

**"Ang Walay Pagpahaluna Sa Paglain-lain Sa Basura – Dili Kuhaon"
PAAGI nga gipatumian na sugod HULYO 1, 2005.**

MALATA - salin nga pagkaon, utanon, dahon, panit sa prutas, basa nga papel, tina-i sa isda, hugaw sa hayop

DILI MALATA - Plastic bags o putos, napkin, diaper, putos sa candy, mga trapo, styropor ballpens, papel nga hugaw, mga tissue, upos sa sigarilyo, plastic nga kutsara ug tinidor, plastic straw, masking and scotch tape, plastic nga putos sa ice water ug junk foods.

MAGAMIT PA - o mabaligya: plastic containers, carton/box, limpyo nga papel, newspaper, botelya aluminum, lata, puthaw, tetra packs...

MAKADAUT - Dry cell battery, lata sa pintal, walay sulod nga insecticido containers, hupas nga tambal, basilyo sa medisina, naponder nga "fluorescent bulbs".

DAGKO - Karaang appliances, washing machine, refrigerator, guba nga sofa, guba nga higdaanan, dagkong mga sanga sa kahoy.

**Nganong Dumalahon man nato ang mga biya?
Nganong ibahig/lahi-lahion man ang basura**

- Ang landfill sa siyudad hamubo nalang ang kapasidad. Mahimo natong mapataas ang gitagal nga tuig sa paggamit niini kon ang atong ilabay kadto ra gyung dili na magamit.

Ang mga biya resulta sa atong buhat – tinagsa o hiniusa nga paagi man. Kon dili man gani kita makahipos sa atong mga biya, unsaon kaha nato pag-atiman ug pagdumala ang mga mas lisud ug mas dagkong mga butang sa atong kaugalingon ug sa katilingban?

**IPASIGARBO NATO ANG ATONG PINALANGGANG
DAKBAYANG CEBU NA WALAY MAKATUPONG SA
KALIMPYO UG KAHAPSAY . . .**

HON. TOMAS R. OSMEÑA
CITY MAYOR, City of Cebu

CEBU CITY COUNCIL

**SOLID WASTE
MANAGEMENT BOARD**

In cooperation with:

AYALA FOUNDATION, INC.
CEBU PCEEM
ETELECARE GLOBAL SOLUTIONS
SAN MIGUEL CORPORATION
UNIVERSITY OF CEBU
UNIVERSITY OF SAN CARLOS
UNIVERSITY OF SOUTHERN PHILIPPINES

住民への周知文

セブ市 Brgy.Luhug との協議結果

日時：2017年1月18日（水） 10時30分～11時30分

場所：Brgy. Luhug

出席者：

セブ側： Brgy. Luhug Barangay Councilor Empleo.Hazel Ann

日本側： 北九州市環境局 環境国際戦略部長 青柳祐治

北九州市環境局環 主査 安武宏

境国際戦略課

協議結果：

- ・現市長支持派のバランガイ（地域自治体）であり、本市がセブ市に対し野村興産の蛍光管リサイクル事業で協力していることを伝えたところ、歓迎を受け協議を行った（たまたま Osmena 市長が別件で視察訪問していたのを遠くから見る事ができた。）。
- ・セブ市内最大のバランガイで、人口約 42,000 人を擁している。
- ・蛍光管、バッテリーを含む廃棄物は合計で 30 t/日発生するが、そのうち蛍光管がいくら含まれているかは把握できていない状況。3t パッカー車 4 台が一日 2 往復で廃棄物の収集運搬を行っているが、運搬能力を慢性的に超過している。特に修理による運行不可の日が頻繁に発生している状況であるとのことであった。
- ・ここでも、蛍光管含む E-WASTE については、病院やショッピングモールから排出されるロットの大きいものはバランガイが関与せず、各排出事業者が民間企業への業務委託により収集搬送され、最終的に CCTFI へ運ばれることになっている。それ以外の小ロットの蛍光管については、各家庭が分別排出する廃棄物と一緒にバランガイが曜日毎に品目を分け収集し、イナヤワンのトランスポートーションに運び、分別状況をチェックしたうえで CCTFI に運んでいる。蛍光管の回収曜日は決まっていない。
- ・以前、カブレラ元市議会議員の指導により各家庭から排出された蛍光管をセブ市庁舎へ直接持っていったことがあったが、それは知り合いから集めた程度の本当に少量のものに止まったとのことであった。
- ・これまで、セブ市からの指導により、横断幕を掲げ、チラシ配布等の環境教育キャンペーンを実施したことがあるが、周知活動としては口コミ程度とのこと。
- ・蛍光管に含まれる水銀の危険性については、海外からのニュースを見る知識層や各コミュニティのリーダー（バランガイ内は 12 分割されており、それぞれ 5～8 のコミュニティが存在する）は知っているが、住民の 8 割は知らないのではないかということであった。このため、学校の PTA に参加する親に対し、水銀処理の必要性を伝えていきたいとのことであった。
- ・セブ市が E-WASTE に関する条例を公布したが、バランガイとしてはガイドラインの施行を待っている状況で、これまで独自の対策はとっていないとのことであった。



Brgy.Luhug の正面



Osmena 市長による視察の様子

セブ市 Brgy.CogonPaldo との協議結果

日時：2017年1月18日（水） 14時00分～15時00分

場所：Cebu City Disaster Control Office（Brgy. CogonPaldo のサテライトオフィス）

出席者：

セブ側：	Cebu City Disaster Control Office	責任者	
日本側：	北九州市環境局	環境国際戦略部長	青柳祐治
	北九州市環境局環境国際戦略課	主査	安武宏

協議結果：

- ・セブ市の最南西に位置するバランガイで、産業はほとんどない住宅地（セブ市中心部より車で1時間弱で到着）。
- ・このバランガイは現市長反対派であったため、バランガイ本体の訪問は実現できず、現市長支持派が運営するサテライトオフィスを訪問のうえ協議を行った。
- ・このバランガイは、把握できている選挙有権者だけで20,000人を擁しており（選挙権は20歳以上、投票率は常に98%）、エリア内には一軒家が数多く散在している。
- ・バランガイ本体が、収集を行っているが、ごみ出しルールを守っていないので、市民へも周知等はこちらで行っている。分別等のルールを守るようにバランガイに言っているが、やってくれない。
- ・廃棄物の収集運搬について、ガイドラインがないことから分別が全く行われていない。このため、各家庭から集められた廃棄物のうち、売れるものはジャンクショップに買い取られ、それ以外のは海がすぐそばにあるため、蛍光管を含め海洋投棄されている。
- ・サテライトオフィスによる指導方法としては、各コミュニティのリーダー4～5人の家を一軒一軒訪問し、個別に指導を行い、その後バランガイ内の25エリアに伝える仕組み。
- ・蛍光管に含まれる水銀の危険性は、住民が海外からのニュースを見ているため、そのほとんどが知っているとのことであった。
- ・セブ市がE-WASTEに関するガイドライン（IRR）が施行されれば、蛍光管回収BOXがバランガイ内にも設置される見通しだが、現市長反対派のバランガイ建物内には設置せず、このサテライトオフィスに設置されることになる見込みとのことであった。
- ・なお、セブ市内には80のバランガイが存在するが、うち現市長支持派は11に止まる。そのため、今回は事前の訪問ポイントが難航し、当初4カ所のバランガイ訪問を予定していたが、結果的に3カ所（うち1カ所はサテライトオフィス）となり、やむなく当日の情報収集を終えた。このように実際の運営を担うバランガイの大半が現市長反対派で占められているなか、現在のセブ市が推進しようとするE-WASTE条例の運営について、ガイドラインが施行されても、実際に現市長反対派から如何に理解を得て運営することが出来るかが最大の鍵と思えた。



Sebu City Disaster Control Office の正面



協議の様子（中央がサテライトオフィスの責任者）

"Zero Mercury Project in the Philippines"
July 1, 2016, New World Makati Hotel
Press Room 1, 2nd Floor
Makati City

PROGRAMME				
Time			Topic	Speaker
9:00	-	10:00	Registration	
10:00	-	10:10	Invocation	Ms. Rebecca Candare Pollution Control Officer - FRP
10:10	-	10:15	Project Overview	Ms. Agnes Vallejo Senior Manager - AMETCO
10:15	-	10:45	Our Project: Zero Mercury in the Philippines	Mr. Yasuyuki Yamawake Asst. Manager - Nomura Kohsan Co., Ltd.
10:45	-	11:15	Mercury Management in the Philippines	Engr. Geri Geronimo Sañez Chief, Hazwaste Division - DENR-EMB
11:15	-	12:00	Management of Municipal Solid Waste & Mercury in Kitakyushu City	Mr. Yuji Aoyagi Executive Director - Int'l Env. Strategies Dept. City of Kitakyushu
12:00	-	13:00	LUNCH BREAK w/ Video Presentation	
13:00	-	13:30	Collection and Transport Flow	Ms. Lulu Villanueva Senior Assistant Manager - AMETCO
13:30	-	14:00	Question and Answer	Mr. Naoki Wakai Manager of Mercury Containing Waste Treatment - FRP Phils. Corp.



A Forum on Zero Mercury Project in the Philippines
August 25, 2016 | 9:00 AM to 1:00 PM
Cebu Grand Hotel, Escario Street, Cebu City

Programme

8:30 AM-9:30 AM	Registration	CCCI Staff
9:30 AM-10:00 AM	Opening Ceremony	
	Invocation & Pambansang Awit	CCCI Staff
	Welcome Remarks	Mr. Ted B. Locson, Jr. CCTFI President and CCCI VP – EARD
	Acknowledgement of Participants and Guests	Mr. Ronnel Botardo General Manager CCTFI
	Rationale of the Forum	Mr. Jun Nishida Consultant Nomura Kohsan, Co., Ltd
10:00 AM-10:30 AM	Our Project : Zero Mercury in the Philippines	Mr. Yasuyuki Yamawake Manager, Int'l. Operator Nomura Kohsan, Co., Ltd.
10:30 AM-11:00 AM	Mercury Update in the Philippines	Engr. Geri Sañez DENR-EMB Central Office, HWMS
11:00 AM-11:30 AM	An Ordinance Providing for the Management of Special Wastes of Cebu, Providing Fees and Imposing Penalties for Non-Compliance Thereof	Ms. Nida Cabrera CCENRO
11:30 AM-12:00 NN	Flow of Mercury Waste Management in Cebu	Mr. Ronnel Botardo
12:00 NN-12:30 PM	OPEN FORUM	Mr. Naoki Wakai Manager of Mercury Containing Waste Treatment F.R.P. Philippines Corp.
	Lunch	
12:30 PM-1:00 PM	Closing Remarks and Next Steps	

Emcee:
 Gary Paloma, CCCI-EARD Officer



Nomura Kohsan Co., Ltd.

A Forum on Zero Mercury Project in the Philippines
January 17, 2017 | 9:00 AM to 1:00 PM
Social Hall, 4th Floor Legislative Building, Cebu City Hall

P r o g r a m m e

Time		Topics	Speakers
8:00 AM	- 9:00 AM	Registration	CCTFI and CCENRO Staff
9:00 AM	- 9:30 AM	Opening Ceremony	
		Invocation and Pambansang Awit	CCTFI Staff
		Welcome Remarks	Dr. Efren S. Valiente <i>President, CERRI</i>
		Message	Tomas R. Osmeña <i>City Mayor</i>
		Acknowledgement of Participants and Guests	Mr. Ronnel Botardo <i>General Manager</i> <i>CCTFI</i>
		Rationale of the Forum	Mr. Jun Nishida <i>Consultant</i> <i>Nomura Kohsan Co. LTD.</i>
9:30 AM	- 10:00 AM	Our Project : Zero Mercury in the Philippines	Mr. Yasuyuki Yamawake <i>Manager, Internal Operations,</i> <i>Nomura Kohsan</i>
10:00 AM	- 10:30 AM	Mercury Update in the Philippines	Engr. Geri Geronimo Sañez <i>Chief, HWMS</i> <i>DENR-EMB Central Office</i>
10:30 AM	- 11:00 AM	An Ordinance Providing for the Management of Special Wastes in the City of Cebu, Providing Fees and Imposing Penalties for Non-Compliance Thereof	Ms. Nida Cabrera <i>Author, City Ordinance No. 2450</i> <i>CCENRO</i>
11:00 AM	- 11:45 AM	Management of Municipal Solid Waste and Mercury in Kitakyushu City	Mr. Yuji Aoyagi <i>Executive Director, Int'l Env. Strategies Dept.,</i> <i>City of Kitakyushu</i>
11:45 AM	- 12:15 PM	Flow of Mercury Waste Management in Cebu	Mr. Ronnel Botardo <i>General Manager, CCTFI</i>
12:15 PM	- 12:45 PM	OPEN FORUM Lunch	Mr. Naoki Wakai <i>Manager of Mercury Containing Waste Treatment</i> <i>FRP Philippines Corp.</i>
12:45 PM	- 1:00 PM	Closing Remarks and Next Steps	

"Zero Mercury Project in the Philippines"

January 19, 2017, Midas Hotel & Casino

2nd Floor, Avenue Montagne, 2702 Roxas Boulevard, Pasay City

PROGRAMME				
Time			Topic	Speaker
9:00	-	10:00	Registration	-
10:00	-	10:10	Invocation	Ms. Rebecca Candare Pollution Control Officer - FRP
10:10	-	10:15	Opening Remarks	Ms. Miki Tsuchiya Office of Sound Material Cycle Society, Waste Management & Recycling Dept., Ministry of the Environment Government of Japan
10:15	-	11:00	Project Overview & Our Project Zero Mercury in the Philippines	Mr. Yasuyuki Yamawake Asst. Manager - Nomura Kohsan Co., Ltd.
11:00	-	12:00	Mercury Update in the Philippines	Engr. Geri Geronimo Sañez Chief, Hazwaste Division - DENR-EMB
12:00	-	13:00	LUNCH BREAK w/ Video Presentation	
13:00	-	13:30	Mercury End-of-life Options and their Implications	Ms. Myline Macabuhay Assistant Head of the Policy Development & Research Unit of the Environmental Justice Group - BAN Toxics
13:30	-	13:45	Collection & Transport Flow	Ms. Lulu Villanueva Senior Assistant Manager - AMETCO
13:45	-	14:00	Question and Answer	Mr. Naoki Wakai Manager of Mercury Containing Waste Treatment - FRP Phils. Corp.

Overview of the Philippine Legal and Regulatory Framework geared towards the Implementation of the Minamata Convention

GERI-GERONIMO R. SAÑEZ
 Chief, Hazardous Waste Management Section
 Environmental Quality Management Division
 Environmental Management Bureau
 Department of Environment and Natural Resources

Outline of Presentation

- Current Legal and Regulatory Framework
- Projects/Programs/Initiatives
- Update on the Ratification of the Minamata Convention on Mercury in the Philippines

CURRENT LEGAL AND REGULATORY FRAMEWORK

Legal and Regulatory Framework

RA 6969 Toxic Substances and Hazardous and Nuclear Wastes Control Act of 1990
Joint DENR-DOH AO 2005-02 Management of Health Care Wastes
DENR AO 2013-22 Revised Procedures and Standards for HW Management
DENR AO 1992-29 IRR of RA 6969
DENR AO 1997-38 CCO for Mercury and Mercury Compounds
JAO DENR-DOE 2013-09-001 Lamp Waste Management

Legal and Regulatory Framework


DENR AO 1990-34 & 35 WQG and Effluent Standards
RA 9003 Ecological Solid Waste Management Act of 2000
RA 9275 Philippine Clean Water Act of 2004
RA 8749 Philippine Clean Air Act of 1999
DENR AO 2001-34 IRR of RA 9003
DENR AO 2005-10 IRR of RA 9275

Republic Act 6969: Toxic Substances and Hazardous and Nuclear Wastes Control Act of 1990

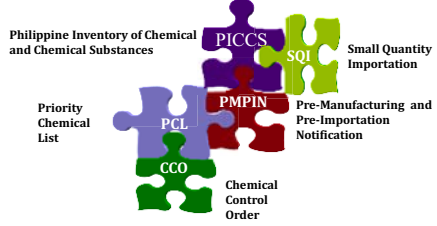
The Act directs the Department of Environment and Natural Resources (DENR) to establish rules, regulations, and programs for controlling chemical substances and hazardous wastes in the Philippines.

**Department Administrative Order (DAO) 1992-29:
Implementing Rules and Regulations of RA 6969**

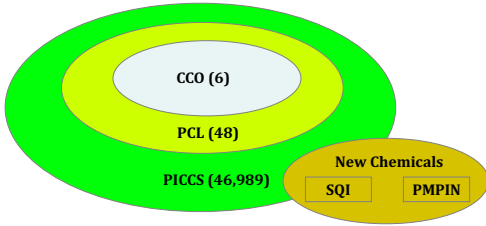
- Chemical Management (Title II)
- Hazardous Waste Management (Title III)



Title II: Management of Chemicals and Chemical Substances





Title II: Management of Chemicals and Chemical Substances



Chemical Control Order (CCO)


- Mercury & Mercury Compounds (DAO 1997-38)
- Cyanide & Cyanide Compounds (DAO 1997-39)
- Asbestos (DAO 2000-02)
- Ozone Depleting Substances (DAOs 2000-18/2004-08)
- Polychlorinated Biphenyls (DAO 2004-01)
- Lead and Lead Compounds (DAO 2013-24)

**DAO 1997-38:
CCO for Mercury and Mercury Compounds**

Section 7, the use of mercury and mercury compounds is strictly limited to the following end-users:

- Chlor-alkali plants
- Mining and metallurgical industries
- Electrical apparatus (lamps, arc rectifiers, battery cells, and others)
- Industrial and control instruments
- Pharmaceutical
- Paint manufacturing
- Pulp and paper manufacturing
- Dental amalgam
- Industrial catalyst
- Pesticides (fungicide) production or formulation



**Title III:
Hazardous Waste Management**

**DAO 2013-22:
REVISED PROCEDURES AND STANDARDS FOR THE MANAGEMENT OF HAZARDOUS WASTES (Revising DAO 2004-36)**




Classification of Hazardous Wastes

CLASS	WASTE NUMBER
A. Wastes with cyanide	A101
B. Acid wastes	B201 to B299
C. Alkali wastes	C101 to C399
D. Wastes with Inorganic Chemicals	D401 to D499
E. Reactive Chemical Wastes	E501 to E599
F. Inks/Dyes/Pigments/Paint/Resins/Latex/Adhesives/Organic Sludge	F601 to F699
G. Waste Organic Solvents	G703 to G704
H. Organic Wastes	H802
I. Oil	I101-1104
J. Containers	J201
K. Stabilized Waste	K301 to K303
L. Organic Chemicals	L401 to L404
M. Miscellaneous Wastes	M501 to M507

Classification of Hazardous Wastes

CLASS	DESCRIPTION	WASTE NUMBER
Mercury and mercury compounds	Includes all wastes with a total Hg concentration > 0.1 mg/L based on analysis of an extract. These also includes organomercury compounds. Refer to CCO	D407
Waste electrical and electronic equipment (WEEE)	Include all waste electrical and electronic equipment that contain hazardous components such as lead, cadmium, mercury, hexavalent chromium, polybrominated biphenyls (PBBs) and polybrominated diphenyl ethers (PBDEs) that includes its peripherals i.e., ink cartridges, toners, etc.	M506

Classification of Hazardous Wastes

CLASS	DESCRIPTION	WASTE NUMBER
Special wastes	Household hazardous wastes such as paints, thinners, household batteries, lead-acid batteries, spray canisters and the like that are consolidated by Material Recovery Facilities (MRFs). These include wastes from residential and commercial sources that comprise of consumer electronics, white goods (i.e. refrigerators, washing machines, air conditioners, etc.) batteries, oil and busted lamps.	M507



Department of Health Directive

DOH Administrative Order No. 2008-0021: Gradual Phase-Out of Mercury in all Philippine Healthcare Facilities and Institutions

- Thermometers (December 2009)
- Sphygmomanometers (December 2010)
- Guidelines for setting up a proper temporary mercury storage area
- Specific storage requirements and standards

Joint Directive of the Department of Environment and Natural Resources and the Department of Energy

Joint DENR-DOE Administrative Order (JAO 2013-09-0001): Lighting Industry Waste Management Guidelines

- The JAO aims to regulate the end-of-life disposal of lighting products to control the release of mercury and other toxic substances into the environment
- The implementation of the Extended Producer Responsibility (EPR) for lighting products and the operationalization of a Lamp Waste Management Facility (LWMF) is part of the Philippine Energy Efficiency Project (PEEP) of the DOE

Executive Order No. 79, s. 2012


Institutionalizing and Implementing Reforms in the Philippine Mining Sector Providing Policies and Guidelines to Ensure Environmental Protection and Responsible Mining in the Utilization of Mineral Resources

- Section 2: Full enforcement of environmental standards in mining
- Section 11: Measures to Improve Small-Scale Mining Activities

The use of mercury in small-scale mining shall be strictly prohibited.



PROJECTS/PROGRAMS/INITIATIVES



Development of Minamata Initial Assessment (Philippines, Cambodia and Pakistan)

- ❖ **Component 1:** Establishment of Coordination Mechanism and organization of process
- ❖ **Component 2:** Assessment of the national infrastructure and capacity for the management of mercury, including national legislation
- ❖ **Component 3:** Development of a mercury inventory using the UNEP mercury toolkit and strategies to identify and assess mercury contaminated sites
- ❖ **Component 4:** Identification of challenges, needs and opportunities to implement the Minamata Convention on Mercury
- ❖ **Component 5:** Preparation, validation of National MIA report and implementation of awareness raising activities and dissemination of results
- ❖ **Component 6:** Information exchange, capacity building and knowledge generation

ON-GOING



RATIFICATION AND EARLY IMPLEMENTATION OF THE MINAMATA CONVENTION ON MERCURY IN THE PHILIPPINES PROJECT

Ratification Dossier comprising of the following:

- a) Legal assessment of the existing legal instrument for mercury in the Philippines
- b) Technical study considering the implications and benefits of ratification
- c) Concise plan of priority areas and actions related to mercury management in the Philippines

Completed Projects




Outline of the Ratification Dossier

- I. Introduction
- II. Mercury in the Philippines
- III. Benefits of Adopting the Minamata Convention on Mercury
- IV. Overall Assessment on the Advantages and Disadvantages of Adopting the Minamata Convention on Mercury
- V. Measures in Implementing the Minamata Convention

A. Inventory of Mercury and

A. Environmental
B. Economic
C. Socio-Cultural

D. Legal and Regulatory Requirements on the Management of Mercury and Mercury Wastes





PRIMER
ON THE RATIFICATION
OF THE MINAMATA CONVENTION
ON MERCURY
IN THE PHILIPPINES



Ratification and Early
Implementation of the
Minamata Convention
on Mercury in the
Philippines



Improve the health and environment and artisanal gold mining communities in the Philippines by reducing mercury emissions

- A formalized ASGM entity to facilitate the reduction of mercury is established.
- Comprehensive health education, techniques, and technology training programs to reduce mercury in ASGM are developed, including mercury surveillance program at the community level to prevent exposure among high risk populations.
- Two replicable pilot projects are implemented with local and national stakeholders. Overall mercury use, emissions, and exposure are reduced at pilot sites.
- Capacity for regional and sub-regional collaboration and coordination to manage and monitor mercury are increased.

Completed Projects

High Risk Practices in ASGM - Philippines

Courtesy of the "Improve the health and environment and artisanal gold mining communities in the Philippines by reducing mercury emissions" Project
(© Dr. Elvira Pasang, Project Coordinator)

MANAGEMENT OF MERCURY AND MERCURY-CONTAINING WASTES

Minimize and, where feasible, eliminate mercury releases to air, water, and land from mercury wastes by adopting Environmentally Sound Management (ESM) of these wastes (following a lifecycle management approach)

Completed Projects

National Strategic Plan for the Phase-out of Mercury in ASGM

Priority Goal, Objectives and Implementation strategies:

- Effectively reduce mercury use in the ASGM sector;
- Develop and implement coherent national policies and regulations;
- Establish a legal and organized group of ASGM miners with a national constituency and representing the needs of the ASGM sector;
- Build and strengthen institutional capacity of PMRBs, LGUs and other ASGM support institutions;
- Enhance cooperation and partnership of all levels among miners, industry sector, NGOs, Church, Academic institutions;
- Develop and promote the safe handling and long term storage of excess mercury from the ASGM sector.

Completed Projects

Mercury Assessment for the Philippines Using the UNEP Mercury Toolkit

Top three (3) principal sub-categories releasing mercury in the Philippines are:

- ❖ Primary Virgin Metal production – 65,927 kg Hg/year (32% of total releases) – ASGM;
- ❖ Extraction and Use of Fuel and Energy Resources – 31,940 kg Hg/year (20% of total releases)
- ❖ Other intentional use – products, e.g. thermometer, etc. – 29,471 kg Hg/year (20% of total releases)

Over-all mercury emissions are distributed mainly to:

- ❖ air (45%); land (19%); water (18%); and the rest to general waste and others.

Completed Projects

Philippine Energy Efficiency Project (PEEP)

Project Components:

DOE is transforming the lighting industry market by promoting the use of energy-efficient lighting (EELs) products and recognizes that EELs such as fluorescent lamps contain mercury; thus DOE intends to:

- operationalize a Lamp Waste Management Facility (LWMF) that will recovery mercury from lamp wastes
- Implement an Extended Producer Responsibility (EPR) for lighting products

Collaborative Output:
Joint DENR-DOE Administrative Order on Lighting Industry Waste Management Guidelines

Completed Projects

Philippine Efficient Lighting Market Transformation Project (PELMATP)

Completed Projects

Collaborative Outputs:

- Guidebook on the Management of Mercury-Containing Lamp Wastes
- Poster on the Health and Environmental Effect of Mercury
- Primer on Lamp Waste Management

Update on the Ratification Process of the Minamata Convention on Mercury in the Philippines

Ratification

- The ratification process shall follow Executive Order (EO) No. 459, which provides the Guidelines in the Negotiation of International Agreements and its Ratification
- Ratification Dossier and the Certificates of Concurrences will be transmitted to our Department of Foreign Affairs (DFA), which in turn, will submit it to the Office of the President and Senate of the Philippines.

Status of Submission of Certificates of Concurrence

1. DOH	:	March 27, 2015 (28 Dec 2016)
2. FPA-OPAFSAM	:	September 1, 2015
3. DOST	:	September 24, 2015
4. DTI	:	January 12, 2016
5. OSHC-DOLE	:	January 22, 2016
6. DOE	:	June 14, 2016
7. BOC-DOF	:	none yet (05 Jan 2017)

DFA has advised to secure new Certificates of Concurrences reflecting the signatures of the new Department/Agency Heads.

Let's Save the Future!!!

MARAMING SALAMAT PO!!!


www.emb.gov.ph


Ethylene oxide – colorless gas (flammable, reactive, and explosive)

$$\text{CH}_2\text{OCH}_2$$

or

$$\text{CH}_2=\text{CH}_2$$



Managing Special Wastes
City Ordinance No. 2450
-Forum on Zero Mercury Project in the Phils.-
17 January 2017



Nida C. Cabrera
Principal Sponsor
City Mayor's Representative

Presentation Outline

- 1. The Problem**
 - What are Special Wastes?
 - Environmental concerns
 - Trends driving growth
- 2. The City of Cebu's Solution**
 - City Ordinance No. 2450
- 3. How Can You Help?**



What are Special Wastes?

- "Household hazardous wastes"
(RA No. 9003, DENR Administrative Order-DAO No. 2013-22)
- The definition includes:
 - Paints
 - Thinners
 - Household batteries
 - Lead-acid batteries
 - Spray canisters and the like
 - Bulky wastes
 - Consumer electronics
 - White goods
 - Yard wastes that are collected separately
 - Batteries, oil and tires.



What are the Environmental Concerns?

- The heavy metals and some of the other materials can become hazards to human health and the environment when improperly managed.
- February 2012 Household Hazardous Waste Study in Cebu City:
"About 42.60% of the respondents were completely unaware of hazardous products, especially products which are most likely to contain mercury. They were also unaware of the proper disposal method of these wastes."


Households dispose lamps with domestic wastes


Circuit board removal

Growth of Special Wastes: Technology Trends

Technological advances speed up obsolescence & lead to more e-waste



Solution:
City Ordinance No. 2450

Title: "An Ordinance Providing for the Management of Special Wastes in the City of Cebu, Providing Fees and Imposing Penalties for Non-Compliance Thereof"

Enactment by City Council: January 27, 2016
Approval/Signing by Mayor: February 12, 2016

Waste Generators

Separate special wastes from the municipal solid waste stream in accordance to existing waste regulations & storing them in a safe area prior to collection.

Bring special wastes to designated barangay collection points and/or MRFs serving as temporary storage for household hazardous wastes.

Collection Points

Established in the Barangays.

Temporary storage for Special Wastes until their removal by an accredited/registered **Transporter** to a registered **Treatment, Storage and Disposal (TSD) Facility**.

Comply with applicable environmental, health and safety regulations, including protection & training for staff.

Must be accredited by the City Government.

Transporter & TSD Facility

Operates pursuant to guidelines under DAO No. 2013-22

Must be accredited by the City Government

Recyclers

Shall not be allowed to operate unless duly accredited by the Cebu City Government.



Extended Producer Responsibility

Business establishments operating within the City that have an existing EPR policy shall be provided with incentives in accordance with the policies declared under City Ordinance No. 2243- "Sustainable Development Ordinance of the City of Cebu"

Prohibited Acts

- a. **Failure** by collection points, transporters, TSD facilities, and informal recyclers to **secure accreditation** from the City.
- b. **Failure** by collection points, transporters, TSD facilities, and formal and informal recyclers to comply with requirements to **submit Contingency Plan and Annual Report**.
- c. **Failure** of informal recyclers performing the function of a waste transporter and TSD facility to **secure the required permit, clearance and/or accreditation from the DENR-EMB and the City**.
- d. **Dismantling** of special wastes **outside the duly-designated facilities**.

Fines and Penalties

- a. First Offense – a fine of P1,000.00.
- b. Second Offense – a fine of P3,000.00.
- c. Third Offense – a fine of P5,000.00 or imprisonment of not less than one month or more than 6 months, or both such fine and imprisonment at the discretion of the court.

Violation for the 3rd time shall merit the revocation of business permit and accreditation, after the issuance of the appropriate recommendation from the Enforcement and Regulatory Unit of the Cebu City Environment and Natural Resources Office (CCENRO) or the City Legal Office of the Cebu City Government.

Enforcement and Monitoring

The Cebu City Environment & Natural Resources Office (CCENRO) is responsible for the implementation of this Ordinance, which includes, but not limited to, enforcement, coordination, and monitoring activities.

BARANGAYS:

- Submit baseline information regarding collection points, transporters, TSD facilities, and formal and informal recyclers in their barangays, including their compliance to permit and accreditation requirements;
- Conduct regular information and education campaign to ensure effective segregation and storage of special wastes;
- Require service providers to present Manifest Receipts in conveying or transporting special wastes from the barangay;
- Ensure that waste transporters convey or transport special wastes in transports suitable for the wastes being transported; and
- Perform such other functions which shall allow effective and efficient implementation of this Ordinance.

Ways Forward

1. Formulation of the Implementing Rules and Regulations (IRR) to include: (a) accreditation requirements, including annual accreditation fee; (b) annual reporting requirements and contingency plans.
2. Identification of Barangay Collection Points.
3. Personnel and training requirements.
4. Bidding of services for: Transporter and TSD facility.
5. Budget appropriation for the transport and treatment of Special Wastes (through the Annual Budget).
6. Inclusion of "Special Waste" in the City's waste classification to encourage segregation (and separate handling).

What Can You Do?

Raise Awareness
Encourage recyclers to register with the City
Follow registration and reportorial requirements

Environmentally-Sound Management of Mercury

Options for Storage and Disposal of Mercury End-of-Life Products

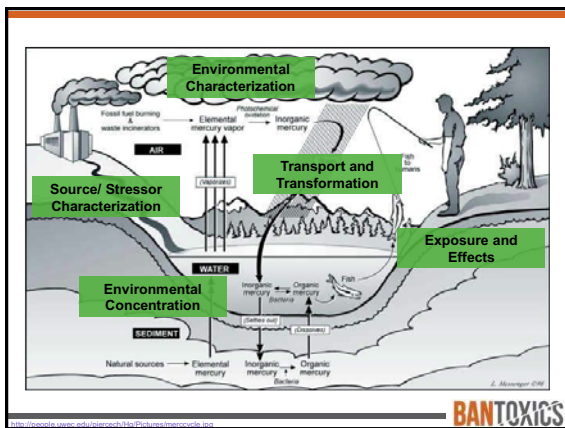
(Ms.) Myline Macabuhay
Policy Development and Research Unit

BANTOXICS

Outline

- The Mercury Cycle
 - Sources of Mercury and Estimated Quantities in the Philippines
- Environmentally-Sound Management Framework
 - Disposal Options for Mercury-containing Wastes
 - Policy and Technical Considerations for Mercury Storage and Disposal
- Conclusions and Recommendations

BANTOXICS



Mercury (Hg)

- A constituent element of the earth
 - Liquid at normal temperature and pressure
 - Occurs in deposits as *cinnabar*
- Natural sources
 - Volcanic and geologic activity
 - Areas naturally enriched in Hg

BANTOXICS

Anthropogenic sources

1. Mobilization of Hg impurities in raw materials
2. Releases from intentional products and processes
3. Remobilization of historic anthropogenic Hg releases previously deposited

BANTOXICS

Sources of Mercury (2008)

Source Category	Total Hg output
Extraction and use of fuels	31,940 kg/yr
Primary (virgin) metal production	71,095 kg/yr
Consumer products with intentional uses of Hg	3,165 kg/yr
Other intentional product/process use	27,698 kg/yr
Waste deposition/ landfilling and waste water treatment	1,804 kg/yr

BANTOXICS

Mercury in the Environment

- Both natural and anthropogenic sources release Hg in its volatile, elemental form, Hg(0).
 - Well-mixed in the atmosphere
 - Atmospheric lifetime: 0.5 to 1 year
- Some anthropogenic sources can also emit mercury in two forms: divalent mercury (Hg(II)), and mercury associated with particulate matter (Hg(P))

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Mercury in the Environment

- Hg(0) is oxidized to Hg(II) through photochemistry
- Hg(II) and Hg(P) are the most predominant forms deposited to ecosystems
 - Wet and dry deposition

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Mercury in the Environment

- Can be incorporated in the soil pool
 - Plant uptake depends on several variables
- Hg(II) may undergo methylation to form methylmercury (MeHg)
 - Can bioaccumulate, biomagnify and persist in the environment

Bioaccumulation

Contaminant Levels ↑

TIME →

Biomagnification

Contaminant Levels ↑

www.biosboc.net

BANTOXICS

Routes of Exposure and Impacts to Human Health

- Elemental Hg
 - Inhalation
 - Acute: respiratory disorders
 - Chronic: tremors, sleep disturbances, impaired cognitive skills
- MeHg
 - Ingestion
 - Loss of control of body movements, numbness of limbs, muscle weakness, damage of hearing and speech, loss of peripheral vision and insanity
 - Paralysis, coma, death

BANTOXICS

Environmentally-Sound Management (ESM)

“taking all practicable steps to ensure that hazardous wastes or other wastes are managed in a manner that will protect human health and the environment against the adverse effects which may result from such waste.”

- Article 2.8 of the Basel Convention

BANTOXICS

Guiding Principles for ESM

Countries should promote:

- Prevention and minimization;
- Sustainable use of resources in both production and consumption;
- Recognition of waste as a resource (where appropriate);
- An integrated life-cycle approach; and
- Innovation in the production and delivery of services.

ec.europa.eu

BANTOXICS

Common Understanding on what ESM encompasses

1. Have a clear picture as to which wastes are arising and the quantities that need to be managed;
2. Understand how these need to be managed to ensure ESM;
3. Have sufficient capacity to manage all waste streams in an environmentally-sound manner;
4. Ensure that those with a role in the generation and management of wastes understand what they need to do;

BANTOXICS

Common Understanding on what ESM encompasses

5. Have a system that incentivizes compliance;
6. Monitor the effectiveness of the system; and
7. Ensure that the transboundary movement of wastes is in compliance with the Basel Convention.

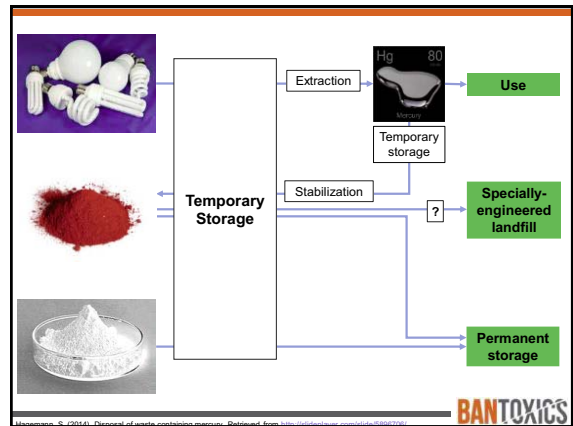
BANTOXICS

Mercury-containing Wastes

- Phase out Hg containing products and industrial Hg uses
 - Minamata Convention
 - Ensuing Hg wastes arising from these phase outs will become a critical issue
- Some Hg-containing products are expected to rise in the coming years



BANTOXICS



Options for Final Storage and Disposal



Aboveground Storage Below ground Storage

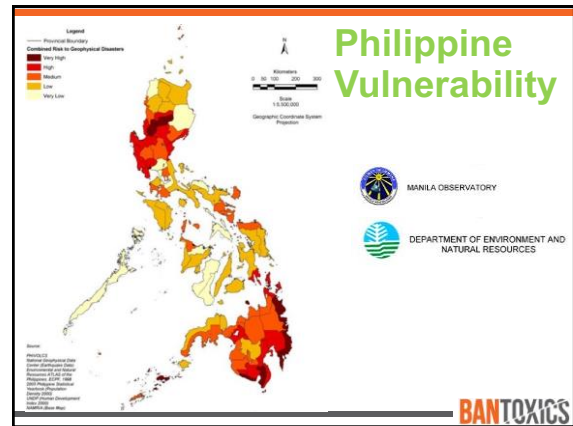
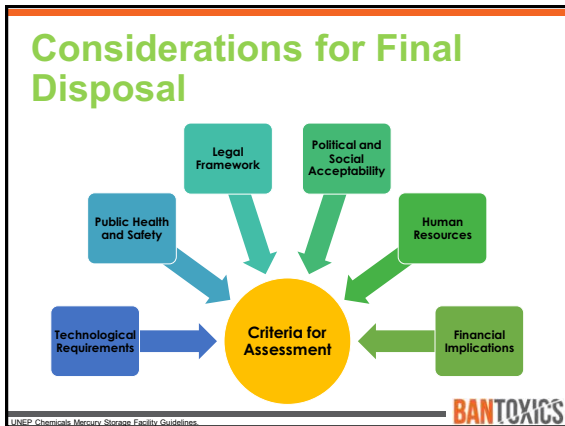
BANTOXICS

Options for Final Storage and Disposal



Use of Hazardous Wastes Facilities Export for ESM

BANTOXICS



Financial Implications

Scenario
<ul style="list-style-type: none"> Hg to be stored in its elemental form; Hg received by the facility is already contained in prescribed flasks
<ul style="list-style-type: none"> 1,000 tons of elemental Hg Building area: 1,373 m² Land area: 5,000 m²

BANTOXICS

Financial Implications

Capital or Investment	Recurring/ Operational
<ul style="list-style-type: none"> Pre-construction: feasibility study, EIA, detailed engineering design and permitting/public consultation. Construction: civil, mechanical, electrical and fire suppressant system Closure: building demolition/facility dismantling, hazardous/non-hazardous waste disposal, and site assessment and site-rehabilitation. 	<ul style="list-style-type: none"> Personnel Maintenance and Utilities Consumables & PPE Environmental Monitoring
<ul style="list-style-type: none"> USD 2,892,739 	<ul style="list-style-type: none"> USD 370,000 (per annum)

BANTOXICS

- ## Conclusion and Recommendations
- Prevention and minimization of Hg wastes start with addressing Hg supply into the country.
 - Update and improve legal infrastructure on Hg and improve implementation of existing laws.
 - Immediately evaluate ESM for Hg in the Philippines.
 - Ratify the Minamata Convention.
- BANTOXICS**

Thank You!

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 @bantoxics

BANTOXICS

Mercury Waste Management in Cebu

Presented by:
CEBU COMMON TREATMENT FACILITY, INC.



Requirements/ Permits: Generator

- ⇒ Hazardous Waste Generators ID
- ⇒ **SMR** (Self-Monitoring Report)
- ⇒ **MOA** (Memorandum of Agreement)
- ⇒ Packing and Labeling/ Hazard Identification

HAZARDOUS WASTE	
Waste Information	HW Class
	HW Description
	HW Number
	Characteristics
	Form
	Volume
Packaging Information	Packaging Date
	Shipping Date
	Waste Transport Record Number
Container Information	Capacity
	Material
Generator Information	ID Number
	Name
	Address
	Telephone #
	Fax #
	Name of Hazardous Waste Management Supervisor

Transport

- ⇒ **PTT** (Permit to Transport)
- ⇒ **TRC** (Transport Registration Certificate)
- ⇒ Manifest Form
- ⇒ Personnel Competency
- ⇒ **PPE** (Personal Protective Equipment)

Protection Matters

Ear Protection

- use in noisy areas to avoid hearing loss

Respiratory Equipment

- use to protect from inhaling dust and other contaminants

Safety Gloves

- use to protect your hands from injury

Safety Helmet

- use to protect your head from falling objects

Safety Glasses

- use to protect eyes from flying particles

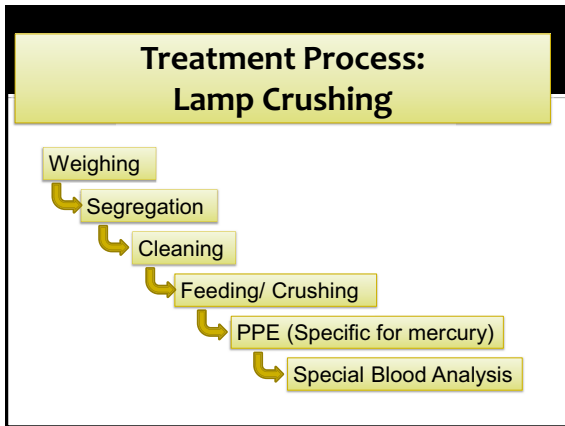
Reflective Clothing

- use to make sure you are highly visible to other personnel

Safety Shoes

- use to protect your feet from falling or rolling objects

You only have one body!



Packing and Shipment

- ⇒ UN Drums
- ⇒ Labeling
- ⇒ Necessary Permits for Transboundary Movement of Hazardous Waste
- ⇒ Shipment to NK (Nomura Kohsan) Itomuka Plant at Kitami-shi, Hokkaido
- ⇒ Recovery and Recycling at NK

HAZARDOUS WASTE	
Waste Information	HW Class
	HW Description
	HW Number
	Characteristics
	Form
	Volume
	Packaging Date
Waste Transport	Shipping Date
	Waste Transport Record Number
Container Information	Capacity
	Material
Generator Information	ID Number
	Name
	Address
	Telephone #
	Fax #
	Name of Hazardous Waste Management Supervisor

James 4:17 Therefore to him that knoweth to do good, and doeth it not, to him it is sin.

**Thank you
and
Have a good day !!!**

"Your Partner in Proper Waste Disposal"

AMETCO
Asia Metal Trading Corporation

Collection and Transport Flow

- Busted Fluorescent Lamps (BFL)

Basic Documentation Requirement

DENR-EMB

PERMIT TO TRANSPORT

Collection and Transport Flow

DENR Permit to Transport (PTT)

TRANSPORTER

TREATER

Basel Treaty Export Clearance

Pre-Treatment and Storage Facility

Documentation Flow

PEZA

DENR-EMB

COPY 1

COPY 2

COPY 3

COPY 4

COPY 5

COPY 6

COPY 7

DENR SIGNED COPY SHOULD BE RETURNED TO PEZA WITHIN FIVE (5) WORKING DAYS FROM DATE OF TRANSPORT

"Your Partner in Proper Wastes Disposal"

AMETCO

Contact Person:
AGNES C. VALLEJO/LULU VILLANUEVA
Lot 28 NCIC Stateland Manggahan,
Gen. Trias, Cavite, Philippines

Tel. (063) 46 402-1440/0139/1239
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ametco_hrd@yahoo.com



Our project for ZERO MERCURY in the Philippines



Nomura Kohsan Co., Ltd.
International Operations
Yasuyuki Yamawake

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Contents

- Overview of Nomura Kohsan's work
- Toxicity of mercury
 - Minamata disease
 - Minamata Convention on Mercury
- Our processing method
- Our project in the Philippines

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Overview of Nomura Kohsan's work

- Who we are
 - The *only* mercury-recycling company in Japan
 - Over 40 years of experience in treating Hg-containing/ Hg-contaminated waste from all across Japan
 - Two plants: Itomuka Plant (Hokkaido) and Kansai Factory (Osaka)
 - ISO14001 certified
- What we do
 - Treatment of Hg waste
 - Recycling mercury and other recyclable materials
 - Contracted work from Zn and Cu refineries
 - Importing waste from abroad for treatment
 - Research on Hg stabilization



Birdseye view of Itomuka Plant

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Overview of Nomura Kohsan's work

RECYCLE


- Wastes containing mercury
 - Fluorescent lamps
 - Batteries
 - Measuring devices
- Wastes contaminated with mercury/ mercury compounds
 - Mercury- containing sludge
 - Mercury- contaminated soil
 - Reagents
- Wastes consisting of mercury/mercury compounds
 - Metal mercury

... and more!

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Overview of Nomura Kohsan's work

- Each year we treat a total of **27,000** tons of mercury waste
 - **13,000** tons of dry-cell batteries
 - **8,000** tons of fluorescent lamps
 - **6,000** tons of other types of waste (i.e. measuring devices, etc.)



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International operations



Taiwan

- To date, we have treated over 3,200 tons of mercury-containing waste which is dry-cell batteries, button cell batteries and HID lamps

Indonesia

- We imported and treated over 300 tons of mercury waste from oil companies in 2016

Philippines

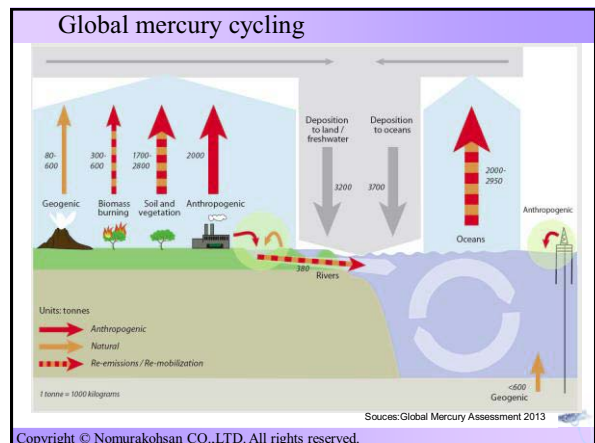
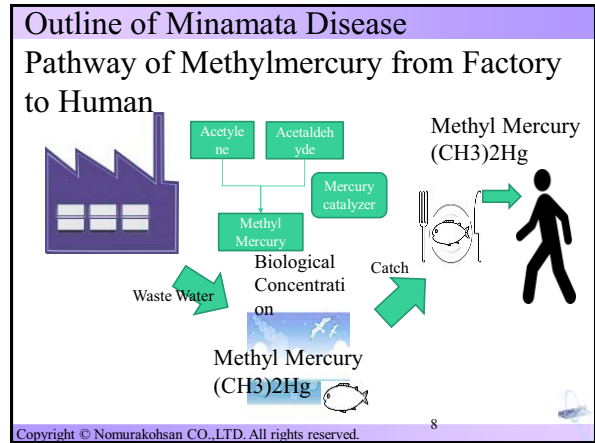
- At present, we have treated over 60 tons of fluorescent lamps



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Toxicity of mercury	
Acute poisoning	Abdominal pain, vomiting, diarrhea, gingivitis, pneumonia, renal failure, cardiovascular failure
Chronic poisoning	Gingivitis, hand tremor, headache, insomnia, fatigue, weakness, loss of appetite, gingival bleeding, kidney damage, hearing loss, visual field constriction
Coming into contact with mercury compounds may cause dermatitis and the mercury may be absorbed into the body through such contact.	

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Minamata Convention on Mercury



This Convention aims to “protect the human health and the environment from anthropogenic emissions and releases of mercury and mercury compounds.”

Work with UNEP

- Nomura Kohsan joined two areas of the United Nations Environment Programme Global Mercury Partnership in 2013
- Attended and presented during the 3rd Waste Management Partnership meeting held in Manila (December 2013)
- We have also been selected as a member of the Expert Group for a UNEP publication on mercury storage and disposal

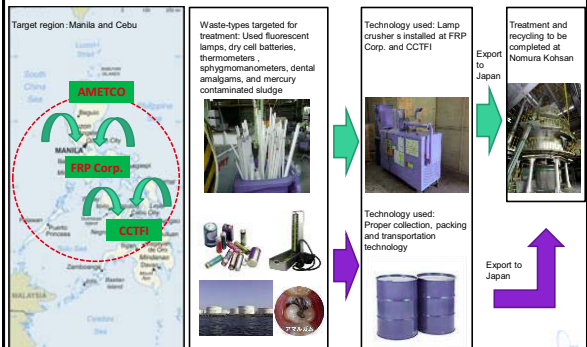


Work with UNIDO

- Nomura Kohsan recently signed a memorandum of understanding with UNIDO
- Objective: to develop a project with a South East Asian country to organize collection center for used lamps
- We will disseminate some of our technologies and develop mercury storage solutions



Mercury waste management scheme in the Philippines



Equipment

- Safe, efficient and reliable technology for crushing lamps
 - Once crushed, Hg-containing glass cullet is stored in a removable, metal drum
 - Mercury gas, contained in each lamp, is captured in the internal filter and activated carbon compartment during the crushing process
 - Conducted Hg measurement for exhaust gas, etc.
 - ▶Exhaust gas: 0.000-0.005ppm
 - ▶Inside the drum container: 0.999ppm (limit of measurement)
- ※Reference value for mercury concentration in the work environment (Japan): 0.025ppm



Training in the Philippines

- Lamp crusher training sessions in Manila and Cebu
 - Explanation of the user’s manual, machine structure, work procedures, and replacement of expendable supplies



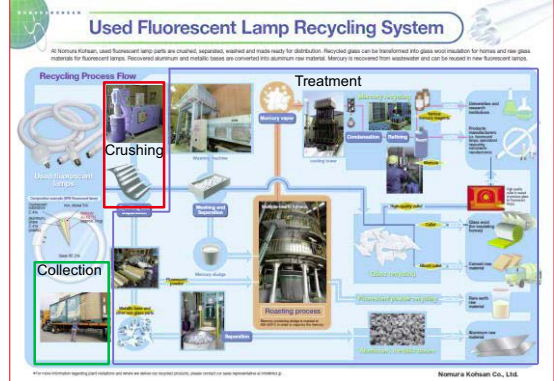
Training in Japan

- Site visit: Nomura Kohsan Kansai Factory, Itomuka Plant



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Used Fluorescent Lamp Recycling System



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For more information,
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