

**GOVERNMENT OF PAKISTAN
MINISTRY OF ENVIRONMENT**

**MANAGEMENT OF MERCURY AND
MERCURY CONTAINING WASTE IN
PAKISTAN**

BY

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**Consultative Meeting on Mercury Waste and Storage,
23 September, 2010, Geneva, Switzerland**

Presentation Sequence

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- Project Brief
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- Results

Management of Mercury and Mercury Containing Waste Project

- Project Brief
- Objectives
- Expected Results
- Chart for Activities
- Summary of Activities
- Future Plan/Proposals

MERCURY INVENTORY PILOT PROJECT



Project Brief

- Project Title: Mercury Inventory Pilot Project in Pakistan
- Sponsoring Agency: USA
- Executing Agency: United Nations Environment Programme (UNEP),
Chemicals Branch, Geneva
- Implementing agency: International Cooperation Wing, Ministry of
Environment, Government of Pakistan
- Duration: January, 2008-November, 2008
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Objectives of the Mercury Inventory Project

- To develop the basic data of mercury and its products in Pakistan
- To identify the mercury exposure in the country
- To identify the groups of people at more risk
- To create the awareness in the general public regarding the toxicity of mercury
- To attempt the replacement of mercury containing commodities
- To develop strategies to reduce the risk of mercury exposure

Methodology of the Project

- Creation of Stakeholders Team
- Identification of mercury products/uses
- Selection of susceptible/effected areas
- Collection /Analysis of samples
- Data collection of mercury and mercury products
- Meetings of stakeholders
- Training of Stakeholders Team by UNEP expert
- Preparation of baseline data/inventory of mercury and its products

Summary of mercury release from all categories

No	Category and Sub-category	Activity rate	Input factor		Amount (Kg Hg/y)	
			Min	Max	Min	Max
1	Extraction and use of fuel/energy sources					
1.1	Coal combustion in large power plants	2091310 T/y	0.05 g Hg/T	0.5 g Hg/T	104.5655 Kg/year	1045.655 Kg/year
1.2-a	Mineral oils - extraction, refining and use	1610762 T/y	0.01 mg Hg/T	0.01 mg Hg/T	0.01610762 Kg/year	0.0161076 Kg/year
1.2-b	Use of gasoline, diesel and distillates	567182.5 T/y	1 mg Hg/T	100 mg Hg/T	5.676182 Kg/year	567.6182 Kg/year
1.2-c	Natural gas - extraction, refining and use	29540000000 m3/year	0.03 μ gHg/Nm3 gas	0.4 μ g Hg/Nm3 gas	0.8862 kg/year	11.816 kg/year
2	Production of other minerals and materials with mercury impurities					
2.1	Cement production	25000000 T/y	0.02 g Hg/T	0.1 g Hg/T	500 Kg/year	2500 Kg/year
3	Intentional use of mercury in industrial purposes					
3.1	Chlor-alkali production with mercury-Technology	52800 T/y	25 g Hg/T	400 g Hg/T	1320 Kg/year	21120 Kg/year

Summary of mercury release from all categories

No	Category and Sub-category	Activity rate	Input factor		Amount (Kg Hg/y)	
			Min	Max	Min	Max
4	Consumer products with intentional use of mercury					
4.1	Thermometers with mercury	310.365 items/y	0.5 items/y	1.5 items/y	155.1825 Kg/year	465.5475 Kg/year
4.2-a	Light sources with mercury (fluorescent tube)	5613180 items/year	10 mg Hg/item	10 mg Hg/item	56.1318 Kg/year	56.1318 Kg/year
4.2-b	Light sources with mercury (metal halide lamps)	360866 items/year	25 mg Hg/item	25 mg Hg/item	9.02165 Kg/year	9.02165 Kg/year
4.3-a	Batteries with mercury (alkaline, other than button cell shapes)	1573 T/year	0.25 kg Hg/T	0.25 kg Hg/T	393.25 Kg/year	393.25 Kg/year
4.3-b	Batteries with mercury {mercury oxide (all sizes)} also called mercury-zinc cell}	0.462 T/year	320 kg/T	320 kg/T	147.84 Kg/year	147.84 Kg/year
5	Custom import data of Biocides and pesticides with quantity					
5.1	Misc. Product uses, mercury metal uses, and other sources	5779 T/year	1 kg Hg/T	1 kg Hg/T	5779 Kg/year	5779 Kg/year

Summary of mercury release from all categories

No	Category and Sub-category	Activity rate	Input factor		Amount (Kg Hg/y)	
			Min	Max	Min	Max
6	Waste incineration					
6.1	Incineration of medical waste	4118 T/year	8 g Hg/T	40 g Hg/T	32.944 Kg/year	164.72 Kg/year
7	Waste deposition/land filling and waste water treatment					
7.1	Informal dumping of general waste	255000 T/year	1 g Hg/T	10 g Hg/T	255 Kg/year	2550 Kg/year
7.2	Control land fills/deposits	1900000 T/year	1 g Hg/T	1 g Hg/t	1900 Kg/year	1900 Kg/year
7.3	Waste water treatment	93776724 cm ³ /year	2 mg Hg/m ³	2 mg Hg/m ³	187.553448 Kg/year	187.553448 Kg/year
TOTAL					10846 Kg/year	36 898.77 Kg/year

MANAGEMENT OF MERCURY AND MERCURY CONTAINING WASTE PROJECT



Project Brief

Project Title: Management of Mercury and Mercury Containing Waste in Pakistan

Sponsoring Agency: Norway

Executing Agency: United Nations Environment Programme (UNEP),
Chemicals Branch, Geneva

Implementing Agency: International Cooperation Wing, Ministry of
Environment, Government of Pakistan

Duration: December, 2008-June, 2010



Main objectives of the project

- Review and analysis of the national mercury inventory data
- Exchange of information with national stakeholders to prioritize mercury waste sources and sectors
- Development of a national mercury waste management plan
- Identification of possibilities for Environmental Sound Management (ESM) application in selected sources / sectors
- Sampling and analysis of relevant environmental and human samples

Expected Results/Outputs of the project

- Enhancement of Draft Technical Guidelines on the ESM of Mercury Waste
- Prioritization of sector/source-specific mercury waste
- Development of national and source/sector-specific mercury waste management plans
- Implementation of training and capacity-building programs
- Awareness-raising of policymakers, regulators and stakeholders
- Mapping of existing capacity :
 - sampling of relevant matrices
 - mercury analysis at national level



**International Cooperation
Wing
Ministry of Environment
Government of Pakistan**

**SUMMARY TABLE FOR ACTIVITIES WITHIN THE
PROJECT ON "MANAGEMENT OF MERCURY AND
MERCURY CONTAINING WASTE IN PAKISTAN**



**UNEP Chemicals Branch,
Geneva**

S #	Activity	Country / Actors	Date	Objective
1	Set-up national project management structure and identification of relevant national stakeholders	International Cooperation Wing, Ministry of Environment	March 2009	<ul style="list-style-type: none"> i. Creation of national project team ii. Identification of national stakeholders iii. The draft national stakeholders workshop agenda indicating priority sectors to be communicated to International Consultant by end of March 2009
2	<ul style="list-style-type: none"> a. National stakeholders' meeting and orientation on the Draft Technical Guidelines on Environmental Sound Management (ESM) of Mercury Waste, criteria for prioritization and drafting of a national mercury waste management plan b. Sector-specific and awareness-raising activities on the Technical Guidelines (TG) application 	IC Wing, M/o Environment and International Consultant	April 2009	Questionnaire of mercury issues to be distributed to Workshop participants in advance of the workshop
			May 2009	<ul style="list-style-type: none"> i. National inception workshop of stakeholders ii. Site visits of International Consultant to hot spots i.e. Chlor-alkali industry (Ittehad Chemicals), hospital waste incinerator iii. Proceeding/report of inception workshop to be communicated to UNEP Chemicals Branch

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UNEP Chemicals Branch,
Geneva

S#	Activity	Country / Actors	Date	Objective
3	Collection of samples and shipment to UK	IC Wing, M/o Environment and Mercury Lab, UK	June 2009	
4	Development of national mercury waste management plan	IC Wing, M/o Environment and International Consultant	June 2009 – May 2010	Application of Basel Convention Technical Guideline on Mercury Waste on the following sectors; a) Chlor-alkali industry b) Dental amalgams sector c) Medical waste incinerators
5	Sharing of results national with local stakeholders	Mercury Lab, UK	July 2009	



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UNEP Chemicals Branch,
Geneva

S #	Activity	Country / Actors	Date	Objective
6	Global final project results workshop	Burkina Faso, Cambodia, Chili, Pakistan, Philippines, International Consultant, Mercury Lab, UK and UNEP Chemicals Branch	March/April 2010	i. Evaluation of project activities ii. Lessons learned iii. Discussion on draft final report
7	2 nd national stakeholder meeting to finalize management plan and communication of results to UNEP Chemicals Branch	IC Wing, M/o Environment and International Consultant	May 2010	Finalization of mercury waste management plan with recommendations of all the national stakeholders
8	Submission of final technical and financial national reports to UNEP, Chemicals Branch	IC Wing, M/o Environment and International Consultant	June 2010	Final report will be submitted to UNEP Chemicals Branch by email
9	Publication of project final report	UNEP Chemicals Branch		

Summary of Activities

- Set-up national project management structure
- Identification of National Stakeholders
- Site Visit of UNEP Chemicals Expert Dr Mario Yarto to Chlor Alkali Industries
- Inception Workshop of National Stakeholders
- Collection of Human hair samples & shipment to UK
- Products for Mercury analysis
- Draft Mercury Waste Management Plan
- Final Workshop of National Stakeholders

National Project Management Structure

- Joint Secretary (IC)/SAICM- NFP
- Technical Officer (Chemical)/NPC-MWP
- Programme Officer
- Administrative and Finance Assistant
- Office Attendant
- Messenger

Identification of National Stakeholders

- Ministry of Environment
- Federal & Provincial EPA's
- Ministry of Commerce
- Ministry of Industries and Production
- Federal Board of Revenue
- Ministry of Health
- Ministry of Science and Technology
- Ministry of Food and Agriculture
- Ministry of Petroleum and Natural Resources
- City District Governments
- Chamber of Commerce and Industry
- Research institutes
- Academia
- NGOs
- Electronic and print media

Site Visit of UNEP Chemical Expert to Chlor-Alkali Industries

1. Ittehad Chemicals Limited
(40% Production on Mercury Cell Technology)
2. Sittara Chemicals Industries
(100% Production on Membrane Cell Technology)





Inception Workshop of National Stakeholders

Date: 30th July, 2009

Venue: Avari Hotel, Lahore

No of Participants: 168

Group I: Criteria for prioritization

Group II: Drafting of a national mercury waste management plan

Group III: Sector specific and awareness raising activities on the Technical Guidelines (TG) application

Inception Workshop of National Stakeholders

Recommendations

Group I: Criteria for prioritization

Policies

- Phase-out programme in existing appliances, Equipment and Industries
- Best Technical options for setting up industries /Import of new products
- Capacity building for utilization of local R&D potential.

Rules and regulations on Hg Import

- Handling, Transportation, Labeling, Storage and safe disposal
- National data base for Hg -Inventory with releases on
 - Air
 - Water
 - Soil
- Monitoring of existing potential Hg sources

Inception Workshop of National Stakeholders

Group II: Drafting of a national mercury waste management plan

- Identification and categorization of mercury waste
- Segregation of mercury waste at source
- Specific legislative guidelines for safe handling, storage transportation and disposal of mercury waste including fresh and existing legislations (Including Basel Convention and National instruments)
- Reuse , recycle and recovery of mercury waste
- Only certified and skilled personnel should handle the mercury waste
- Technical training of consumers of mercury products should be undertaken
- Academia and regulating bodies should include the subject “Hazardous Waste Management” in their curricula

Inception Workshop of National Stakeholders

- **Capacity building of governmental and nongovernmental organizations/departments**
- **Rigorous implementation through EPAs/Ministry of Environment**
- **Monitoring and evaluation by independent monitoring agencies**
- **Encourage development of alternative equipment and materials**
- **Establish R&D centers at provincial level**
- **Exchange of knowledge and expertise at international level**
- **Encouraging mercury free interventions at national level**

Inception Workshop of National Stakeholders

Group III: Sector specific and awareness raising activities on the Technical Guidelines (TG) application

Vision Statement

- Awareness leads to personal protection, personal protection leads to community safety, community safety leads to proper and effective implementation of the National Mercury Waste Management Plan

Goal and Objective

- Development of a national mercury waste management plan
- Incorporation of the Basel Convention
- Use multiple points if necessary

Inception Workshop of National Stakeholders

Main Sectors

- Chlor-Alkali Plants
- Health Care and Dentistry
- Landfill (municipal waste)
- Ship Breaking
- Secondary ferrous and non-ferrous metal production
- Energy sources
- Waste burning (industrial, medical)
- Cell batteries
- Lime production

Inception Workshop of National Stakeholders

Key Players per Sector

HEALTH CARE

- Doctors
- Nurses
- Orderlies
- Medical students
- Paramedical staff
- Hospital administrative staff
- Sanitary workers

INDUSTRY

- Ministry of Industries
- Chambers of commerce and industry
- Labor department
- Customs department
- Small and Medium Enterprises Development Authority (SMEDA)
- Local governments
- Ministry of Environment
- Industrial and Manufacturing units heads
- Labor Union

Inception Workshop of National Stakeholders

LANDFILL (Municipal Waste)

- Project Director Solid Waste Management
- Chief Corporation Officer Municipal Corporation – Local Governments
- Solid Waste Management Office
- EPAs and EPDs
- Sanitary Workers
- Garbage Collectors
- NGOs

Possible Awareness Activities and Practices

PRACTICES

- Waste minimization
- Segregation at source
- Handling
- Collection
- Storage
- Transportation
- Disposal

Inception Workshop of National Stakeholders

Awareness Tools

- Campaigns
- Leaflets
- Brochures
- Workshops
- Banners

Coordination Mechanism

- National coordination committee
- Development of sectoral specific guidelines
- Legislative and Regulatory Guidelines
- Ground level stakeholders
- Monitoring and evaluation

RECOMMENDATION

- Remediation of sites contaminated with mercury
- Introduce programs for public awareness and participation
- Involvement of civil society

Collection of Human hair samples & shipment to UK

Groups of Hair Samples

- Group No (1): Ittihad Chemicals Limited
Number of samples (22)
- Group No (2): Sittara Chemicals Industries
Number of samples (10)
- Group No (3): Punjab Dental Collage & Hospital
Number of samples (22)
- Group No (4): Control Group Samples
Number of samples (18)



THE ONLY WAY

SAFETY
EQUIPMENT

HOUSE SURGEONS ON DUTY

Sr. No

From 10-08-09 IMPORTANT NOTE MONDAY:
Filling Patients will be Treated in this
Department from 8:15 AM TO 10:30 AM.
ALL H/O and Doctors Please
Instruction.





HOUSE SURG

Sr. No	
	From 10-08-09 M
	Filling Patients
	Department from
	10 and Doc
	hon.

Comparison of T-Hg concentrations from this study with other different studies of different exposed populations worldwide

Location	n	Mean ± SD (µg/g)	Range (µg/g)	Comments	References
Tucuruí, Para, Brazil	125	35.0	0.9-240	Fishermen	Leino and Lodenius (1995) ⁽²⁾
Palawan Philippines	130	3.7	0.1 – 18.5	Hg mining impacted area	Williams et al. (2000) ⁽³⁾
Kuwait	100	4.181	-	Fishermen	Al-Majed and Preston (2000) ⁽⁴⁾
Diwalwal, Philippines	316	4.14	0.03-37.76	Gold amalgamation area	Drasch et al. (2001) ⁽⁵⁾
Rio Branco, Brazil	2318	2.418 ± 0.850	-	Urban population	De Oliveira Santos et al (2002) ⁽⁶⁾
Jacareacanga, Para, Brazil	205	8.6	0.3-83.2	Brazilian Amazon riverine community	Crompton et al. (2002) ⁽⁷⁾
Ten cities in Japan	8665	1.82 (GM*)	0.02 – 29.37		Yasutake et al. (2004) ⁽⁸⁾
Cambodia	94	3.1 (GM) 7.3 (GM)	0.54-190	A source other than fish may be responsible for high Hg in some Cambodians	Tetsuro, A. et al (2005) ⁽⁹⁾

Comparison of T-Hg concentrations from this study with other different studies of different exposed populations worldwide

Location	n	Mean \pm SD ($\mu\text{g/g}$)	Range ($\mu\text{g/g}$)	Comments	References
Madeira River B., Amazon , Brazil	713	15.22 \pm 9.60	5.99-150	Riverside population	Bastos et al. (2006) ⁽¹⁰⁾
Wujiazhan town, northeast China	108	3.44 (AM**) 0.648 (GM*)	0.16-199	The river was polluted with Me-Hg by industrial wastewater discharge	Zhang and Wang (2006) ⁽¹¹⁾
DSX, Wanshan	49	5.5 \pm 2.7	1.5-16	Mercury mining area	Ping Li (2009) ⁽¹²⁾
XCX, Wanshan	36	3.3 \pm 1.4	1.6-9.4	Mercury mining area	Ping Li (2009) ⁽¹²⁾
Chlor-Alkali / Pakistan (SCL)	9	Mean 4.36 Median 2.30	1.69 – 20.2	Pakistani Chlor-Alkali factory	This study
Chlor-Alkali / Pakistan (ICL)	23	Mean 818 Median 177	3.3 - 9341	Pakistani Chlor-Alkali factory (Lahore)	This study
Pakistani Health worker/ Pakistan	22	Mean 2.59 Median 2.26	0.45- 4.86	Dental Hospital () Pakistan /Lahore)	This study
Punjab University (Lahore /Pakistan)	18	Mean 0.76* Median 0.39*	<0.03-4.73	Pakistani Control group (student population)	This study

Products for Mercury analysis

Detail of Mercury Products Samples

Category "A" Light sources				
S.NO	Description	Brand Name	Origin	Quantity
1	Energy saver	Osaka	China	1
2	Energy saver	Philips	China	1
3	Tube light	Sailboat	China	1
4	Bulb	Osaka	China	1
Total				4
Category "B" Paints				
S.NO	Description	Brand Name	Origin	Quantity
1	Synthetic enamel	Hi-delux	Khurram shahzad & company Pakistan	1
2	Synthetic enamel	Fouji	Harris paint factory lahore Pakistan	1
Total #				2

Cont'

Products for Mercury analysis

Category "C" Cosmetics Sub category Skin Cream				
S.No	Description	Brand Name	Origin	Quantity
.				
1	Skin cream	Vince	King world laboratories Australia	1
2	Skin cream	Due	Creative Cosmetic Karachi Pakistan	1
Total				2
Sub category Sun screen Cream				
S.No	Description	Brand Name	Origin	Quantity
.				
1	Sun screen cream	Sun block cream	Stiefel consumer USA	1
2	Sun screen cream	Banana boat	Canada	1
Total				2

Products for Mercury analysis

Sub category Pimpled medicated cream				
S.No	Description	Brand Name	Origin	Quantity
.				
1	Pimplex	Pimpal cream	Brookes pharmaceutical laboratories (Pakistan)	1
2	Pimplex	Adapco	ATCO Laboratories Karachi Pakistan	1
Total				2
Sub category Soap				
S.No	Description	Brand Name	Origin	Quantity
.				
1	Soap	Dove	Unilever Germany	1
2	Soap	Skin white	Skincare Company Pakistan	1
Total				2

Products for Mercury analysis

Sub category Mascara

S.No.	Description	Brand Name	Origin	Quantity
1	Mascara	Lancom	Paris	1
2	Mascara	Etude	Korea	1
Total			2	

Category "D" Pharmaceutical

S.No.	Description	Brand Name	Origin	Quantity
1	Lotion	Mercurochrome lotion B.P.C	Spectrum Laboratories Lahore Pakistan	1
2	Lotion	Mercurochrome lotion B.P.C	Sapient Pharma Kot Lakhpat Lahore	1
Total			2	

Category "E" Miscellaneous Sub category Dental amalgam

S.No.	Description	Brand Name	Origin	Quantity
1	Dental amalgam	local	Pakistan	(6 samples)
Total			6	Cont'

Products for Mercury analysis

Sub-Category Battery				
Button cell battery (12 samples)				
S.No	Description	Brand Name	Origin	Quantity
1	Button cell battery	Vinic	Japan	1
2	Button cell battery	Lithium battery	China	1
3	Button cell battery	Fante Lithium battery		1
4	Button cell battery	Sony	Japan	1
5	Button cell battery	Panasonic	Japan	1
6	Button cell battery	Maxell	Japan	1
7	Button cell battery	Maxell	Japan	1
8	Button cell battery	Energizer	USA	1
9	Button cell battery	Lithium cell	Nil	1
10	Button cell battery	Tianqiu	Nil	1
11	Button cell battery	LR 1130	Nil	1
12	Button cell battery	L 1154	Nil	1
Total				12

Cont'

Products for Mercury analysis

Cylindrical battery (12 samples)				
S.No	Description	Brand Name	Origin	Quantity
1	Cylindrical battery	Energizer	China	1
2	Cylindrical battery	Energizer	Singapore	1
3	Cylindrical battery	Super alkaline	China	1
4	Cylindrical battery	Silver	Nil	1
5	Cylindrical battery	Vimie	Nil	1
6	Cylindrical battery	Alkaline	Nil	1
7	Cylindrical battery	Eastar	Nil	1
8	Cylindrical battery	Toyashiba	Nil	1
9	Cylindrical battery	Rocket	Nil	1
10	Cylindrical battery	3-circles	Japan	1
11	Cylindrical battery	Nokeea	Nil	1
12	Cylindrical battery	Power flesh	Nil	1
Total				12

Cont'

Products for Mercury analysis

Sub category Cement				
S.No	Description	Brand Name	Origin	Quantity
.				
1	Lime	local	Pakistan	1
Total				1
Sub category LPG				
S.No	Description	Brand Name	Origin	Quantity
.				
1	Diesel	local	Pakistan	1
2	Coal tar	local	Pakistan	1
Total				2
Category "F" Pesticides				
S.No	Description	Brand Name	Origin	Quantity
.				
1	Pesticide	Tenekil	PCSIR laboratories Karachi Pakistan	1
2	Pesticide	Rapids	Pakistan	1
Total				2

Cont'

Products for Mercury analysis

<u>Muzaffarabad, Azad Jammu and Kashmir</u>				
S.No.	Description	Location	Origin	Quantity
1	Municipal effluent	Domail	Pakistan	1
2	Municipal effluent	Near Neelam bridge	Pakistan	1
3	Hospital waste	Abbas Institute of Medical Sciences (AIMS)	Pakistan	2
4	Solid waste landfill site	Shahdra	Pakistan	4
Total			8	
Grand Total			61	

Draft National Mercury Waste Management Plan

1. Chlor Alkali Sector
2. Health Sector
3. Light Products Sector

Final Workshop of National Stakeholders

Date: 19th May, 2010

Venue: Islamabad Hotel, Islamabad

No of Participants: 130

Group I: Chlor-Alkali Sector

Group II: Health Sector

Group III: Light Products Sector

Final Workshop of National Stakeholders

Recommendations

Group I: Chlor-alkali- Sector

- **Phase out Plan**
 - a) **Total shut down of 30 MT of mercury cell within 2 months**
 - b) **Remaining 90 MT by 2015**

- **Demolition plan**
 - a) **Hg disposal**
 - b) **Rest of equipment scrap**

- **To replace Mercury plant with Ionized Exchange Membrane plant, technical and financial assistance is required.**

Final Workshop of National Stakeholders

Group II: Health Sector


- Replacement of mercuric amalgam with composite (white material)
- Baseline data on existence and use of mercury in public and private health sectors
- Proper handling of mercury waste in health sector (e.g. laboratories and equipments)
- Awareness messages regarding hazards of mercury and general public through posters, lectures in educational institutions, print and electronic media
- Dental clinics should have amalgam mixer/ separator through law /legislation
- The cosmetic manufacturers should be made mandatory through legislation to cite mercury warning on cosmetics in Urdu and English both
- Mercury containing waste should not be mixed with other hazardous waste
- Hospitals should develop guidelines to store, handle mercury equipment
- EPA should develop data and produce mercury containing rules for concerned agencies (imports, PSQCA , medicines, fungicides etc)
- Future industries must not use mercury in products (ISO 9001)

Final Workshop of National Stakeholders

Group III: Light Products Sector

- Light energy savers should not be encouraged as these contain mercury.
- Lighting is a diffused activity taking place at every house and commercial center and it is difficult to apply a control on diffused activities. So first preference should be given to reduction of mercury use in manufacturing.
- Take back services may work more efficiently with the responsibility of the distributors to effectively convey this concept through electronic and print media.
- Apply Management / Treatment Practices for Curbing Mercury Release into Environment
- Develop Electrical & Electronics Manufacturing with Minimum or No Use of Mercury
- Undertake R&D programmes with Cooperation of Chambers of Commerce & Industries and Academia for Developing Environment Friendly Technologies Regarding Mercury Manufacturing and Mercury Waste Management

Future Plan/Proposals

1. Phasing out of Mercury and Mercury Containing Products in the Country
 2. Capacity Building of Institutions regarding the management of Mercury
 3. Awareness Raising Activities on Health Impacts of Mercury
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Thanks

