環境省
Ministry of the Environment
Government of Japan

Draft Technical Guidelines for the Environmentally Sound Management of Wastes Consisting of Elemental Hg and Wastes Containing or Contaminated with Hg - 7th Draft -

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Let's SUPER COOLBIZ

CHALLENGE 25

reduce reuse recycle 3R

Execom Meeting,
Surabaya
29-30 July 2011

OEWG-VII/7: Decision on Hg Waste Guidelines

1	Welcomes the past process
2	Invites further nominations in the works of SIWG by 30 June 2010
3	Invites Parties to consider serving as a lead country
4	Requests the lead country with SIWG to revise TG by 31 October 2010
5	Invites further comments by 28 February 2011
6	Requests the lead country with SIWG to revise TG by 31 July 2011
7	Invites further comments by 30 September 2011
8	Mandates SIWG to hold a meeting immediately before COP10 for final preparation of TG
9	Requests SBC to report on the progress of SIWG meeting to COP10 and to submit the draft TG to COP10 for consideration and possible adoption

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1 Introduction

Definition	**Substances or objectives which are disposed of or are intended to be disposed of or are required to be disposed of by the provisions of national law (Art 2-1)**
Wastes consisting of elemental Hg	**Elemental Hg recovered from waste containing Hg and waste contaminated with Hg, spent catalyst, surplus stock of elemental Hg designated as wastes**
Wastes containing Hg	**Waste of Hg added products:** **1. Wastes of Hg added products that easily releases Hg into the environment when they are broken** **2. Wastes of Hg added other than 1** **3. Stabilized or solidified wastes containing Hg that result from stabilization or solidification of wastes consisting of elemental Hg**
Wastes contaminated with Hg	**Residues generated from mining processes, industrial processes, or waste treatment processes**

2 Relevant Provisions of the Basel Convention and International Linkages

Hg Provisions - The Basel Convention

Annex III – List of Hazardous Characteristics	
H6.1	Poisonous (acute)
H11	Toxic (delayed or chronic)
H12	Ecotoxic

Annex I and VIII	
Entries with direct reference to Hg	
Y29	Wastes having Hg or Hg compounds
A1010	Wastes of alloys of Hg or Hg compounds
A1030	Wastes having any of Hg or Compounds
A1180	Waste e-assemblies or scrap containing Hg

Other entries related to wastes which may contain or be contaminated with Hg				
A1170	A2030	A2060	A3140	A4010
A4020	A4030	A4080	A4160	

INC Process

INC3 (2011), INC4 (2012), INC5 (2013), DipCon (2013)

Rotterdam Convention

Hg compounds incl. inorganic Hg, alkyl-Hg compounds, etc in Annex III

LRTAP Heavy Metals Protocol

Control of anthropogenic emission of heavy metals incl Hg

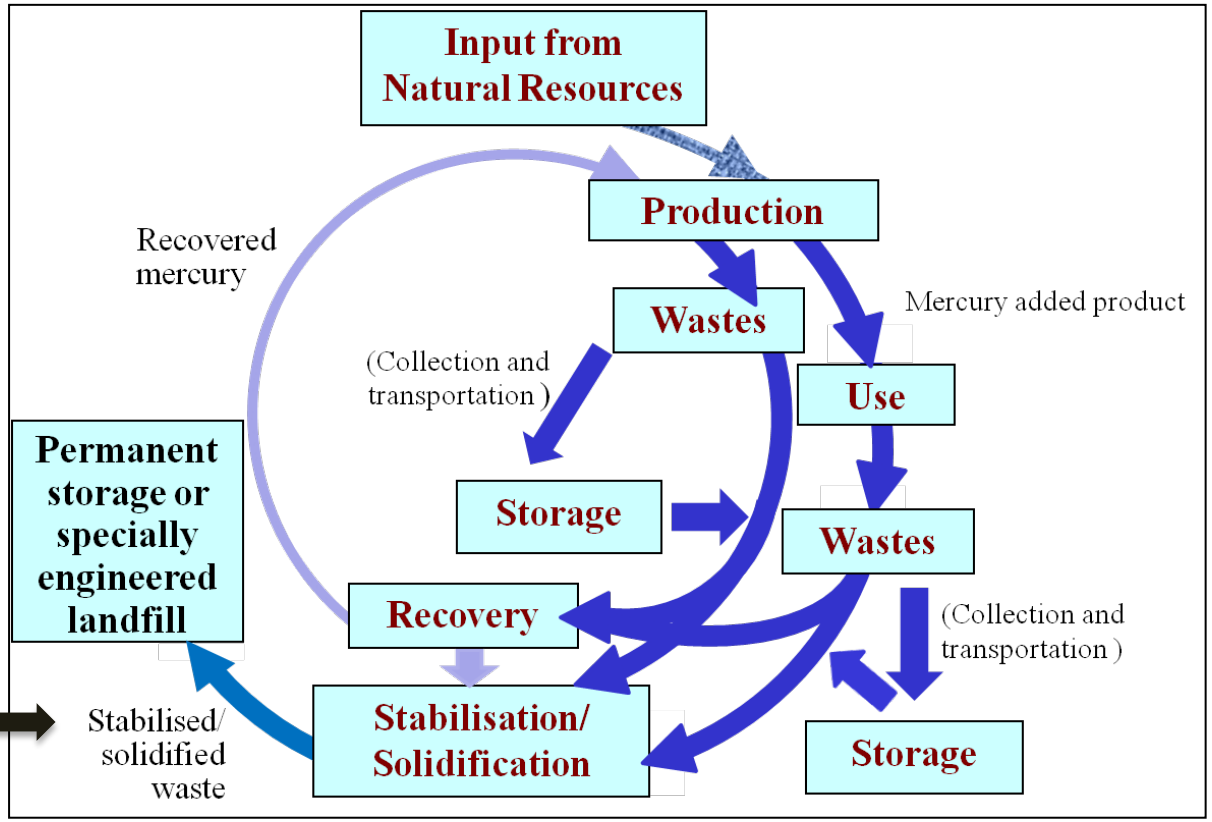
SAICM

Quick Start Programme (QSP)

3 Guidance on ESM

3.1 General Concept of ESM

Concept	ESM of Hg waste based on ESM of hazardous wastes	
Basel Convention	**ESM**	Taking all practicable steps to protect adverse effect in human health and the environment (2-8)
	Facilities	Measures to adequate disposal facilities (4-2-b) with competent personnel (4-2-c)
	TG	Necessary of TG (4-8)
OECD – Core Performance Elements	**EMS**	
	Health & Safety	
	Monitoring/ reporting	
	Personnel training	
	Emergency plan	
	Plan for closure/after-care	
Lifecycle Management	Minimization of Hg release to the environment at each stage	



3 Guidance on ESM
3.2 Legislative and Regulatory Framework

Registration of Waste Generators	**Type**	Industrial establishments Medical/research institutes Waste collectors
	Info	Name, address, responsible person, amount/kind of wastes, collection scheme, etc
Reduction/Phase-out of Hg in Products and Industrial Processes		Regulatory framework for phase-out programme (except for not practical available products/processes)
The Basel Convention - TBM		Prohibition of Hg waste import (4-1-a)
		TBM under the certain conditions: ESM facility under a national legal framework at state-of-the-art level
		The Ban Amendment (only for the ratified countries)
Authorization and Inspection of Disposal Facilities		Treatment of Hg waste at ESM facilities with approvals or operating permits under legal framework

3 Guidance on ESM

3.3 Identification and Inventory

Category		Examples
1	Extraction & use of fuels/energy sources	Coal combustion, extraction/refining/use of mineral oils, natural gas, other sources, etc
2	Primary (virgin) metal production	Primary extraction and processing of Hg, metal extraction and initial processing, etc
3	Production processes with Hg impurities	Cement production, pulp/paper production, lime production, light weight aggregate kilns, etc
4	Intentional use of Hg in industrial processes	Chlor-alkali production (Hg tech), VCM production, Acetaldehyde production ($HgSO_4$ catalyst), etc
5	Products/application with intentional use of Hg	Thermometers/measuring devices, E-switches, light sources with Hg, batteries with Hg, etc
6	Secondary metal production	Recovery of Hg, ferrous metals, gold (from E-waste), and other metals
7	Waste incineration	Incineration of MSW, HW, medical wastes
8	Waste deposition/landfilling, wastewater treatment	Control of landfills/deposits, uncontrolled local disposal/dumping, wastewater system
9	Crematoria and cemeteries	Crematoria, cemeteries

3 Guidance on ESM
3.4 Sampling, Analysis and Monitoring

	Necessary info	Procedures	Type
Sampling	Numbers, date, locations, conditions, special remarks, etc	Quality assurance and quality control	Liquids, solids, gases, biological samples

	Conditions of high-quality	Analytical steps
Analysis	• Specification of techniques • Maintenance quality • Validation of all methods • Staff quality	a. Extraction b. Purification c. Identification of suitable detectors (AAS, etc) d. Quantification and reporting as required e. Reporting in accordance with regulations

Monitoring	Co-operate in monitoring the efforts of the management of HW on human health and the environment (10-2-a)	
	Type	**Target**
	Waste	• Mobility of Hg in wastes • Hg concentration in wastes
	Flue gas	• Air quality including Hg • Speciation of Hg (elemental, oxidized, particle-bound, T-Hg)

3 Guidance on ESM
3.5 Waste Prevention and Minimization

ASGM	• Education of ASGM workers on exposure risks and environmental impacts of Hg uses • Hg-free techniques • Interim solutions towards Hg-free techniques
VCM production	• Alternative, Hg-free methods • Better management of Hg (low-Hg catalyst, environmental control equipment)
Chlor-Alkali production	• Hg-free methods (membrane and diaphragm process) • Better control of the existing facilities
Hg added products	• Hg-free products • Limits of Hg use • Procumbent • Take-back collection programme • EPR

3.6 Handling, Separation, Collection, Packaging, Labelling, Transportation and Storage

Handling		•Avoid any possibility to release Hg from Hg wastes •No mixture of Hg wastes with other wastes
Separation		•Separation from other wastes at waste generators
Collection	**Wastes consisting of Hg^0**	•Collection of waste consisting of elemental Hg in appropriate containers
	Wastes containing Hg	•Waste collection stations or drop-off deports •Public places or shops •Households
	Wastes contaminated with Hg	•Separate collection from other wastes if Hg contents exceed a certain criteria
Packaging, labelling, transportation		•National hazardous waste or dangerous goods transportation legislation •International standards
Storage	**Wastes consisting of Hg^0**	•Separate storage from other wastes •Use of package or box of new products for solid waste •Use of original containers for liquid waste
	Other Hg wastes until any D operations	•Technical requirements comply with national law for HW •Designated/controlled area at secured zone

3.7 Environmentally Sound Disposal - 1

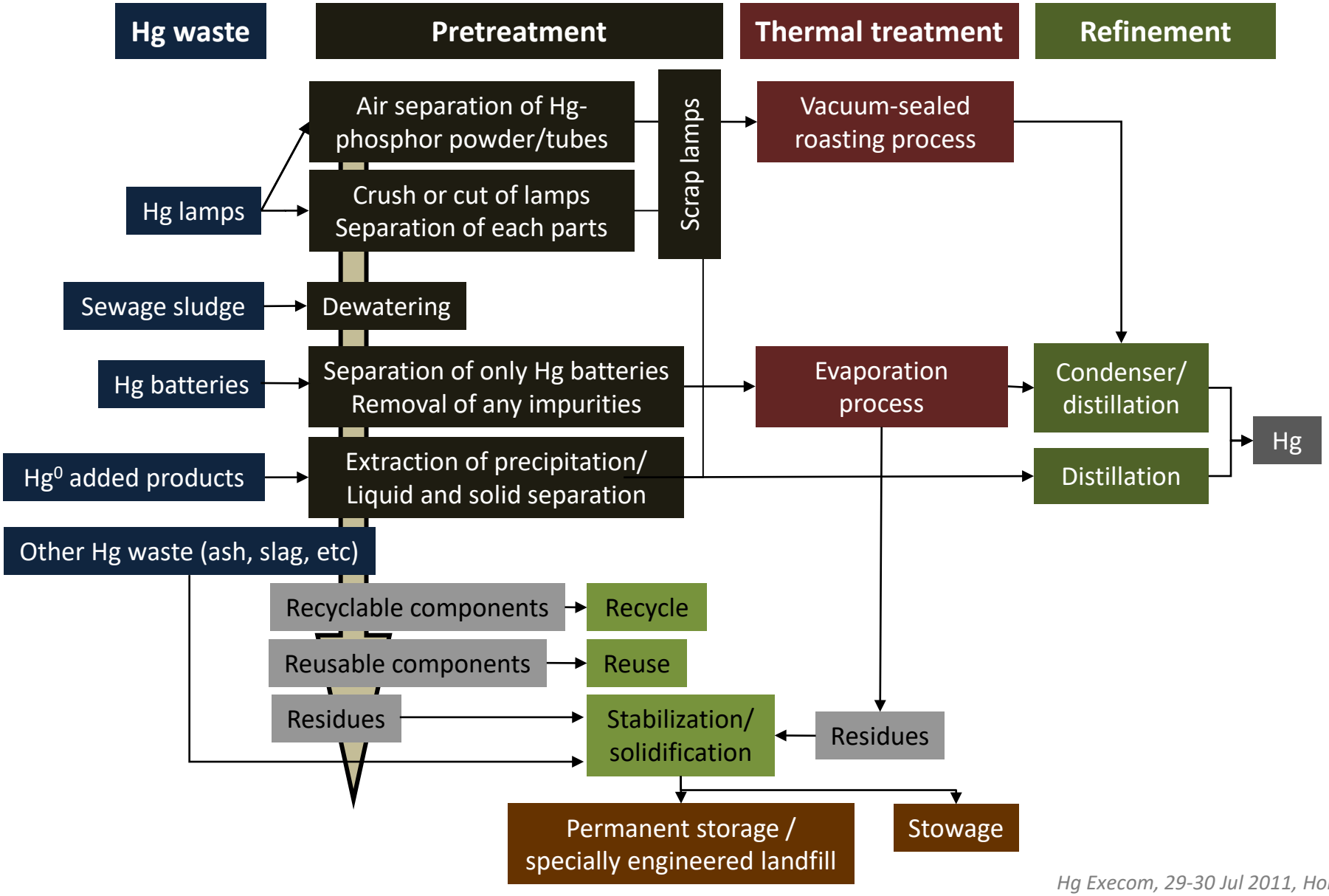
R4	Recycling/reclamation of metals and metal compounds
R6	Regeneration of acids or bases
R7	Recovery of components used for pollution abatement
R8	Recovery of components from catalyst
R12	Exchanges of wastes for submissions to R4, R7, R8 or R13
R13	Accumulation of material intended for R4, R7, R8 or R12
D5	Specially engineered landfill
D9	Physico-chemical treatment
D12	Permanent storage
D13	Blending or mixing prior to submissions to D5, D9, D12, D14 or D15
D14	Repackaging prior to submissions D5, D9, D12, D13 or D15
D15	Storage pending any of D5, D9, D12, D13 or D14

For D5 or D12

For stowage

3 Guidance on ESM

3.7 Environmentally Sound Disposal - 2



3.8 Reduction of Hg Releases from Thermal Treatment and Disposal of Waste

Hg releases from	Primary techniques	Secondary techniques
Thermal treatment	•Efficient removal of Hg-added products •Notification of waste producers of the need to segregate wastes •Identification/restriction to receive Hg wastes	•Proper treatment of flue gas as co-benefit with other emissions

Hg releases from	Principle	Control measures
Landfilles	•To avoid landfilling of any types of Hg wastes	•Leachate treatment system •Landfill gas capture system

3.9 Remediation of Contaminated Sites

Identification of Contaminated Sites and Emergency Response

1	Visual observation of site conditions or attendant contaminant sources
2	Visual observation of manufacturing, or other operations to emit Hg
3	Observed adverse effects in human health and the environment
4	Physical or analytical results showing contaminant levels
5	Reports from community

Factors for Environmentally Sound Remediation

1	Amount of Hg released	6	Methylation potential
2	Origin of contamination	7	Leaching potential of Hg
3	Chemical state of Hg on the sites	8	Background Hg contamination
4	Number, size, location of Hg hotspots	9	Hg mobility in aquatic system
5	Mining properties	10	Cleanup standard

Receptors	Bioavailability to aquatic biota, invertebrates, edible plants Hg concentrations in human, animal and plants

3 Guidance on ESM
3.10 Health and Safety

Principle	Employer's responsibility for health and safety of every employed person with sufficient level of insurance coverage
	•Keep workers and the public away from all possible source of wastes •Control wastes so that possibility of exposure is minimized •Protect workers by ensuring that personal protective equipment is used

Basic knowledge for employees	
1	Definition of Hg wastes
2	Segregation of Hg wastes from others
3	Occupational safety and health
4	Proper labellig and storage requirements
5	Treatment methods for Hg waste
6	Engineering controls in minimizing exposure
7	Emergency response

3.11 Emergency Response

Emergency Response Plan	
1	Identification of potential hazards
2	Legislation governing emergency plans
3	Action plans
4	Personnel training plans
5	Communication targets (fire service, polices, governments, etc)

Special Consideration for Spillage of Elemental Hg	
One glass-in-Hg-thermometer	Possible by cleanup personally; but contact to a medical doctor if any complains are showed
More than one thermometer	Contact to a professional, health authority or local government for professional cleaup

3 Guidance on ESM

3.12 Awareness and Participation

	Contents	Expected results
Publications	• Information papers (e.g. booklet, web sites, etc., in various languages) • Guidebooks how to dispose of waste	• Knowledge sources • How to handle Hg products/wastes
Environmental Education Programmes	• Voluntary seminars • Demonstration of take-back programme • eLearning	• Raising knowledge • Opportunities to directly expose environmental issues
Activities	• Take-back programmes • Hg-free product campaigns	• Implementation of environmental activities among all partners
Risk Communication	• Safe level of mercury exposure • Hg pollution levels • Fish consumption advisories (only for populations that consume large amounts of fish)	• Proper understanding of safe and risk levels of mercury exposure, in appropriate circumstances

Thank you

www.basel.int/techmatters/index.html