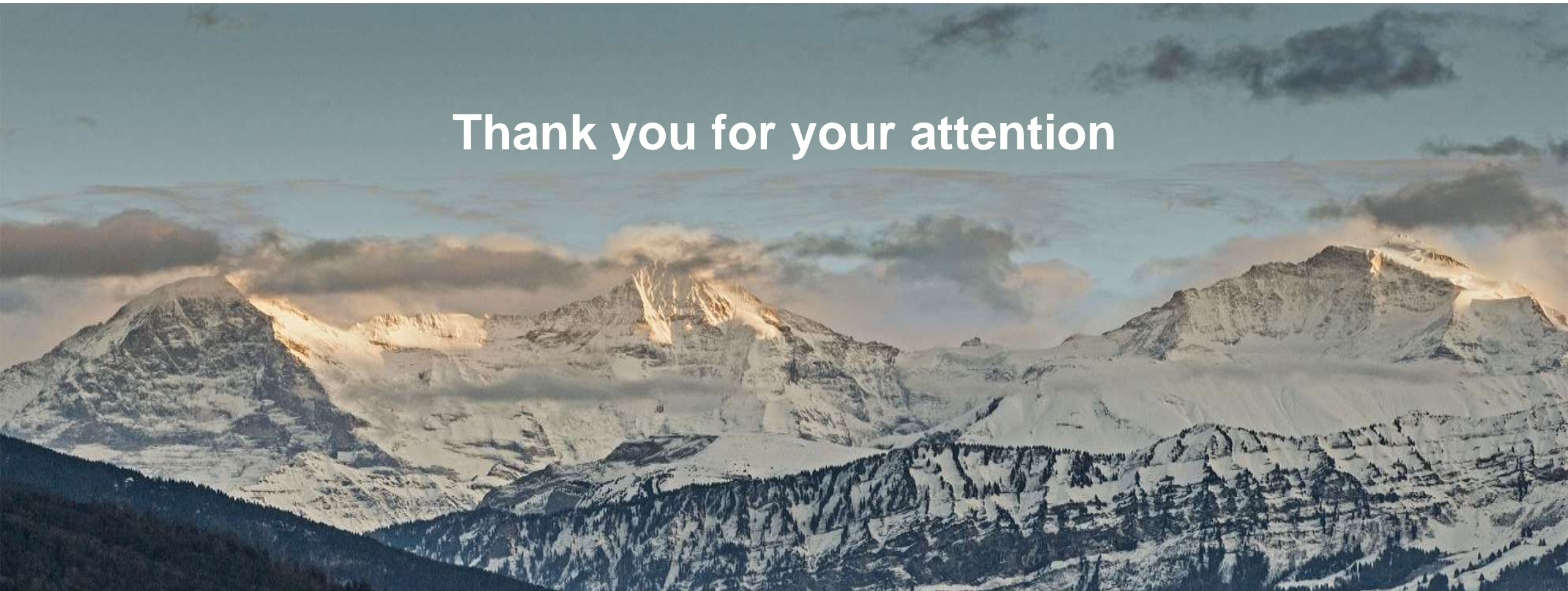
- ✓ batch process
- ✓ wet process at low temperatures in a closed circuit limits the risk of Hg emissions
- ✓ no gaseous Hg in the process
- ✓ stabilisation solution is regenerated
→ *zero effluents produced*
- ✓ simple reactants

Traceability chain for the mercury stabilisation



Traceability chain for the stabilisation of Mercury





Thank you for your attention

SESSION 2: Panel discussion on mercury waste management: perspectives and practices

*Facilitated by Ana Garcia, Ministry for the Ecological Transition and the Demographic Challenge, Spain,
and Judith Torres, Ministry of Housing, Territorial Planning and Environment, Uruguay, co-leads of the
Supply and Storage Area*

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ON MERCURY**

Mercury Waste Management

Case Study of Gold Plating and Other sectors from Nepal

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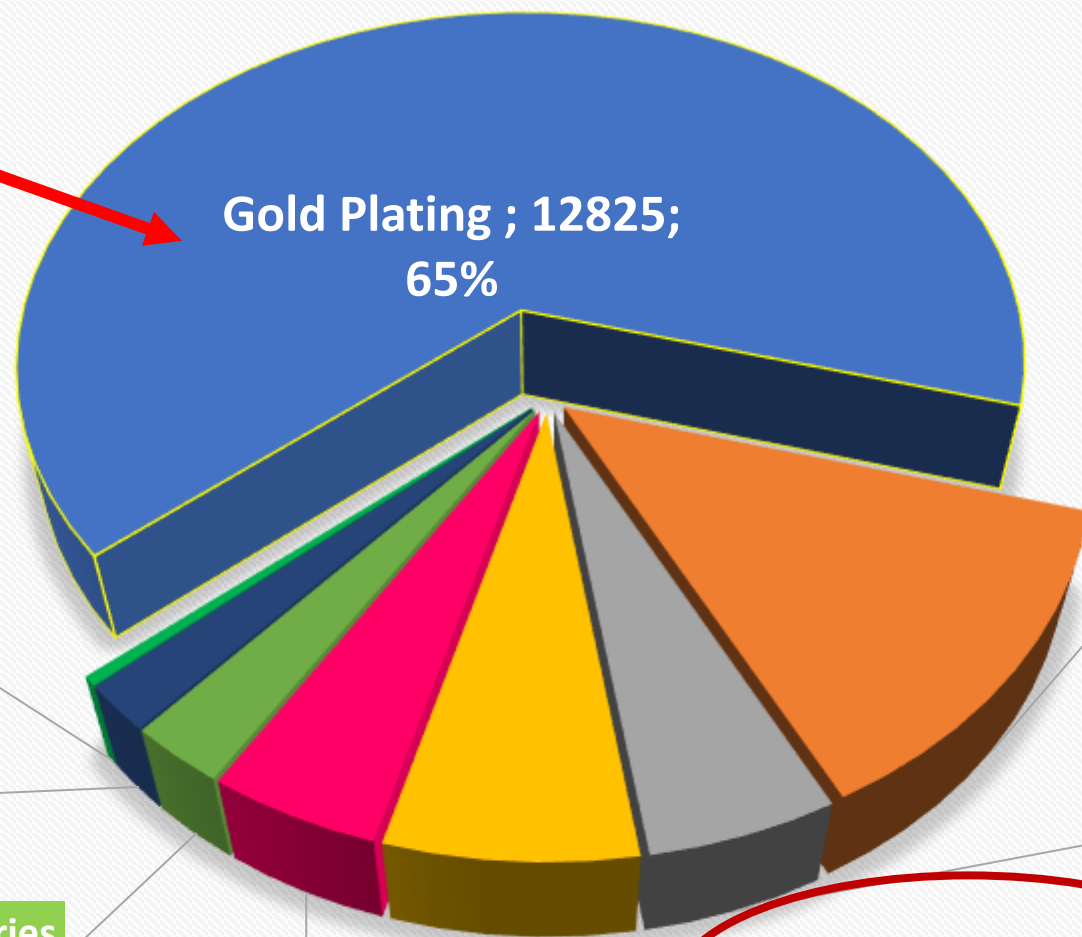
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Mercury Waste Side Event, BRS COP 9th June 2022, Geneva, Switzerland



Source Categories contributing to Mercury Release (19615 Kg Hg/Yr.) in Nepal



Production of Recycled metal, 80, 0%

Other Materials Production ; 388; 2%

Cremetoria and Cemeteries ; 512; 3%

Energy Consumption ; 904; 5%

Dumping of General Waste ; 1318; 7%

Use and Disposal of Product ; 2590; 13%

Waste Incineration & Open Dumping ; 998; 5%

High Mercury in waste water discharged from Gold Plating Workshop

100 % non-compliance of MOFE Standards

Sample Id	Mercury (mg/L)	Times more than Standard Nepal Generic Standard of Waste Water effluent for Water ways/in land (mg/L)
		0.01
NPL -01	0.893	89.3
NPL -02	11478	1147800
NPL -03	1.822	182.2
NPL -04	0.627	62.7
NPL -05	2.791	279.1



What will happen to Ecosystem? & depending communities?

Source: CEPHED 2019, Laboratory test results.

Mercury Monitoring In Metal Plating Women Workers of Child Bearing Age

Conducted by Biological Research Institute
(BRI/IPEN/CEPHED 2017/18) with support of
United Nations Office of Environment (UNO)

- Study was done in Lalitpur District
- 20 Women of childbearing age 18-44 years

Avg. THg (ppm)	Max. THg (ppm)	Min. THg (ppm0)
3.62	28.46	0.35
www.mercuryconvention.org or http://ipen.org/Mercury-Monitoring-in-Women		

According to results of Bio-monitoring of mercury in gold plating, women are **found to have very high.**

15 of 20(75%) exceed more than 1 ppm reference dose)



MERCURY MONITORING IN
WOMEN OF CHILD-BEARING AGE IN
THE ASIA & THE PACIFIC REGION



Lee Bell,
IPEN Mercury Policy
Advisor

April 2017

Waste Management Practices & Challenges

INFRASTRUCTURE & TECHNICAL KNOW-HOW

PRIMITIVE :

- Untreated Wastewater discharged into water or land
- Cotton containing mercury: Burned to recover last remaining gold



Pic Source: Mr. Sanam Shakya, VP, FHAN,

WAY FORWARD

1. **Inclusion of Gold Plating in MC and TWG**
2. Infrastructure Developments
3. Technical and Financial Assistance for ESM and MC Implementation
4. **Strict mercury limits for waste (1 mg/Kg) in waste guidelines (MC & BC).**
5. Robust and Efficient Technology innovation for Mercury capture to protect gold plating and waste workers
6. OSH Guideline for Hg Exposure for gold plating workshop.
7. Swift ratification of MC



Center for Public Health and Environmental Development (CEPHED), NEPAL

FIRST IN ASIA AWARD 2022

Established: October 2004

Goal: Improved environment management and public health

Vision: Bridging people with science and technology for healthy living and environment safety.

Activities: Research, Publication, Dissemination, Policy influences, Feedback and model demonstration

Global Linkage: IPEN, GAIA, ELAW, CEH, Toxics Link, ZMWG/EEB, WAMFD, Asian Center, ABAN, IBAS, ANROEV

Inter/National Recognitions: CEPHED Works Recognized all over and also serving many task force /committee formed under Government.



WWF Cons. Award 2020



PEN AWARD 2011



GRILL ENTP Award 2011



Env. Cons. Award 2012



Best Paper. Award 2015



Env. Cons. Award 2016



SESSION 2: Panel discussion on mercury waste management: perspectives and practices

Facilitated by Ana Garcia, Ministry for the Ecological Transition and the Demographic Challenge, Spain, and Judith Torres, Ministry of Housing, Territorial Planning and Environment, Uruguay, co-leads of the Supply and Storage Area

Panelists:

- **Anahit Aleksandryan, Ministry of Environment, Armenia**
- **Mohammed Oglah Khashashneh, Ministry of Environment, Jordan**
- **Carlos M. López Alled, Tragsa-MITERD, Spain**
- **Philippe Zanettin, BATREC**
- **Christian Stiels, Econ Industries**
- **Ram Charitra Sah, Center for Public Health and Environmental Development (CEPHED), Nepal**



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CLOSING REMARKS

Rodges Ankrah

US-EPA, Co-chair of the Global Mercury Partnership Advisory Group



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