附件二、IEMN 2018 Workshop 第一天（菲律賓日）簡報

REGULATORY FRAMEWORK ON HAZARDOUS WASTE MANAGEMENT

Geri-Geronimo R. Sañez
Chief, Hazardous Waste Management Section
Environmental Quality Management Division
Environmental Management Bureau
Department of Environment and Natural Resources

The Environmental Management Bureau (EMB) - Department of Environment and Natural Resources (DENR)

- Formulate ... enforce environmental p... rules and regulations;
- Advise the DENR Secretary on matte... environment... management;
- Issue permits ... laws and monitor ...
- Act as Focal Point or ... Environmental Agreements ... Stockholm, Rotterdam ...

Geri-Geronimo R. Sañez
Chief, Hazardous Waste Management Section
Environmental Quality Management Division
Environmental Management Bureau
Department of Environment and Natural Resources

E-Waste Management in the Philippines"

Geri-Geronimo R. Sañez
Chief, Hazardous Waste Management Section
Environmental Quality Management Division
Environmental Management Bureau
Department of Environment and Natural Resources

OUTLINE

- ... FRAMEWORK ON HAZARDOUS WASTE MANAGEMENT
- E-WASTE STATISTICS
- GOOD PRACTICES ON E-WASTE MANAGEMENT
- PROJECTS ON E-WASTE
- UPCOMING E-WASTE POLICY

Geri-Geronimo R. Sañez
Chief, Hazardous Waste Management Section
Environmental Quality Management Division
Environmental Management Bureau
Department of Environment and Natural Resources

EMB Mandates

- P.D. 1586: The Philippine Environmental Impact Statement (EIS) System of 1978
- R.A. 8749: The Philippine Clean Air Act of 1999
- R.A. 9003: The Ecological Solid Waste Management Act of 2000
- R.A. 9275: The Philippine Clean Water Act of 2004
- R.A. 9512: Environmental Awareness and Education Act of 2008

Geri-Geronimo R. Sañez
Chief, Hazardous Waste Management Section
Environmental Quality Management Division
Environmental Management Bureau
Department of Environment and Natural Resources

Republic Act (RA) 6969

"Toxic Substance and Hazardous and Nuclear Waste Control Act of 1990"

Management of industrial ... all aspects of its life cycle ... transportation, ...

Geri-Geronimo R. Sañez
Chief, Hazardous Waste Management Section
Environmental Quality Management Division
Environmental Management Bureau
Department of Environment and Natural Resources

RA6969: Toxic Substances and Hazardous and Nuclear Waste Control Act of 1990

"Regulates the importation, manufacture, processing, handling, storage, transportation, ... and disposal of chemical substances and ... Philippines including the entry, even ... the storage and ... into the country for ...

Geri-Geronimo R. Sañez
Chief, Hazardous Waste Management Section
Environmental Quality Management Division
Environmental Management Bureau
Department of Environment and Natural Resources

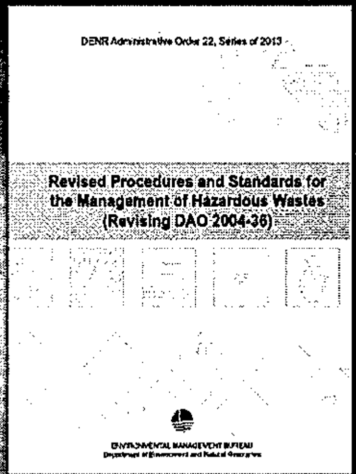
DAO 1992-29: Implementing Rules and Regulations of RA 6969

Title II: provides for the regulation of all ... that may pose threat to public ... environment, whether through ... sale, use ... and disposal ...

Title III: provides for ... from generation ... recycling ...

Geri-Geronimo R. Sañez
Chief, Hazardous Waste Management Section
Environmental Quality Management Division
Environmental Management Bureau
Department of Environment and Natural Resources

DAO 2013-22



- Classification of Hazardous Wa...
- Registration of Hazard... Generators
- ...tion of Haza...
- Categ...

Geri-Geronimo R. Sañez
Chief, Hazardous Waste Management Section
Environmental Quality Management Division
Environmental Management Bureau
Department of Environment and Natural Resources

HISTORY OF HW ISSUANCES

- RA 6969
- Title III of DAO 1992-29
  HW Manage...
- SUPERSEDED
- ...36
  Procedural Manual for HW Management
- ...22
  Revised Proce... of Hazardous Waste

Geri-Geronimo R. Sañez
Chief, Hazardous Waste Management Section
Environmental Quality Management Division
Environmental Management Bureau
Department of Environment and Natural Resources

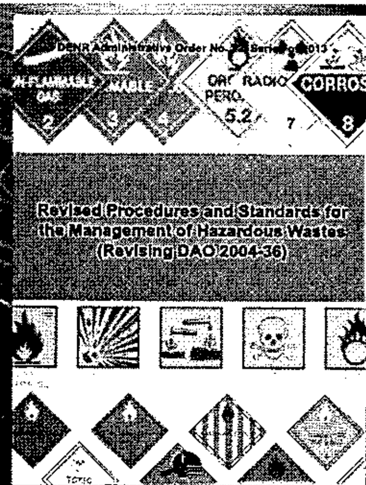
What are Hazardous Wastes?

- ... are without any safe com... industrial, agricultural or economic usage ... shipped, transported or brought from th... origin for dumping or disposal ... through any part of the territory ...
- by products, side-products, p... reacti... contaminated plant... other su... as consume... present unrea... safety and to the ...

Geri-Geronimo R. Sañez
Chief, Hazardous Waste Management Section
Environmental Quality Management Division
Environmental Management Bureau
Department of Environment and Natural Resources

DAO 2013-22

- ... Standards for the Management of Hazardous Wastes
  Amends DAO 2004-36



Geri-Geronimo R. Sañez
Chief, Hazardous Waste Management Section
Environmental Quality Management Division
Environmental Management Bureau
Department of Environment and Natural Resources

Classification of Hazardous Wastes

Miscellaneous Wastes	Waste Number
Pathological or infectious wastes	M501
Asbestos wastes	M502
Pharmaceuticals and drugs	M503
Pesticides	M504
Persistent Organic Pollutants (POPs) wastes	M505
Waste Electrical and Electronic Equipment (WEEE)	M506
Special Wastes	M507

Geri-Geronimo R. Sañez
Chief, Hazardous Waste Management Section
Environmental Quality Management Division
Environmental Management Bureau
Department of Environment and Natural Resources

Exempted Wastes

- Household wastes managed under RA 9003 except Wastes
- Wastewaters which are disposed on-site through
- Materials from burning except those
- Septic tank effluents and
- Untreated spoils from mining materials in the nature of mine facility consumables

Geri-Geronimo R. Sañez
Chief, Hazardous Waste Management Section
Environmental Quality Management Division
Environmental Management Bureau
Department of Environment and Natural Resources

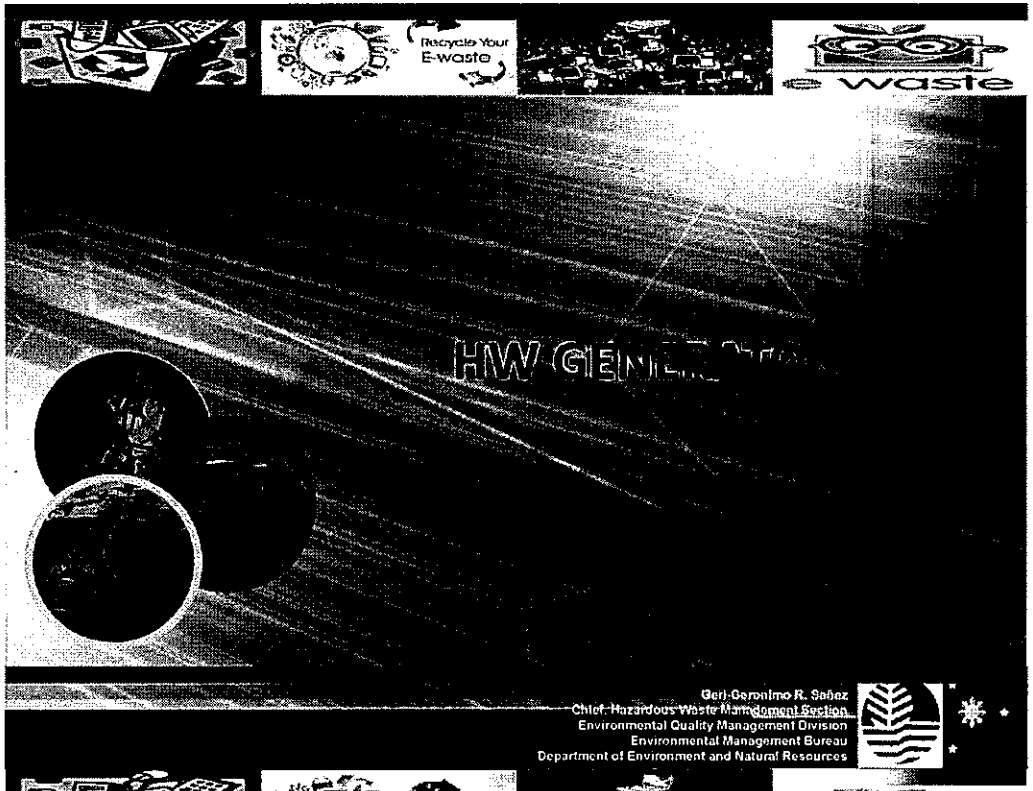
CHARACTERISTICS OF HAZARDOUS WASTE

Geri-Geronimo R. Sañez
Chief, Hazardous Waste Management Section
Environmental Quality Management Division
Environmental Management Bureau
Department of Environment and Natural Resources

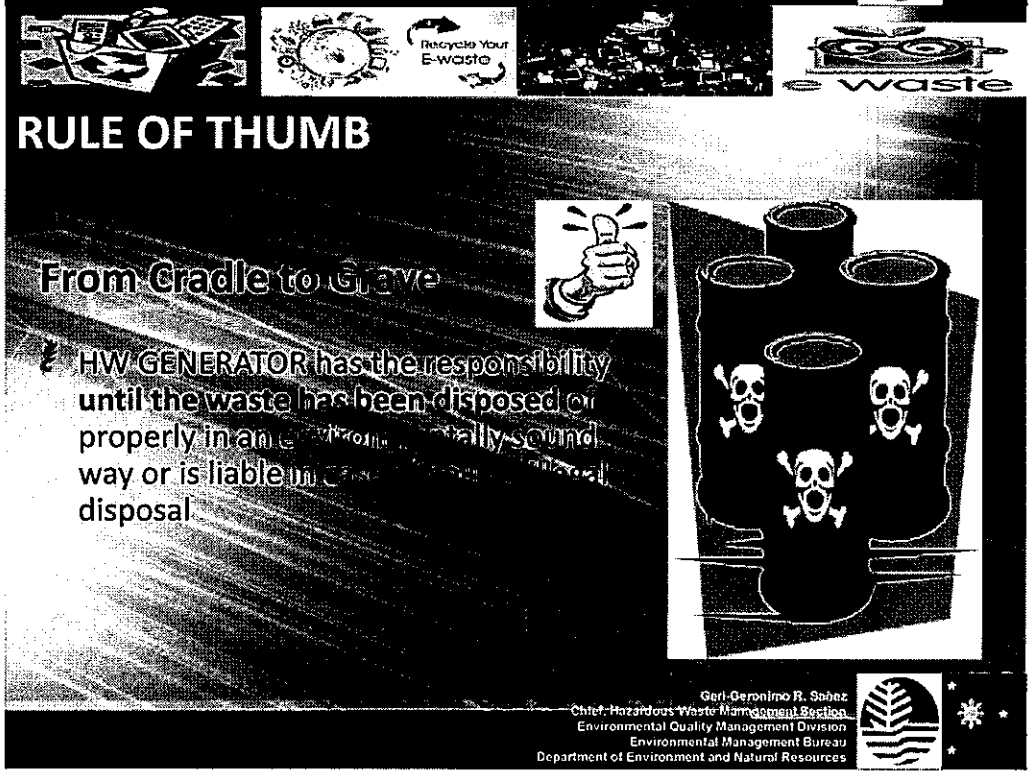
CLASSIFICATION OF HAZARDOUS WASTES

	WASTE NUMBER
	A101
	B201 to B299
	C301 to C399
	D401 to D499
	E501 to E599
/Ashes/Organic Sludge	F601 to F699
	G703 to G704
	H802
	I101 to I104
	J201
	K301 to K303
	L401 to L404
	M501 to M507

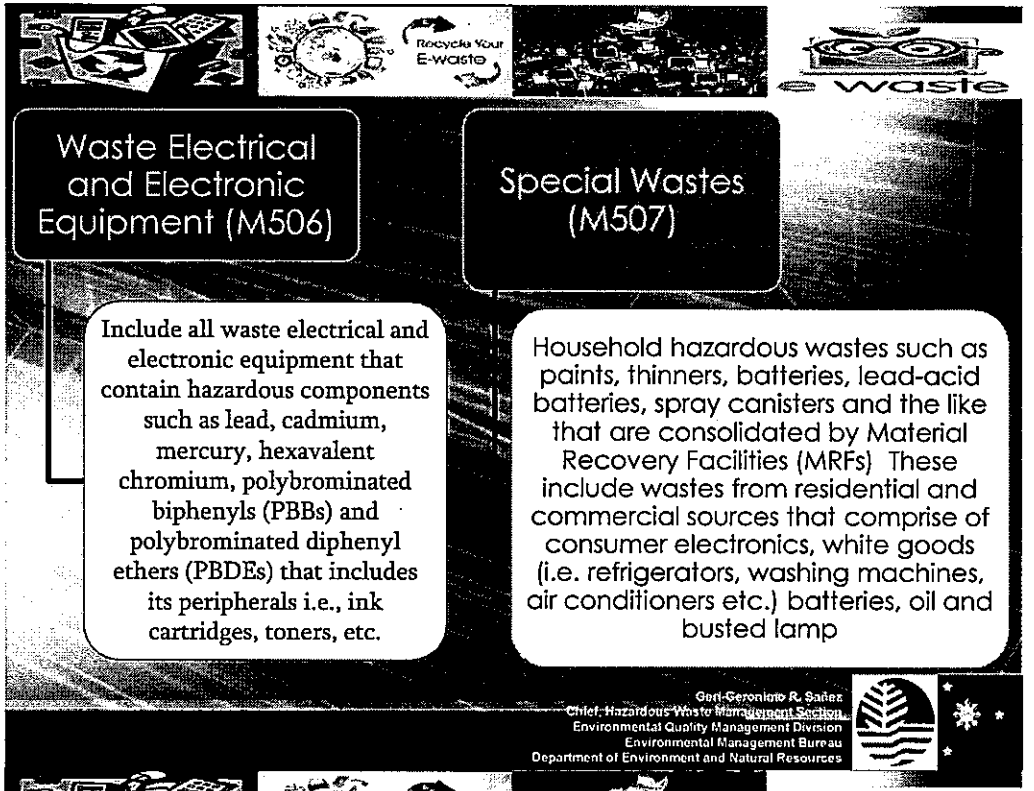
Geri-Geronimo R. Sañez
Chief, Hazardous Waste Management Section
Environmental Quality Management Division
Environmental Management Bureau
Department of Environment and Natural Resources



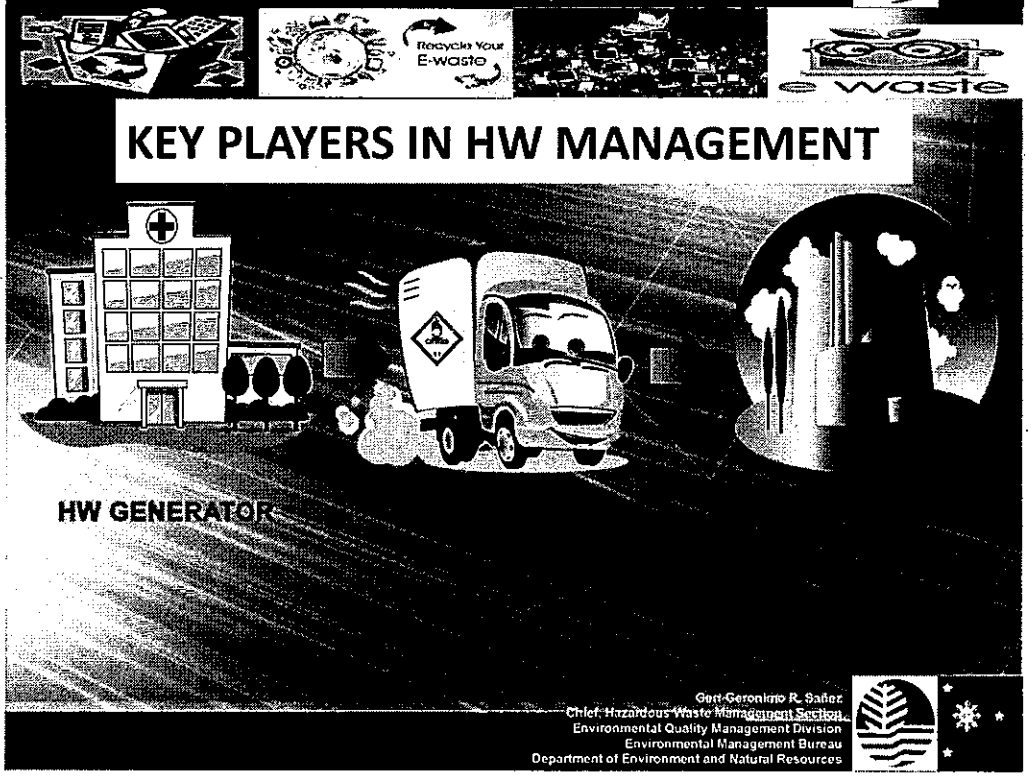
Geri-Geronimo R. Sañez
Chief, Hazardous Waste Management Section
Environmental Quality Management Division
Environmental Management Bureau
Department of Environment and Natural Resources



Geri-Geronimo R. Sañez
Chief, Hazardous Waste Management Section
Environmental Quality Management Division
Environmental Management Bureau
Department of Environment and Natural Resources



Geri-Geronimo R. Sañez
Chief, Hazardous Waste Management Section
Environmental Quality Management Division
Environmental Management Bureau
Department of Environment and Natural Resources



Geri-Geronimo R. Sañez
Chief, Hazardous Waste Management Section
Environmental Quality Management Division
Environmental Management Bureau
Department of Environment and Natural Resources

COMPLIANCE REQUIREMENTS OF WASTE GENERATORS

CATEGORY	COMPLIANCE REQUIREMENTS							
	Registration	Designation of PCO	Reporting	Storage and Labeling	Storage Time Limit	Manifest System	Contingency Planning	Training
Large quantity generators	Yes	Full time	Quarterly	Yes	6 months	Yes	Yes	Yes
Medium quantity generators	Yes	Full time	Semi-Annual	Yes	1 year	Yes	Yes	Yes
Small quantity generators	Yes	Full-time	Annual	Yes	1 year	Yes	Yes	Yes

Geri-Geronimo R. Sañez
Chief, Hazardous Waste Management Section
Environmental Quality Management Division
Environmental Management Bureau
Department of Environment and Natural Resources

Categories of HW Generators

A101	Wastes with Cyanide	>10,000	10,000-5,000	<5,000
L403 L404	ODS PCB Wastes			
M502	Asbestos Wastes			
M503	Pharmaceuticals and Drugs			
D401-D499	Waste with Inorganic Chemicals	>20,000	20,000-10,000	<10,000
E501-E599	Reactive Chemical Waste			
F601-F699	Inks/Dyes/Pigments/Paint/Resins /Latex/Adhesives/ Organic Sludge			
G703-G704	Waste Organic Solvents			
L401-L402	Other Organic Chemicals			
M504-M506	Miscellaneous Waste			

Geri-Geronimo R. Sañez
Chief, Hazardous Waste Management Section
Environmental Quality Management Division
Environmental Management Bureau
Department of Environment and Natural Resources

MAIN RESPONSIBILITY OF HW GENERATORS

Geri-Geronimo R. Sañez
Chief, Hazardous Waste Management Section
Environmental Quality Management Division
Environmental Management Bureau
Department of Environment and Natural Resources

Classification of HW Generators

- Small
- Medium
- Large

Classification is based on the type and volume of hazardous wastes generated

Geri-Geronimo R. Sañez
Chief, Hazardous Waste Management Section
Environmental Quality Management Division
Environmental Management Bureau
Department of Environment and Natural Resources

Minimum Requirements for Hazardous Waste Storage Facilities

- Accessible
- Enclosed but adequately ventilated
- Impermeable floors
- Properly secured
- Provision for
- Provision for proper
- Emergency respon
- Storage time limit

Geri-Geronimo R. Sañez
Chief, Hazardous Waste Management Section
Environmental Quality Management Division
Environmental Management Bureau
Department of Environment and Natural Resources

Categories of HW Generators

B201-B299	Acid Wastes	>36,000	36,000-18,000	36,000-18,000
C301-C399	Alkali wastes			
I101-I104	Used or Waste Oil			
J201	Empty Chemical Containers			
H802	Grease wastes	>500,000	500,000-250,000	<250,000
D407	Busted lamps	≥100 pcs/yr	100-50 pcs/yr	<50 pcs/yr

Geri-Geronimo R. Sañez
Chief, Hazardous Waste Management Section
Environmental Quality Management Division
Environmental Management Bureau
Department of Environment and Natural Resources

REMENTS

- Be accessible in cases of eme
- For purpose of inspection
- monitor
- Be
- Have floor

Geri-Geronimo R. Sañez
Chief, Hazardous Waste Management Section
Environmental Quality Management Division
Environmental Management Bureau
Department of Environment and Natural Resources

Requirements for HW Generators

- Regis
- Designate a Pollution Control Officer (PCO)
- Determine if wastes are hazardous
- Submit reports to EMB Regional Office
- Responsible for
- Submit Contin
- Conduct personnel

Geri-Geronimo R. Sañez
Chief, Hazardous Waste Management Section
Environmental Quality Management Division
Environmental Management Bureau
Department of Environment and Natural Resources

REMENTS

Have full emergency response
equipment corresponding to...
of wastes being st...
emergencies asso...

Geri-Geronimo R. Sañez
Chief, Hazardous Waste Management Section
Environmental Quality Management Division
Environmental Management Bureau
Department of Environment and Natural Resources

LABELING REQUIREMENTS

- Pro... ...ld be done at the waste generator's fac... ...should be maintained at the TSD facility
- Label is ac... ...by a placard... to characterist... vessel, container...

Geri-Geronimo R. Sañez
Chief, Hazardous Waste Management Section
Environmental Quality Management Division
Environmental Management Bureau
Department of Environment and Natural Resources

IREMENTS

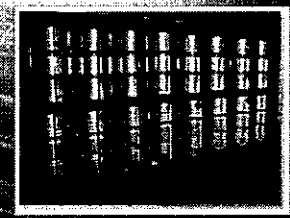
Be properly sec... ...ed and not easily accessed by unauthorized persons

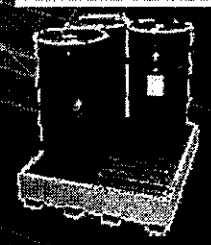
Have provision for proper waste segregation in ac... ...ce with the following
- Chemical Properties
- Waste Type

Geri-Geronimo R. Sañez
Chief, Hazardous Waste Management Section
Environmental Quality Management Division
Environmental Management Bureau
Department of Environment and Natural Resources

IREMENTS

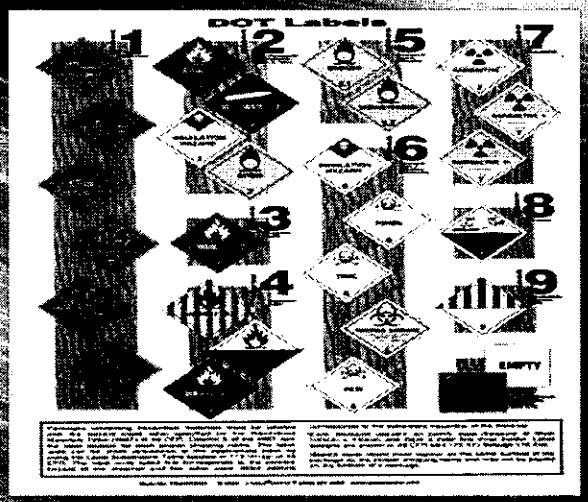
...drum
handling ... ...cribed in the following:
- Store drums in upright position on pallets and stack no more than two (2) drums ...h
- Raised drums ... ... structures to allow p... and circulation of air





Geri-Geronimo R. Sañez
Chief, Hazardous Waste Management Section
Environmental Quality Management Division
Environmental Management Bureau
Department of Environment and Natural Resources

Symbols Accompanying the Label



Geri-Geronimo R. Sañez
Chief, Hazardous Waste Management Section
Environmental Quality Management Division
Environmental Management Bureau
Department of Environment and Natural Resources

Label

HAZARDOUS WASTE		
Waste Information	HW Class	Name of the hazardous waste class as specified in the revised Table 1 of Chapter 2
	HW Description	Name of the hazardous waste description as specified in the revised Table 1 of Chapter 2
	HW Number	Code of the hazardous waste description as specified in the revised Table 1 of Chapter 2
	Characteristic	Toxic, Corrosive, Flammable, Explosive, Reactive, and/or Infectious
	Form	Liquid, Solid, or Sludge
	Volume	Volume of the hazardous waste contained in the vessel, container, or tank.
	Packaging date	Date on which the hazardous waste is packed in the vessel, container, or tank.
	Shipping date	Date on which the hazardous waste must be removed from the storage area and transported off site if applicable
	Waste transport record number	Manifest number if transported off site
Container Information	Capacity	Maximum capacity or volume of the container
	Material	Materials that a vessel, container, or tank is made of
Generator Information	ID number	ID number issued by DENR upon registration
	Name	Name of the waste generator (company name)
	Address	Address of the waste generator
	Telephone #	
	Fax #	
	Name of HWMS	Name of hazardous waste management supervisor (HWMS)

Size of the Label: 20 cm x 30 cm

Accompanied by a symbol

Geri-Geronimo R. Sañez
Chief, Hazardous Waste Management Section
Environmental Quality Management Division
Environmental Management Bureau
Department of Environment and Natural Resources

HAZARDOUS WASTE

Waste Information	HW Class	Name of the hazardous waste class as specified in the revised Table 1 of Chapter 2
	HW Description	Name of the hazardous waste description as specified in the revised Table 1 of Chapter 2
	HW Number	Code of the hazardous waste description as specified in the revised Table 1 of Chapter 2
	Characteristic	Toxic, Corrosive, Flammable, Explosive, Reactive, and/or Infectious
	Form	Liquid, Solid, or Sludge
	Volume	Volume of the hazardous waste contained in the vessel, container, or tank.
	Packaging date	Date on which the hazardous waste is packed in the vessel, container, or tank.
	Shipping date	Date on which the hazardous waste must be removed from the storage area and transported off site if applicable
	Waste transport record number	Manifest number if transported off site
Container Information	Capacity	Maximum capacity or volume of the container
	Material	Materials that a vessel, container, or tank is made of
Generator Information	ID number	ID number issued by DENR upon registration
	Name	Name of the waste generator (company name)
	Address	Address of the waste generator
	Telephone #	
	Fax #	
	Name of HWMS	Name of hazardous waste management supervisor (HWMS)

Geri-Geronimo R. Sañez
Chief, Hazardous Waste Management Section
Environmental Quality Management Division
Environmental Management Bureau
Department of Environment and Natural Resources

Symbols Accompanying the Label

1. [illegible] of the symbol is 25 cm x 25cm for [illegible] and tanks and 30cm x 30cm conveyances carrying vessels, containers, and [illegible]
2. Basic shape of the symbols is a square [illegible] degrees to form a diamond
3. At each of the four sides, a parallel [illegible] drawn to [illegible] or diamond 95 [illegible] diamond.
4. The color should [illegible] figures.

Geri-Geronimo R. Sañez
Chief, Hazardous Waste Management Section
Environmental Quality Management Division
Environmental Management Bureau
Department of Environment and Natural Resources

Categories of TSD Facilities

Category	Description
A	Facilities that conduct onsite treatment and disposal of hazardous wastes generated within the facility that employs or utilizes technologies from Categories B to E
B	Facilities that commercially treat industrial hazardous wastes using thermal technologies either burn or non-burn
C	Landfills that only accept hazardous wastes for final disposal
D	Facilities that recycle or reprocess hazardous waste, which are not generated or produced at the facility
E	Facilities that accept and treat hazardous wastes, which are not generated or produced at the facility using immobilization, encapsulation, polymerization, or similar processes.
F	Facilities that store hazardous wastes, which were not generated from the facility awaiting transport for treatment, disposal, or export such as:

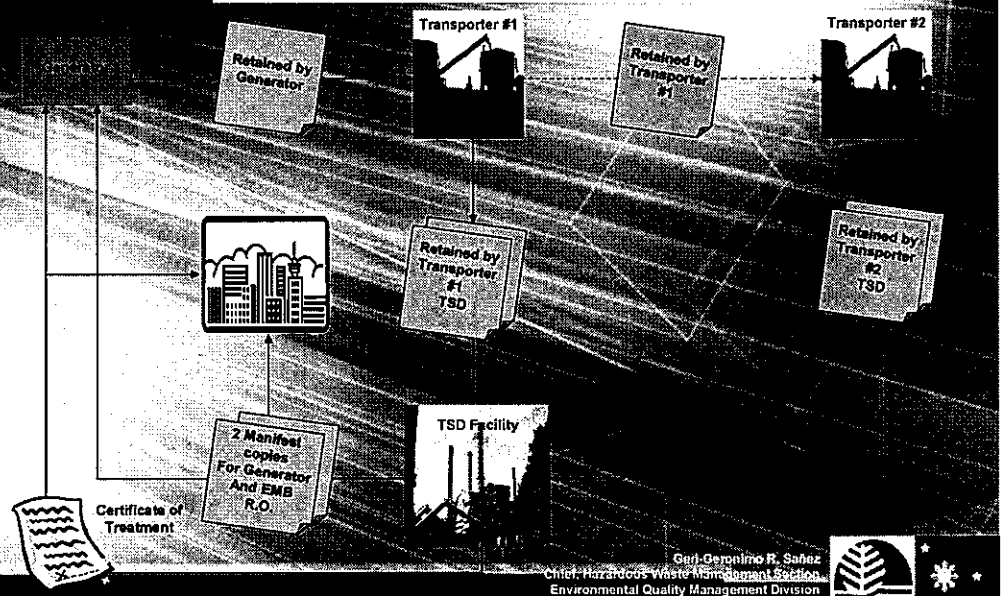
Geri-Geronimo R. Sañez
Chief, Hazardous Waste Management Section
Environmental Quality Management Division
Environmental Management Bureau
Department of Environment and Natural Resources

Requirements for HW Transporters

- Register with EMB
- Drivers and helpers must have appropriate competency on Hazardous Waste Management
- Contingency and Emergency Plan
- Environmental Guarantee Fund
- Valid contract with registered TSD facility(ies)

Geri-Geronimo R. Sañez
Chief, Hazardous Waste Management Section
Environmental Quality Management Division
Environmental Management Bureau
Department of Environment and Natural Resources

HAZARDOUS WASTES TRACKING SYSTEM



Geri-Geronimo R. Sañez
Chief, Hazardous Waste Management Section
Environmental Quality Management Division
Environmental Management Bureau
Department of Environment and Natural Resources

Requirements for TSD facilities

- Register with EMB
- Designate a Pollution Control Officer (PCO)
- Comply with the waste acceptance requirements and the Manifest System
- Submit residuals management plan
- Prepare and implement an emergency contingency plan
- Conduct personnel training
- Valid contract with registered transporter

Geri-Geronimo R. Sañez
Chief, Hazardous Waste Management Section
Environmental Quality Management Division
Environmental Management Bureau
Department of Environment and Natural Resources

Basel Convention

... [illegible] ... Restrictions

- Prohibits transboundary movements of wastes from OECD to No[illegible] that belong to any Category contained in Annex I (Article 4)
- Prohibits Parties to export/import waste either for ... operations from Non-Parties (Articles 6 & 7) ... Multilateral and Regional Arrangements (Article 11)
- Encourage Parties to ... (for local implementation ... (Article 4)
- Encourage parties to ... support of the Conve...

Geri-Geronimo R. Sañez
Chief, Hazardous Waste Management Section
Environmental Quality Management Division
Environmental Management Bureau
Department of Environment and Natural Resources

Basel Convention on the Transboundary Movements of Hazardous Wastes and their Disposal

Geri-Geronimo R. Sañez
Chief, Hazardous Waste Management Section
Environmental Quality Management Division
Environmental Management Bureau
Department of Environment and Natural Resources

THE BASEL CONVENTION ON THE TRANSBOUNDARY MOVEMENTS OF HAZARDOUS WASTES AND THEIR DISPOSAL

Hazardous wastes are allowed to be exported for recovery, treatment and final disposal and to countries which are parties to the Basel Convention on the Transboundary Movement of HW and their Disposal or to countries with existing bilateral, multilateral and regional agreements

Geri-Geronimo R. Sañez
Chief, Hazardous Waste Management Section
Environmental Quality Management Division
Environmental Management Bureau
Department of Environment and Natural Resources

Basel Convention

... Conference of the Plenipotentiaries on 22 March 19[illegible] in Basel, Switzerland

- entered into force 05 May 1992
- ratified by the Philippine Senate on 21 October 19[illegible] Philippines became a signatory and a contrac...
- entered into force on ... January 1994
- the **Department of ... Natural Resources ... Environmental Manage...** ... and Competent Authority to the C...

Geri-Geronimo R. Sañez
Chief, Hazardous Waste Management Section
Environmental Quality Management Division
Environmental Management Bureau
Department of Environment and Natural Resources

E-WASTE STATISTICS

Geri-Geronimo R. Sañez
Chief, Hazardous Waste Management Section
Environmental Quality Management Division
Environmental Management Bureau
Department of Environment and Natural Resources

E-WASTE TRANSPORTERS AND TSD FACILITIES AS OF JANUARY 2018

TSDs	44
TRANSPORTERS	88

The numbers are based on the ac... online registered TSD and Transporter... that caters M506 and M507

Geri-Geronimo R. Sañez
Chief, Hazardous Waste Management Section
Environmental Quality Management Division
Environmental Management Bureau
Department of Environment and Natural Resources

Import (Recyclable) and Export of Hazardous Waste

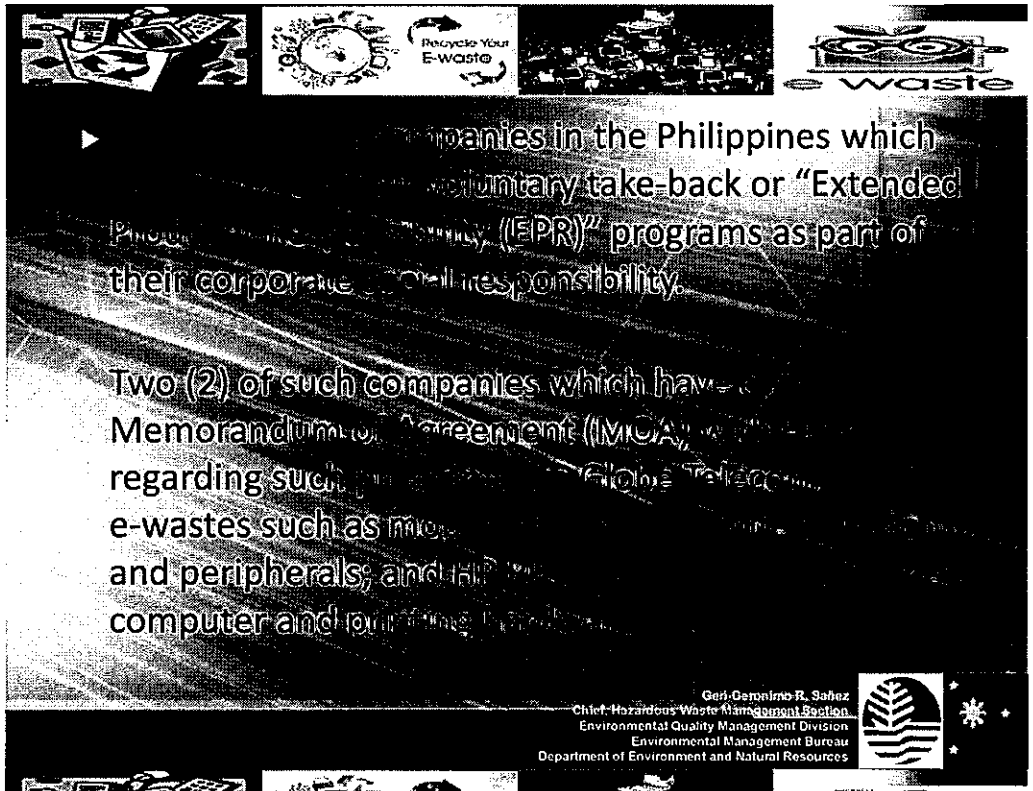
- Basel Convention requirements and procedures
  - Notification/Consent procedure
  - Duly Motivated Request (DMR)
- Registration of Importers (Online)
- Secure Importation Clearance

Geri-Geronimo R. Sañez
Chief, Hazardous Waste Management Section
Environmental Quality Management Division
Environmental Management Bureau
Department of Environment and Natural Resources

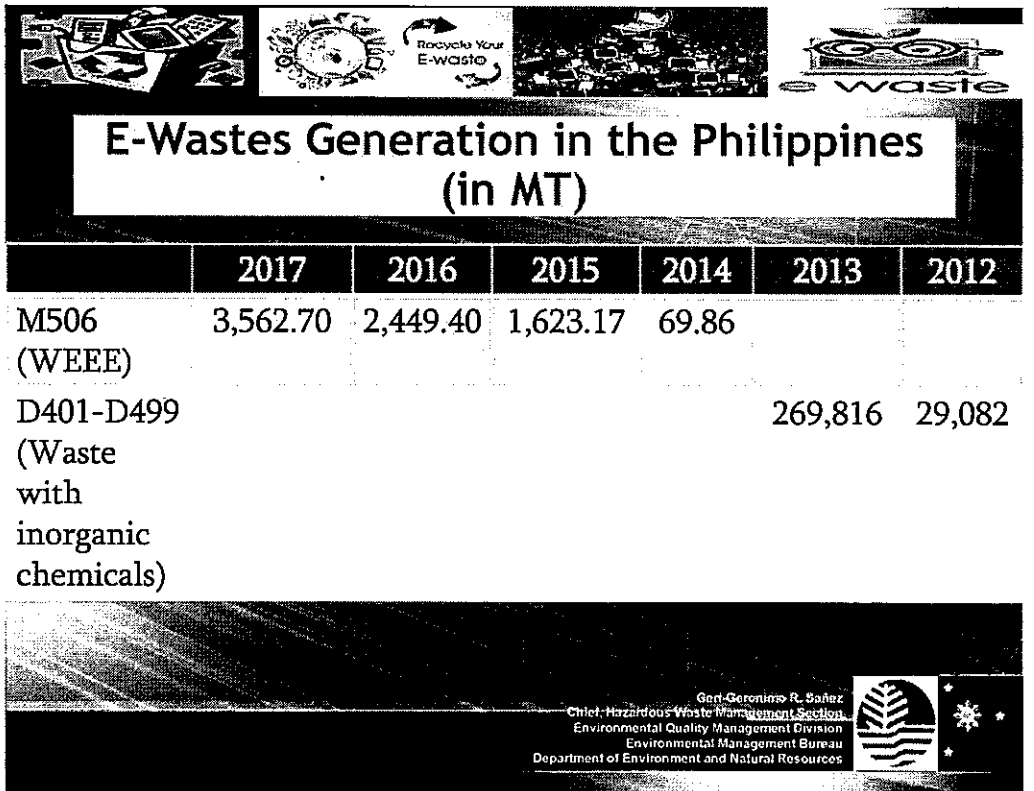
DAO 1994-28: The Interim Guidelines on the Importation of Recyclable Materials Containing Hazardous Substances

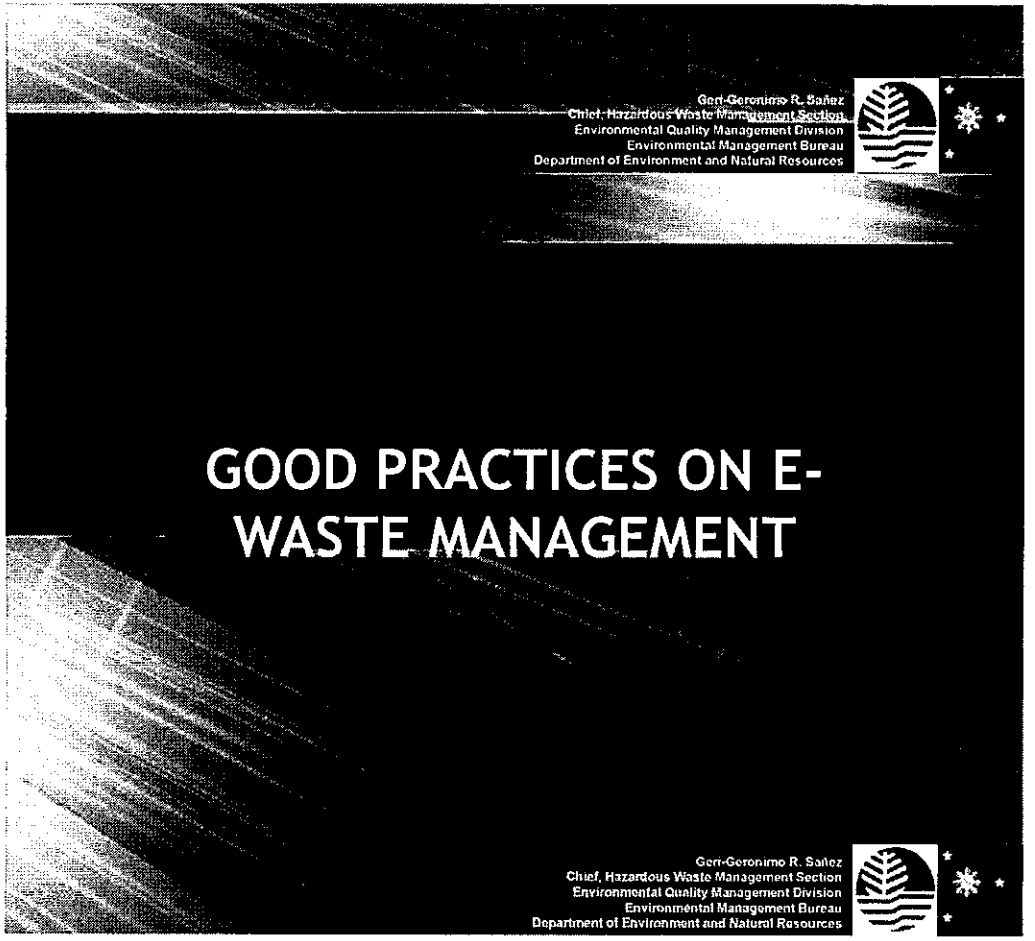
- Allows the importation of the following recyclable materials:
  - scrap metals
  - solid plastic materials
  - **electronic assemblies and scraps**
  - used oil
  - fly ash
- All importation must follow the requirements and procedures of the Basel Convention:
  - Notification and Consent between...
  - Wastes to be imported must have a "defin... with the essential environmental permits and clearan...

Geri-Geronimo R. Sañez
Chief, Hazardous Waste Management Section
Environmental Quality Management Division
Environmental Management Bureau
Department of Environment and Natural Resources


Recycle Your E-waste
e waste
panies in the Philippines which
voluntary take-back or "Extended
(EPR)" programs as part of
their corporate social responsibility.
Two (2) of such companies which have
Memorandum of Agreement (MOA)
Globe Telecom
regarding such
e-wastes such as mo
and peripherals; and HP
computer and pr
Geri-Geronimo R. Sañez
Chief, Hazardous Waste Management Section
Environmental Quality Management Division
Environmental Management Bureau
Department of Environment and Natural Resources


Recycle Your E-waste
e waste
PLANET PARTNERS PROGRAM
ent among:
HP
DENR
TES-AMM PHILIPPINES
Aims to establish a
collection and
program for HP
Started in November 201
November 2019
Geri-Geronimo R. Sañez
Chief, Hazardous Waste Management Section
Environmental Quality Management Division
Environmental Management Bureau
Department of Environment and Natural Resources


Recycle Your E-waste
e waste
E-Wastes Generation in the Philippines (in MT)
2017 2016 2015 2014 2013 2012
M506 (WEEE) 3,562.70 2,449.40 1,623.17 69.86
D401-D499 (Waste with inorganic chemicals) 269,816 29,082
Geri-Geronimo R. Sañez
Chief, Hazardous Waste Management Section
Environmental Quality Management Division
Environmental Management Bureau
Department of Environment and Natural Resources


GOOD PRACTICES ON E-WASTE MANAGEMENT
Geri-Geronimo R. Sañez
Chief, Hazardous Waste Management Section
Environmental Quality Management Division
Environmental Management Bureau
Department of Environment and Natural Resources

GEF/UNIDO PROJECT ON SAFE PCB AND E-WASTE MANAGEMENT

Duration: 5 years (2017-2021)

Global Environmental Benefits:

600 metric tons of PCB-contaminated [illegible]
disposed/decontaminated
1,150 metric tons [illegible]

Gen-Geronimo R. Sañez
Chief, Hazardous Waste Management Section
Environmental Quality Management Division
Environmental Management Bureau
Department of Environment and Natural Resources

PILOT PROJECT FOR THE MITIGATION OF ENVIRONMENTAL AND HEALTH HAZARDS IN THE E-WASTE INFORMAL DISMANTLING - METRO MANILA

Implemented by *Medecins Du Monde* (M[illegible] of Doc[illegible] World, a Non-Governmental Organization [illegible]

The Project was [illegible] July 2012 to [illegible]

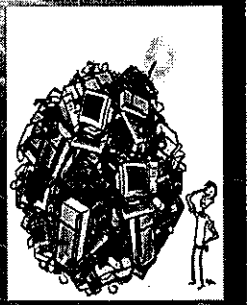
The principal objective [illegible]
mortality and morbidity [illegible]
toxic waste recycling [illegible]

Gen-Geronimo R. Sañez
Chief, Hazardous Waste Management Section
Environmental Quality Management Division
Environmental Management Bureau
Department of Environment and Natural Resources

PROGRAM 1 PHONE

[illegible]agement among:

- G[illegible]
- DENR
- TES-AMM PHILIPPINES



an E-waste recycling and recovery program for sustainability by engaging its stakeholders, subscribers and the public in general to donate their e-waste and contribute in conse[illegible]ing the environment.

Habitat For Humanity Philippi[illegible]
beneficiary of funds raised throu[illegible]
support the building of classrooms [illegible]
in Aklan which were a[illegible]ed by [illegible]

Implemented fro[illegible]

Gen-Geronimo R. Sañez
Chief, Hazardous Waste Management Section
Environmental Quality Management Division
Environmental Management Bureau
Department of Environment and Natural Resources

PROJECTS ON E-WASTES

Gen-Geronimo R. Sañez
Chief, Hazardous Waste Management Section
Environmental Quality Management Division
Environmental Management Bureau
Department of Environment and Natural Resources

Contents

DENR AO

- Section 1.0 Basic Policy
- Section 2.0 Objectives
- Section 3.0 Scope and Coverage
- Section 4.0 Separability Clause
- Section 5.0 Repealing Clause
- Section 6.0 Amendments
- Section 7.0 Effectivity

Guidelines on the ESM of WEEE

- Section 1 Introduction
- Section 2 Definition of Terms
- Section 3 Scope and Coverage
- Section 4 Environmentally Sound Management
- Section 5 Environmental and Health Hazard
- Section 6 Suitability of Wastes for the Operation
- Section 7 Waste Avoidance
- Section 8 Responsibilities of Parties
- Section 9 Registration of Producers to the PRO
- Section 10 Establishment and General Requirement of the PRO
- Section 11 Contents of the WEEE Management Plan
- Section 12 Submission and Approval Process of the WEEE Management Plan
- Section 13 Enforcement Requirements
- Section 14 Steering Committee
- Section 15 TSD Facilities

Chief, Hazardous Waste Management Section
Environmental Quality Management Division
Environmental Management Bureau
Department of Environment and Natural Resources

DAO Objectives

...mechanism for the appropriate management of WEEE

Reduce the amount of electrical and electronic equipment (EEE) type of waste and the hazards brought about by its components

Promote the reuse of EEE and valorization (placing ... or price to) of its waste components

Encourage involvement of all relevant agencies and stakeholders in the life cycle of EEE

Institutionalize the principle of "extended responsibility" (EPR)

Geri-Geronimo R. Sañez
Chief, Hazardous Waste Management Section
Environmental Quality Management Division
Environmental Management Bureau
Department of Environment and Natural Resources

UPCOMING E-WASTE POLICY

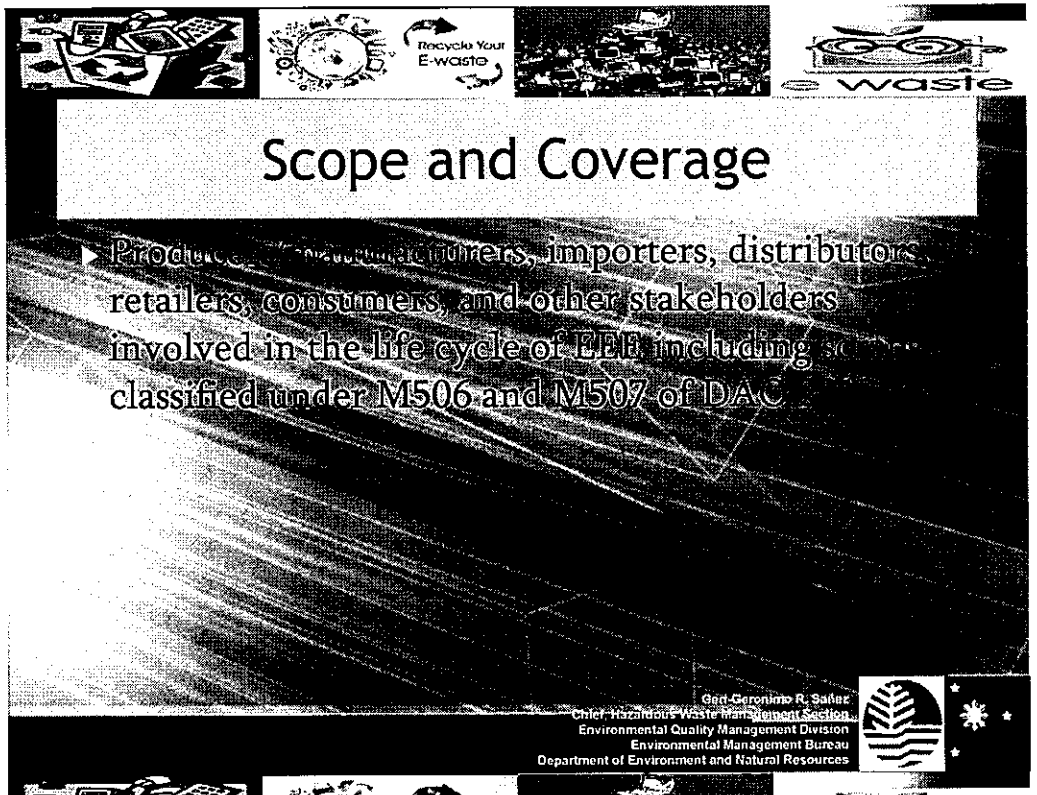
Geri-Geronimo R. Sañez
Chief, Hazardous Waste Management Section
Environmental Quality Management Division
Environmental Management Bureau
Department of Environment and Natural Resources

GUIDELINES ON
ENVIRONMENTALLY SOUND MANAGEMENT OF
WASTE ELECTRICAL AND ELECTRONIC EQUIPMENT

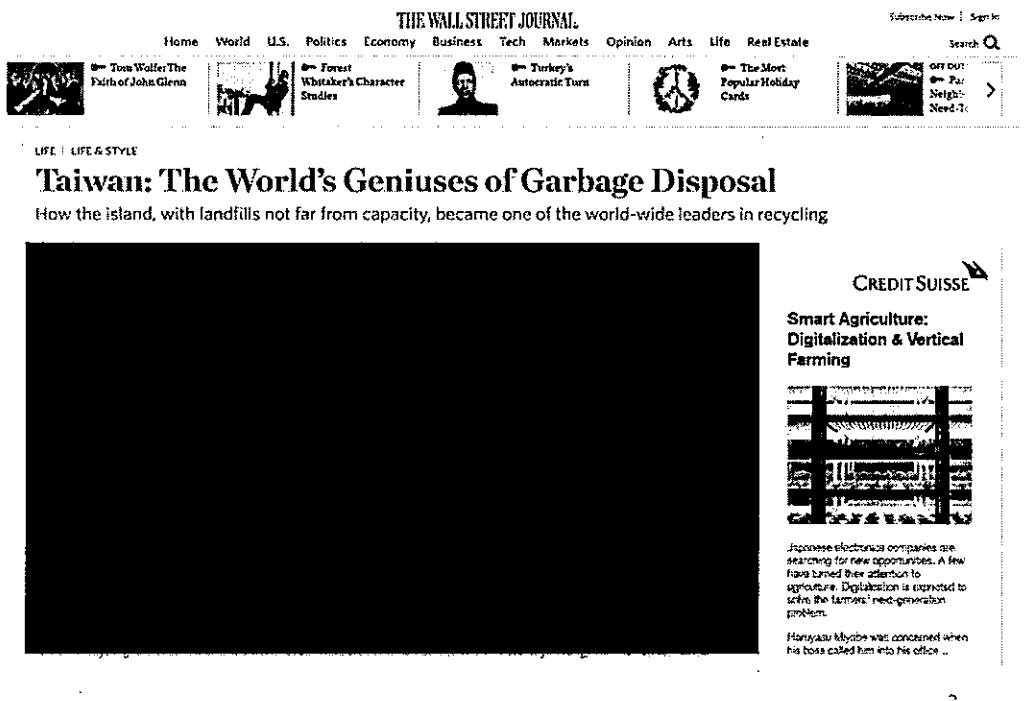
Technical Guidelines on the Environmentally Sound Management (ESM) of Waste Electrical and Electronic Equipment (WEEE)

Geri-Geronimo R. Sañez
Chief, Hazardous Waste Management Section
Environmental Quality Management Division
Environmental Management Bureau
Department of Environment and Natural Resources


Recycle Your E-waste
e waste
DANGEROUS
4
OXIDIZER
5.1
FLAMMABLE
3
THANK YOU!
KEEP CALM AND FOCUS ON HAZARDOUS WASTES
Geri Geronimo R. Sañez
Chief, Hazardous Waste Management Section
Environmental Quality Management Division
Environmental Management Bureau
Department of Environment and Natural Resources


Recycle Your E-waste
e waste
Scope and Coverage
Producers, importers, distributors, retailers, consumers, and other stakeholders involved in the life cycle of EEE including
classified under M506 and M507 of DAO
Geri Geronimo R. Sañez
Chief, Hazardous Waste Management Section
Environmental Quality Management Division
Environmental Management Bureau
Department of Environment and Natural Resources


Recycle Your E-waste
e waste
Email us:
emb.ewaste.embco@gmail.com
Call us:
(02) 928-1212
Visit our website:
www.emb.gov.ph
Health
CAUTION
RoHS Compliant
RoHS LEAD FREE
Geri Geronimo R. Sañez
Chief, Hazardous Waste Management Section
Environmental Quality Management Division
Environmental Management Bureau
Department of Environment and Natural Resources


THE WALL STREET JOURNAL.

Home World U.S. Politics Economy Business Tech Markets Opinion Arts Life Real Estate

Tom Wolfe: The Faith of John Glenn

Forest Whitaker's Character Studies

Turkey's Autocratic Turn

The Most Popular Holiday Cards

LIFE | LIFE & STYLE

Taiwan: The World's Geniuses of Garbage Disposal

How the island, with landfills not far from capacity, became one of the world-wide leaders in recycling

CREDIT SUISSE

Smart Agriculture: Digitalization & Vertical Farming

Japanese electronics companies are searching for new opportunities. A few have turned their attention to agriculture. Digitalization is expected to solve the farmers' next-generation problem.

Haruyasu Miyabe was concerned when his boss called him into his office ...

WEEE Management History

衛政院環境保護署
Environmental Protection Administration
Executive Yuan, R.O.C. (Taiwan)

Highlights of Taiwan E-waste Recycling Program

Presenter: Dr. Lihchyi Wen

Outline

01 WEEE Management History

02 Green Achievements

03 4-in-1 Recycling Program

Institutional Reform of Recycling in Taiwan

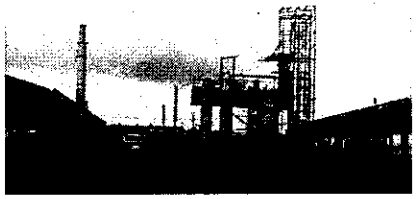
- In 1997, the Waste Disposal Act (WDA) was amended to introduce the Producer's Responsibility Principle, shall be responsible for the collection, transportation, and treatment thereof if such waste:
  - is not easily cleared away or disposed of;
  - contains components that are not readily biodegradable;
  - contains hazardous substances; or
  - possesses recycling or reuse value.

行政院環境保護署
Environmental Protection Administration, Executive Yuan, R.O.C. (Taiwan)

A Brief History of Taiwan's E-waste Management

Dioxin smoke near Erren River (1985)

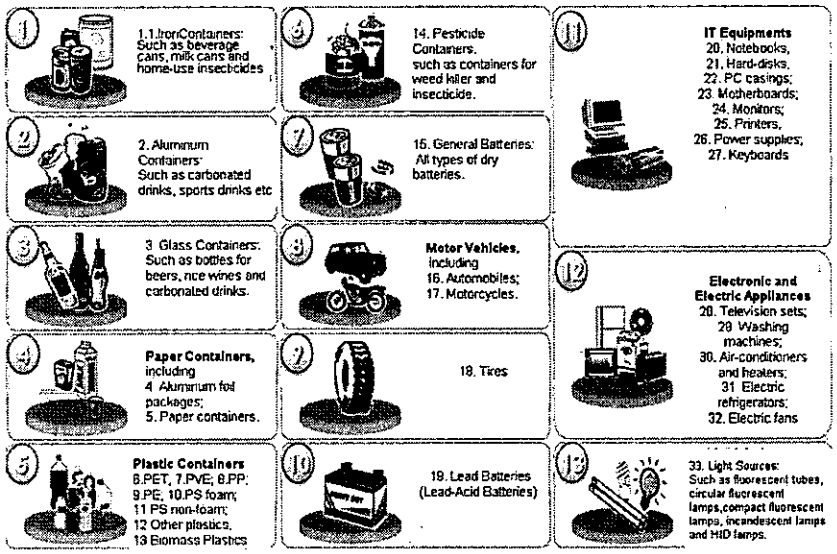
Metal Scraps in Dafa Industrial Park (1987)



Dafa Incinerator (1988)

Acid pickling of metal scraps (1989)

Regulated Recyclable Wastes



Evolution of Recycling System

Main Program

- 2010 Sustainable Material Management
- 2005 Mandatory Garbage Separation
- 2003 Bulky Waste Recycling
- 2001 Food Waste Recycling
- 2000 Per-Bag Trash Fee in Taipei
- 1997 Four-in-One Recycling Program
- 1988 EPR Introduced

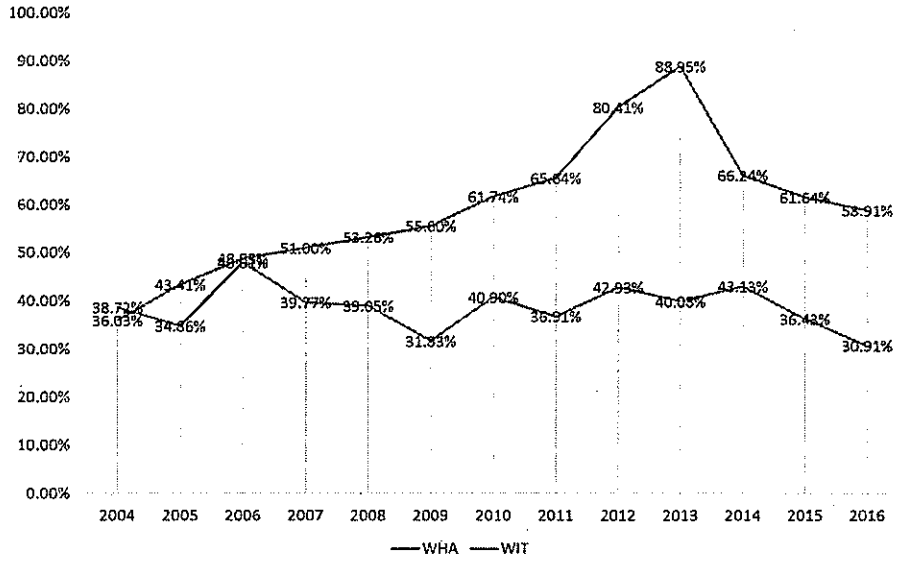
Market-driven recycling only → *Manufacturers and Importers* → *Eight Recycling Funds Management* → *TEPA Recycling Fund Management Board stage*

1988 Stage 1 | 1997 Stage 2 | 1998 Stage 3

Regulated Recyclable wastes

- Container, Tire 1989
- Pesticide container 1990
- Lead-acid battery 1990
- Automobile\Motorcycle 1994
- General battery 1997
- IT equipment 1997
- Home appliance 1998

Waste Home Appliance and Waste IT equipment collection rate



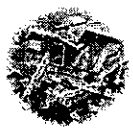
Green Achievements

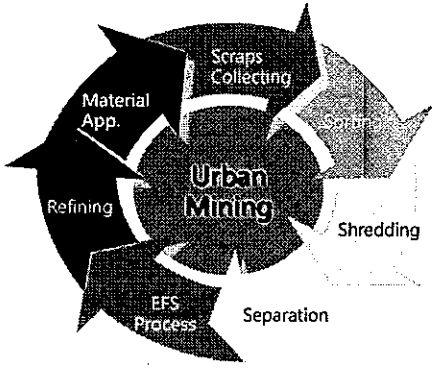
170 Tons/yr of precious and rare-earth metal recycled

- Strong capabilities in resource management and treatment technology
- The traces of precious metals in Electronic Waste are important strategic materials
- Improvement of recycling technology, refine the substances in the e-waste and reuse them in the industry supply chain

Mobile phone

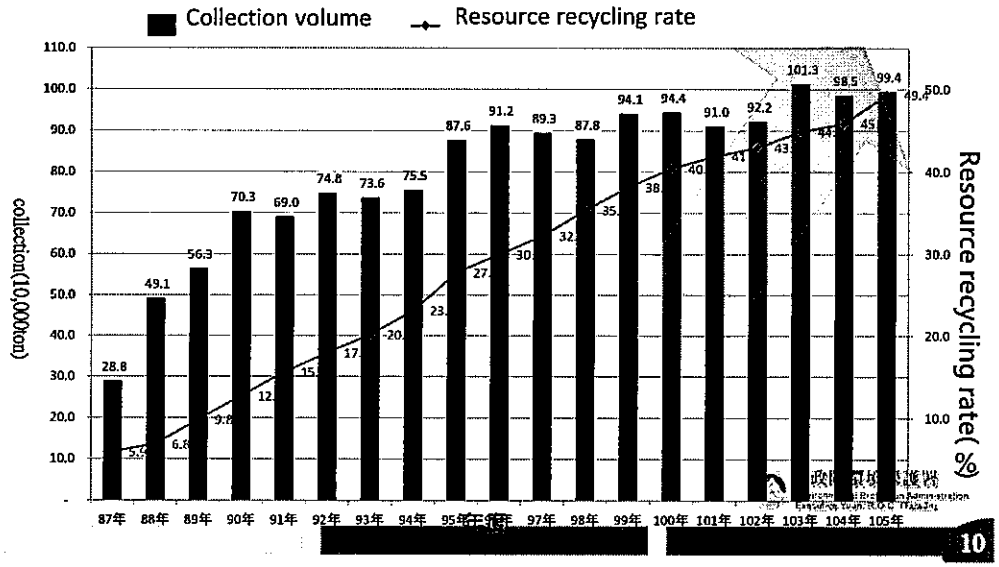
IC substrate





Recycling Performance in Taiwan

3.4 times collection volume
8.3 times Resource recycling growth rate



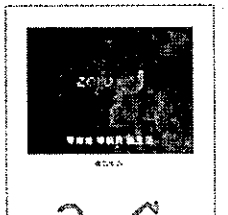
Create something new:
Clothes and blankets are made of wasted + recycled plastic **fiber ...**

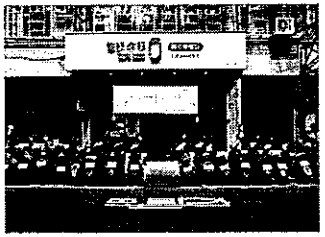
行政院環境保護署
Environmental Protection Administration
Executive Yuan, R.O.C. (Taiwan)

zero zero 妳好 你好

Zero-Zero

Community residents brings unwanted product to community zero-zero shop exchange for daily supplies





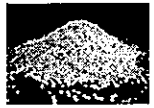
攜帶回收物 → zero zero 城市環保店 → 累積Z幣 → 兌換日常用品，綠色參加活動

大豐環保科技股份有限公司
DA FON ENVIRONMENTAL TECHNOLOGY CO., LTD.

行政院環境保護署
Environmental Protection Administration
Executive Yuan, R.O.C. (Taiwan)

Green Building Materials

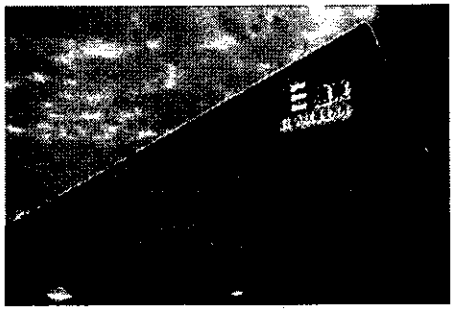
遠東新世紀 FAR EASTERN NEW CENTURY

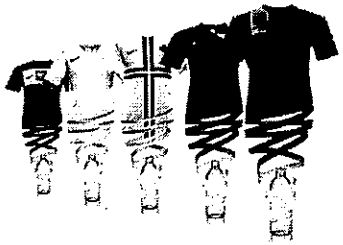


Introduction :
A multi-billion market cap company with polyester and textile business, now reinventing itself in green economy.

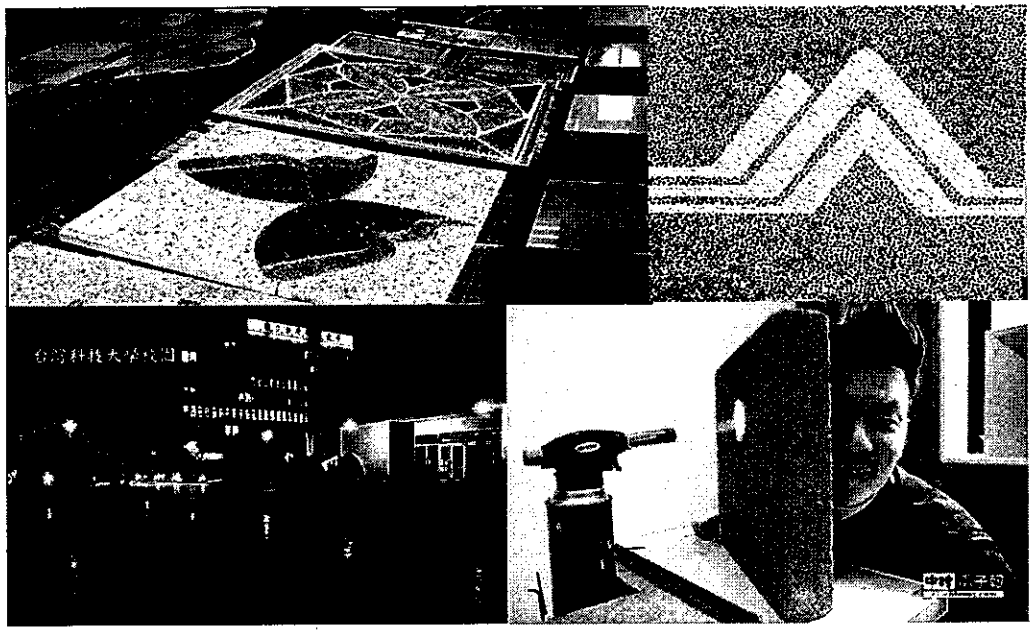
Product Characteristics :
- Recycled/recyclable polyester products, such as food-grade recycled PET resin
- Recycled fiber, which is made from used PET bottles

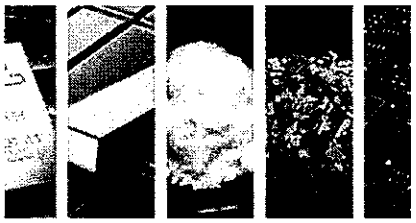
Far Eastern New Century
- The 1st Taiwan Green Classics Award Winner
- Far Eastern EcoARK, the world' s 1st building with exterior walls made entirely by discarded PET bottles
- Football jersey made by recycled fabrics, used by Nike in the FIFA World Cup for two consecutive years

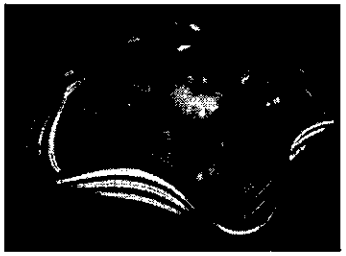


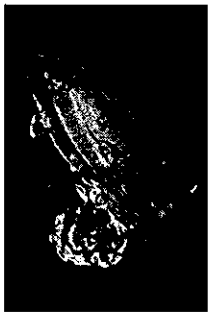


Pave **Taipei city roads with recycled glasses ...**

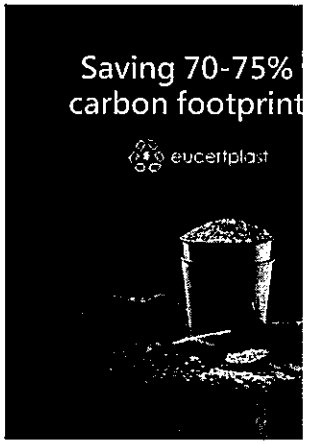


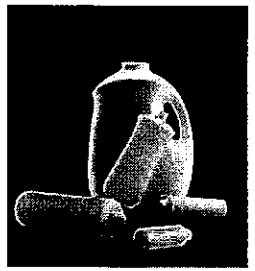


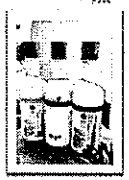


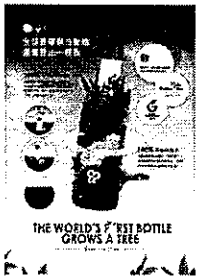


Greenest Shampoo with Sustainable Packaging







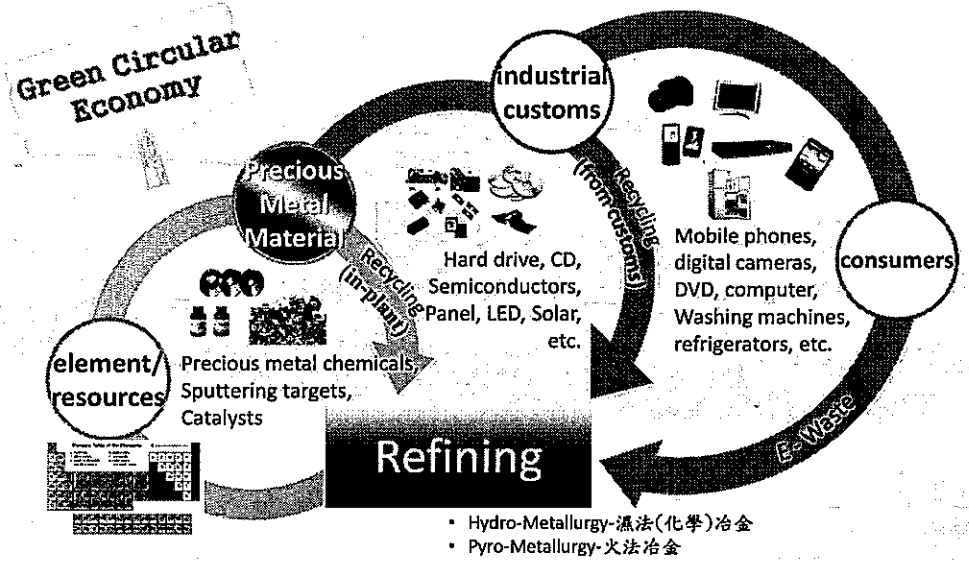


Da Fon Hands in Hands with O'right

The First 100% PCR HDPE Shampoo Bottle in Asia

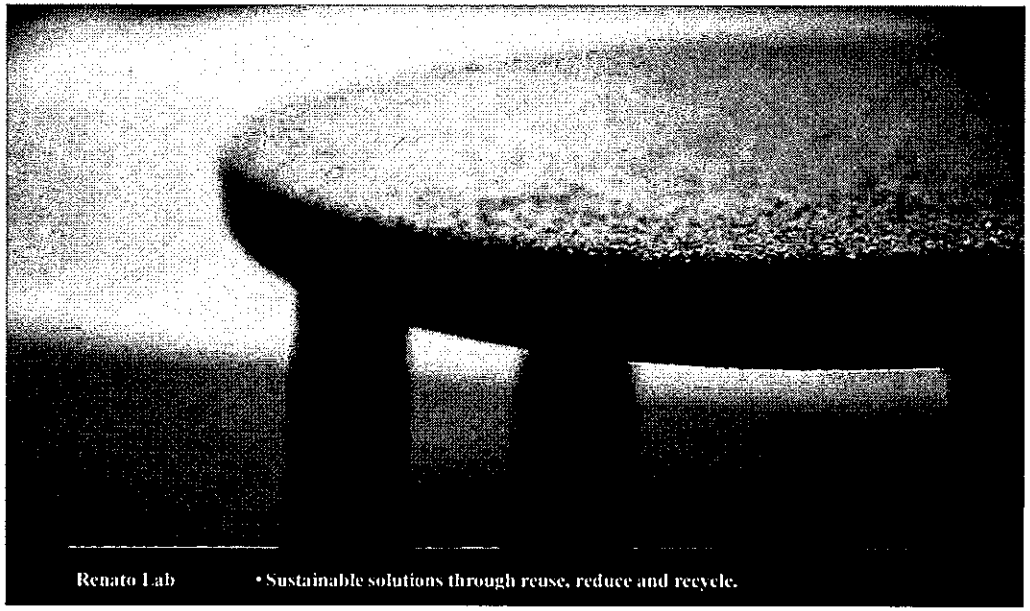
行政院環境保護署
Environmental Protection Administration
Executive Yuan, R.O.C. (Taiwan)

Recycling Case：Green Circular Economy



- Hydro-Metallurgy-濕法(化學)冶金
- Pyro-Metallurgy-火法冶金

A trendy stool designed with recycled rubber tires?



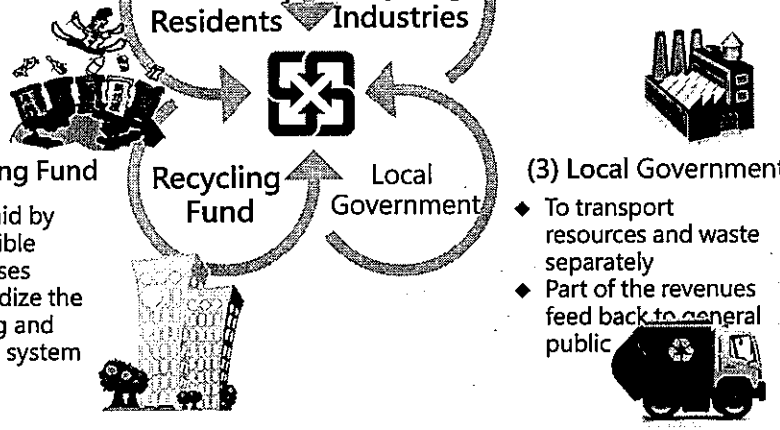
Four-in-One Recycling Program

(1) Community Residents

- To form Community- based Recycling organization
- To Promote separation of waste and recyclable

(2) Recycling Industries

- To purchase waste resources from the public, communities and local government



(4) Recycling Fund

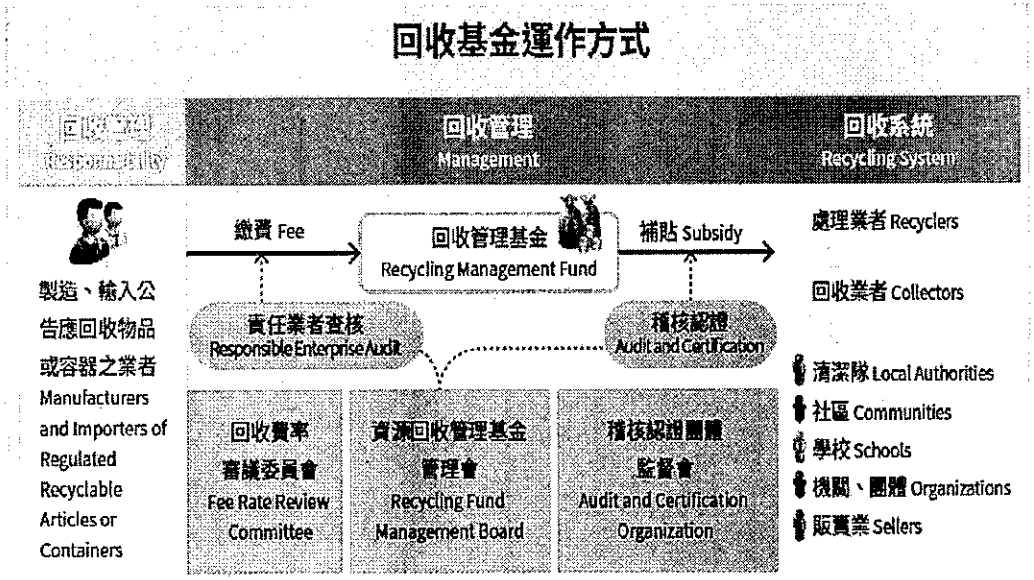
- To be paid by responsible enterprises
- To subsidize the recycling and disposal system

(3) Local Government

- To transport resources and waste separately
- Part of the revenues feed back to general public

4-in-1 Recycling Program

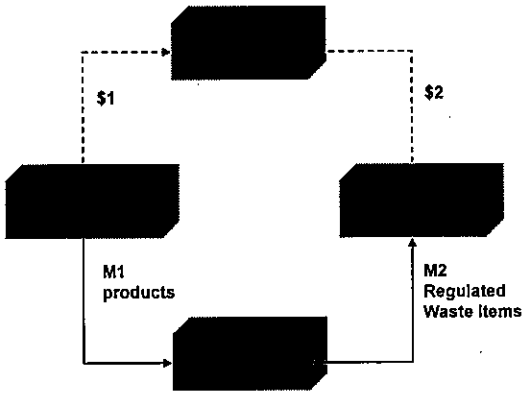
Operation of Recycling Fund



Recycling Management Fund

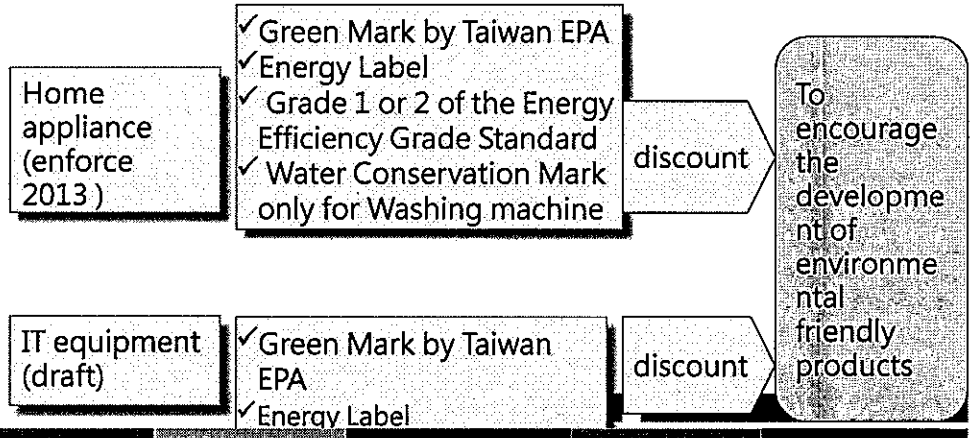
RMF receive recycling-and-treatment fees from producers/importers and uses about 80% of the revenue to subsidize recyclers.

A complete recycling network with built-in checks to ensure all recycled product can be traced



Green Differential Fee Rate

- The differential fee rate means to encourage the development of environmental friendly products. It either decreases the recycling fee rate for the green product producers, or increases the recycling fee rate to hinder less environmental friendly product production.



Concluding Remark

Formula of Recycling Fee of WEEE

H+L-V-F
Total expenditure required

$$Recycling\ fee_t = \frac{[H + L - V - F]_t}{total\ sales\ of\ EEE_t}$$

H: total cost of collection, transportation, and recycling
L: cost of auditing and verification
V: total revenue generated by recyclers from processing RRW
F: prorated trust fund surplus

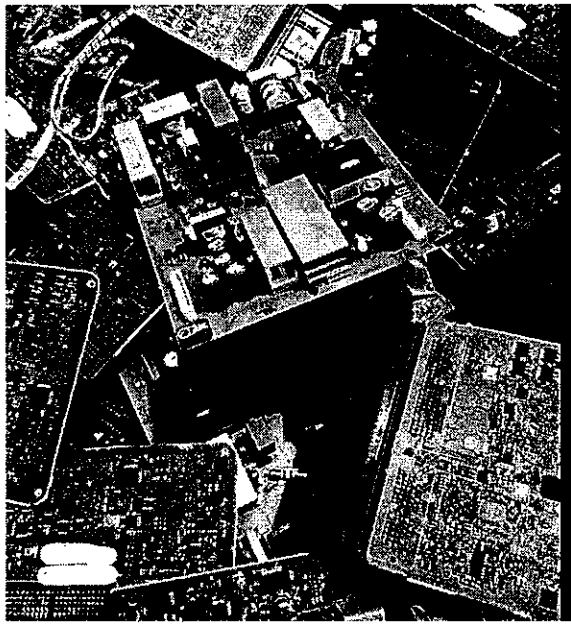
行政院環境保護署
Environmental Protection Administration, Executive Yuan, R.O.C. (Taiwan)

Current Recycling Fee Rate and Subsidy Fee Rate

	Items (selected)			Recycling Fee Rate NT$/unit (US$/unit)		Subsidy Fee Rate NT$/unit (US$/unit)
				Regular	Green products	
1	TV sets	Non-LCD	Over 27 inches	371 (12.37)	260 (8.67)	379.5 (12.65)
			Under 27 inches	247 (8.23)	173 (5.77)	
		LCD	Over 27 inches	233 (7.77)	163 (5.43)	303 (10.1)
			Under 27 inches	127 (4.23)	89 (2.87)	
2	Refrigerator	Over 250 Liters		588 (19.6)	412 (13.73)	635.5 (21.18)
		Under 250 Liters		392 (13.1)	274 (9.13)	
3	Washing machine			307 (10.2)	215 (7.17)	346.5 (11.55)
4	Air conditioner (Heater and air conditioner)			241 (8.03)	169 (5.63)	500 (16.67)
5	Electric fans	Over 12 inches		34 (1.13)	24 (0.8)	20 (0.67)
		Under 12 inches		19 (0.63)	13 (0.43)	
6	IT products	Desk top computer		111 (3.7)	78 (2.6)	182 (6.07)
		Notebook		39 (1.3)	27 (0.9)	303 (10.1)
7		Monitor		127 (4.23)	89 (2.97)	215 (7.17)
		Printer (Laser)		144 (4.8)	137 (4.57)	130 (4.33)
8	Fluorescent Tubes	(straight)		41 (1.37)		40 (1.33)/Kg

- in reality, the recycling system is complicated that it is necessary to examine the roles and different incentive problems of major players.
- In Taiwan, the incentive problems of players are the following:
  - Consumers may not respond well to the subsidy since they care for convenience of taking back
  - Producers only care about how much to pay, not recycling
  - The government is difficult to achieve the target by setting fees
  - Recyclers lack of good competition
- It requires a good system and institutional reform which can respond to these incentive problems.

Thank You



Highlights: Electronics Management in the United States

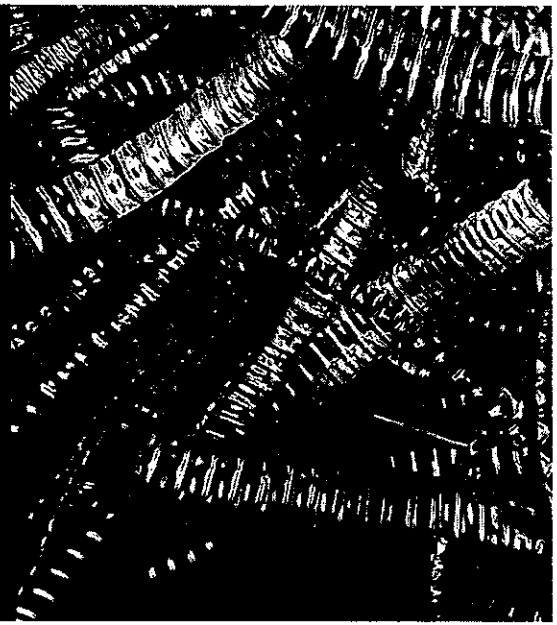
Barnes Johnson, Director

U.S. EPA

Office of Resource Conservation and Recovery

International E-Waste Management Network

Philippine's Day September 24, 2018



Outline

- Electronics in the US
- Sustainable Materials Management
- Regulatory Landscape
- Collection
- Refurbishment and reuse
- Recycling

Electronics: Facts and Figures

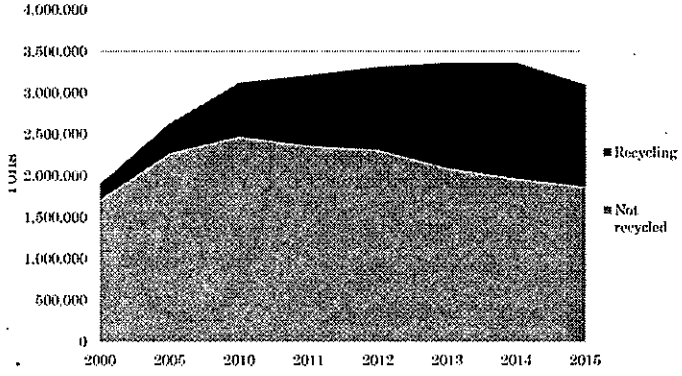
Includes broad range of electronics; does not include white goods

2017: Consumers bought about 900 million electronics products[1]

2015: Households had about 28 electronics devices

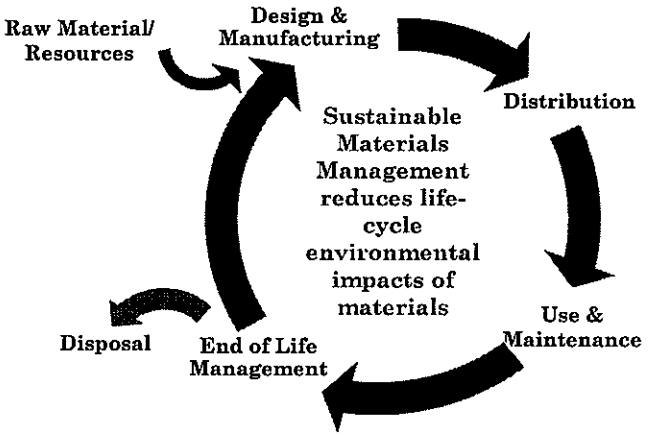
2015: Recycling rate was 39.8%

Electronics Management: 2000 - 2015

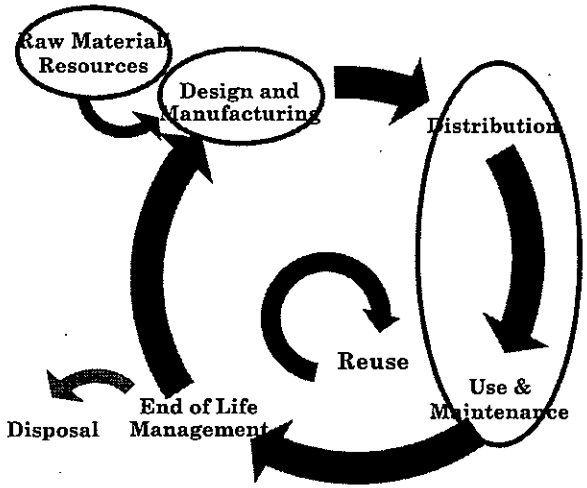


Consumer Electronics Association: The U.S. Consumer Technology Sales and Forecasts (July 2014)

Sustainable Materials Management



Actions: Design, Manufacturing & Use



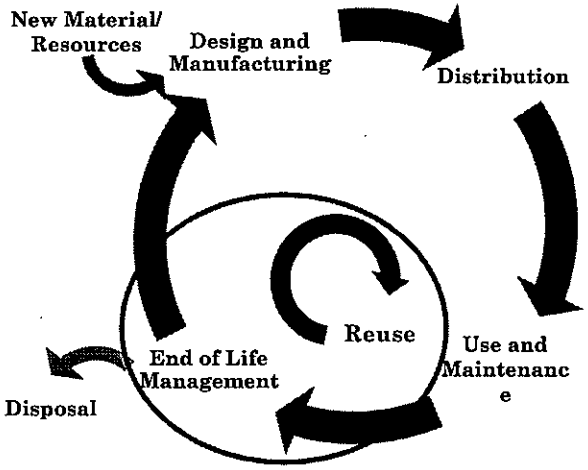
- ✓ Design for use:
  - ➢ lighter and fewer materials
  - ➢ less toxic materials
  - ➢ less energy
  - ➢ more recycled and recyclable materials
- ✓ Design for longer and more adaptable material life
- ✓ Design to be reused and recycled
- ✓ Reduce energy consumption during use

EPEAT®

- Electronic Product Environmental Assessment Tool
- Environmental rating system for computers, TVs, imaging systems, mobile phones and servers
- Products are designed to contain less toxic materials, use less energy, last longer and use recycled materials
- Since 2006, over 850 million EPEAT registered devices have been sold in 43 countries.
- Governments of eight countries including the U.S. require their purchase

6

End: Collection and Reuse/Recycling



Actions:

- ✓ Implement regulatory controls
- ✓ Increase donation options
- ✓ Ensure collection programs are convenient and accessible
- ✓ Support certified recyclers
- ✓ Extend use through reuse
- ✓ Encourage recycling and reuse of the secondary material
- ✓ Support or develop markets

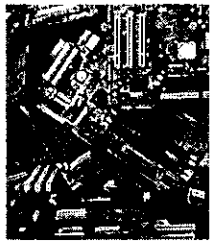
Concerns

Potential Exposure:

- Cathode ray tubes (CRTs) contain 2-5 pounds of lead
- Flat screen back-lighting may contain mercury
- Circuit boards may contain leaded solder
- NiCad, lithium-ion batteries may contain harmful elements

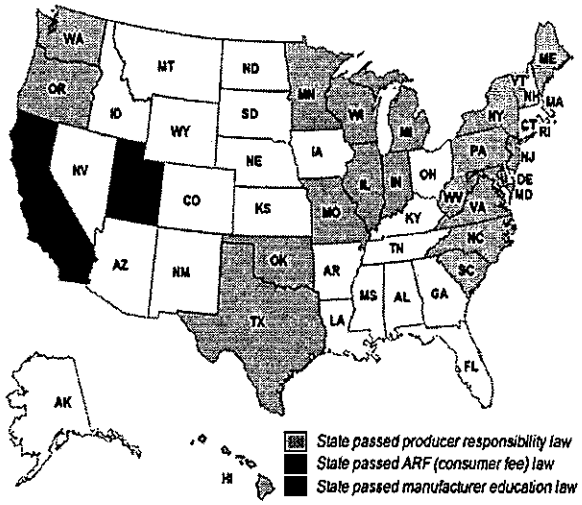
Material lost in landfill:

- Valuable material not available for innovation
- Increase impacts from extracting raw materials



Federal Regulatory Landscape

- Hazardous e-waste is subject to RCRA management requirements
- Cathode ray tubes, circuit boards, some spent lead acid batteries used in external power supplies may be considered hazardous waste, unless certain conditions are met
- Tailored and/or reduced RCRA requirements apply to some electronics to facilitate recycling



State Laws

Take back Laws

Twenty-five US states, the District of Columbia and Puerto Rico have e-waste legislation

Most laws are the extended producer responsibility (EPR) model, except:

- California: Advanced Recovery Fee
- Utah: Public education & outreach

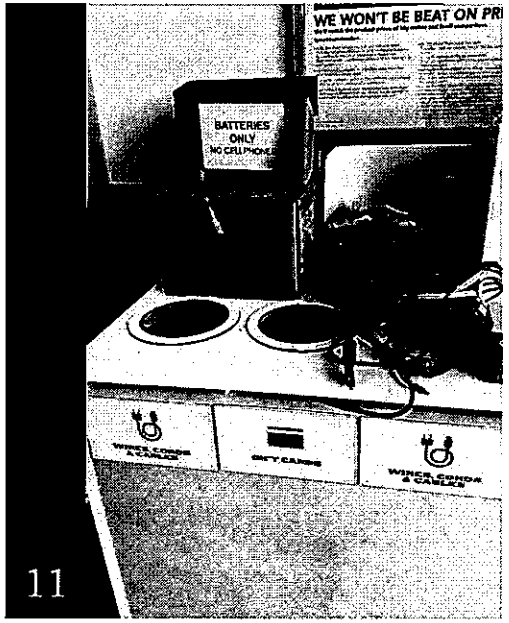
Disposal bans

Seventeen US states and New York City have landfill bans prohibiting disposal of some electronics in non-hazardous landfills

10

Types of Collection Opportunities

Public	Institutional Purchasers	Collection Events	Take Back Services
State Take-back Laws	Requirements for federal equipment	Recycler-hosted events	In-store services (e.g., Staples, Best Buy)
EPA Program	Federal Green Challenge	NGO-hosted events (e.g., religious; scouts)	Manufacturer take back events and mail-in programs
Municipalities	State Electronics Challenge	Leasing Organizations	
	EPEAT		
	Wastewise		



11

Public: Easy and Convenient

Drop off:

- At retail stores; collection points or events

Shipping:

- With prepaid labels and boxes

Pick-up:

- Limited curbside and by some retailers or recyclers

Buy-back

- Limited to late model, higher-priced phones, laptops or tablets

12

Collection: Business and Governments

Most desirable source of used electronics

Federal Government: Mandates used electronics be reused by other governments or schools, or be sent to certified recyclers

State Electronics Challenge: NGO-run voluntary program. Encourages state, tribal and local governments to purchase, use and manage electronics properly

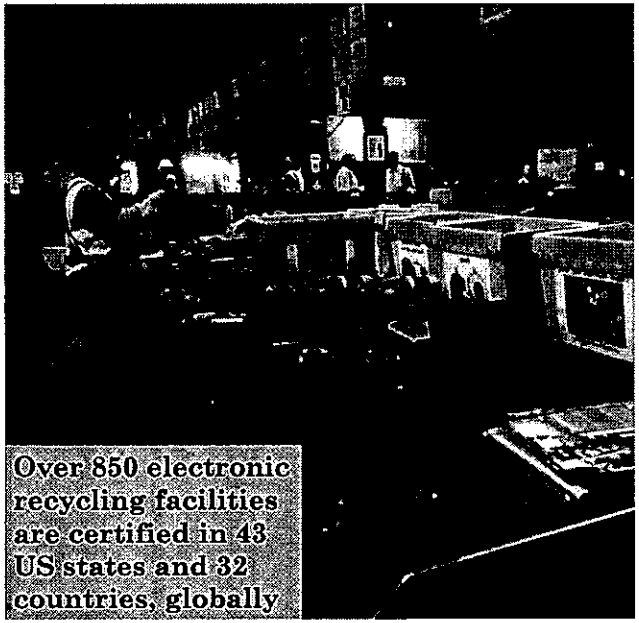
Electronic Product Environmental Assessment Tool: Requires producers to take-back EPEAT-registered products from large institutional purchasers and use certified recyclers

SMM Electronics Challenge

- US EPA's voluntary program
- Recognizes producers and retailers for going beyond take-back laws and to increase sustainability achievements

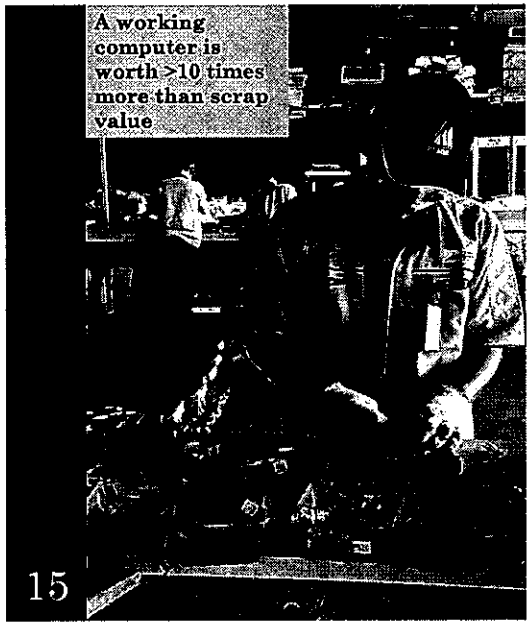
Goals:

- Increase nationwide collection using certified recyclers
- Highlights special sustainability achievements



Certification: Proper Recycling

- Two US programs: Responsible Recycling Practices (R2) and e-Stewards®
- Recyclers demonstrate to a 3rd party auditor they meet standards
- Certification allows recycling service buyers to find qualified recycling facilities
- Certification is necessary for companies recycling for the federal government, some states, and most manufacturers



Refurbishment and Reuse

Refurbishing Industry

- >1500 reuse/ refurbishment companies
- Skilled technicians; takes 3-6 hours to test, repair, upgrade, and install systems
- Retail and wholesale market; sold to schools, charities, small businesses and individuals

Environmental Importance

- Integral to the effective and efficient use of materials
- Lengthens use of products, reducing the impacts from raw material extraction

Electronics Recycling

Recycling Industry
- >1600 electronics processing facilities
- Most recyclers triage for reuse, de-manufacture, process, package and transport scrap material
- Limited number of refining operations

Environmental Importance
- Integral to using materials effective and efficiently
- Recovering materials reduces the impacts of extraction

Advancements
- Closed loop recycling to produce new computers
- Ocean plastic waste used in computer packaging
- Developing rare earth processing/recovery tech

WN6

Questions?

投影片 18

WN6 The "7" is kind of cut off

Project Objective and Specific Targets

Project Objectives:

✓ Protection of human health and environment through sound management of PCBs and PBDEs in E-wastes

Specific Target

✓ Disposal of 600 tons of PCB oil and contaminated equipment

✓ Disposal of 1.150 tons of PBDEs

UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION

Project Components and Outcomes

Component 1. Management of POPs in Waste Electrical and Electronics Equipment (WEEE)

Project Outcomes:

✓Strengthened legislation and institutional capacity in implementing PBDE action plan

✓Reduction and eventual elimination of POPS-PBDE releases from WEEE to mitigate their health impact

UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION

"Implementation of PCB Management Programs for Electric Cooperatives and Safe E Waste Management - **Updates on the E waste Component**"

PHILIPPINES DAY: 8TH INTERNATIONAL E-WASTE MANAGEMENT NETWORK (IEMN) WORKSHOP
24 SEPTEMBER 2018

Leah Aurea U. Texon
UNIDO National Project Manager

INCLUSIVE AND SUSTAINABLE INDUSTRIAL DEVELOPMENT

UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION

Project Summary

GEF Implementing Agency:	UNIDO
Executing Partners:	DENR-EMB (Lead Executing Agency)
Duration:	5 years
GEF Grant	6,789,000 USD
Total Co-Financing	35,868,712 USD

Accomplishments

UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION

Component 1

UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION

Project Component and Outcomes

Component 3. Institutional Strengthening, capacity building and awareness raising

Project Outcomes:

✓Increased capacity and awareness on sustainable and effective WEEE and PCB waste management by relevant stakeholders

UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION

Project Partners

- ✓ Treatment, Storage and Disposal Facilities
  - ➢ Integrated Recycling Industries, Inc. (IRI)
  - ✓ Cebu Common Treatment Facility, Inc.(CCTFI)
- ✓ Civil Society
  - ✓ Eco Waste Coalition

Summary of Findings – Value Chain Analysis

- ✓ Repair shops do not isolate hazardous parts from non-hazardous, as well as solid components from liquid
- ✓ The informal sector does not follow safe and proper practices in storage, dismantling and disposal of e-wastes.

Reports/Studies Undertaken

- Value Chain Analysis
  - ✓ Value Chain Analysis of WEEE Disposal with special focus on CRT monitors and TV Sets completed

- Policy Review
  - ✓ Policy Review of regulations on WEEE management in the Philippines completed

Value Chain Analysis Summary Per Stakeholder

Stakeholder	Process	Value	Specific Actions/Policy Development or Enhancement Plan
Waste generators	Registration, Collection and Disposal	✓ Time ✓ Space ✓ Flow ✓ Convenience	✓ Streamlining and integration of required documents ✓ Matching demand-capacity issues between waste generators and transporters
Transporters /Formal Sector	Application of Permits, Collection, Treatment and Disposal	✓ Proper segregation and labelling of wastes ✓ Required volumes ✓ Ease in processing	✓ Training /formal programs for the general public ✓ Matching demand-capacity issues between waste generators transporters ✓ Efficiency in the filing and processing of required documents

Summary of Findings – Value Chain Analysis

- ✓ Not all offices have a standard operating procedure when it comes to disposing e-wastes
- ✓ Processing e-wastes, particularly the effects of mishandling plastics in computers and TV monitors, as well as what happens to these wastes after disposal, is unknown to many respondents.

Policy Review of regulations on WEEE management in the Philippines

- ✓ Gap analysis undertaken to identify barriers in the implementation of WEEE policies and the updated NIP 2014.
- ✓ Incentive mechanisms identified to improve collection of WEEE from households.
- ✓ Proposed quality standard for PBDE content in waste plastic materials and assessing the impact of the standard

Value Chain Analysis Summary Per Stakeholder

Stakeholder	Process	Value	Specific Actions/Policy Development or Enhancement Plan
Informal Sector	Storage, Dismantling and Disposal	✓ Profit	✓ Training programs on safe practices in handling and dismantling e-wastes. ✓ Launching of programs that will encourage the informal sector to collaborate with the formal sector (profit sharing between formal and informal sector) ✓ Imposition of penalties for non-compliance plus regular surprise inspections

Policy Review

Policy and regulatory barrier

- ✓ Implementation of policies and administrative orders need to be strengthened
- ✓ EPR component for the business sector must be enhanced
- ✓ For the informal sector
  - ➢ Junkshops, other waste recyclers and reclaimers operate without permits
  - ✓ WEEE generated in the informal sector poses a bigger challenge in terms of disposal and handling

XRF analysis demonstration at CCTFI

CRT glass storage at e-wastes recycling community in San Vicente (Camarin), Caloocan City

Policy Review

Institutional capacity barrier

- ✓ For the informal sector
  - ➢ Need for a capability building for LGUs for the handling of WEEE
  - ➢ Lack of awareness of health and environmental hazards
  - ➢ Absence of program in formalizing the informal sector
  - ➢ Lack of green industry involving WEEE to support the circular economy approach and ensure sustainability

UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION

Policy Review

Institutional capacity barrier

- ✓ No local government unit (LGU) other than Cebu has specific WEEE ordinance
- ✓ No laboratory capability to analyze PBDE

UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION

Policy Review

Identification of Incentive Mechanism

- ✓ TSD facility to buy the WEEE or will haul or treat WEEE free of charge
  - ➢ PHP 6-8 per kg for computers and printers
  - ➢ PHP 20 – 100 per piece for mobile phones
- ✓ For WEEE purchased in 2015 or beyond, the EPR shall be triggered
  - ➢ Disposal is through distributors or drop off centers through a partnership with TSD facility

UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION

Policy Review

Institutional capacity barrier

- ✓ XRF method was adopted as a screening method for PBDE in WEEE in 2 TSD facilities
  - ✓ Results will be analyzed with the WEEE model and date of manufacture
  - ✓ Correlations will be prepared
  - ✓ Data to be used for the informal sector to be used as screening procedure in the absence of an XRF instrument

Policy Review

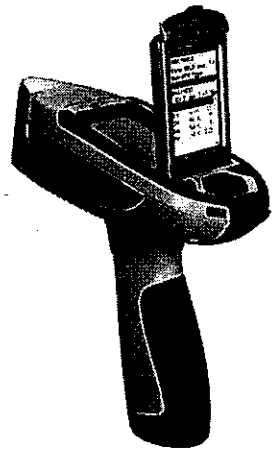
Proposed Quality Standard

- ✓ XRF method was adopted as a screening method for PBDE-laden WEEE in 2 TSD facilities
  - ✓ Results will be analyzed with the WEEE model and date of manufacture and correlation to be further prepared
  - ✓ Data to be used as screening procedure in the absence of an XRF instrument

UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION

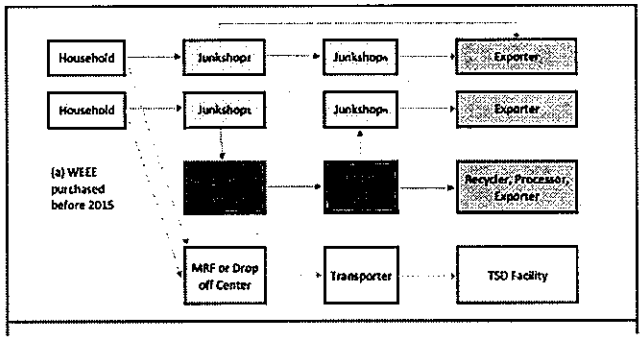
Screening of PBDE in CRT Casings

- ✓ Two (2) units x-ray fluorescence (XRF) spectroscopy device procured
- ✓ Rapid screening of PBDE in CRT plastic casings is on-going at CCTFI and IRI (2 TSD facilities)
- ✓ 40 casings analyzed in CCTFI (equivalent to 84 kg)
  - ➢ 30 samples positive with Br ranging from 110 ppm to 263,854 ppm



UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION

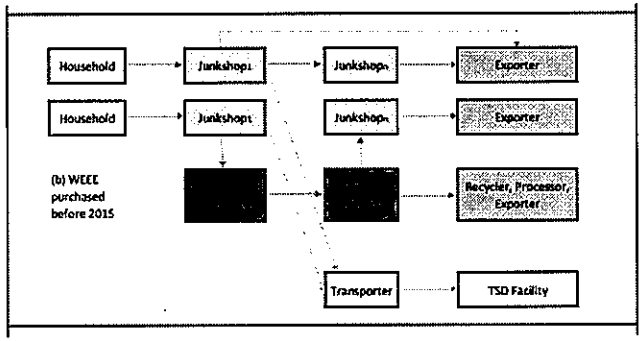
WEEE Purchased before 2015, Model A



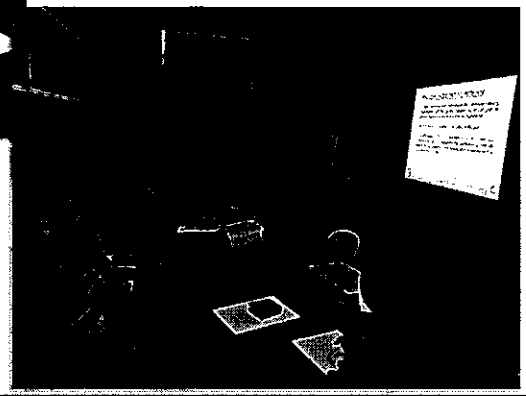
INCLUSIVE AND SUSTAINABLE INDUSTRIAL DEVELOPMENT

UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION

WEEE Purchased before 2015, Model B



XRF analysis demonstration at IRI



CCTFI company presentation during the XRF training

UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION

Component 3

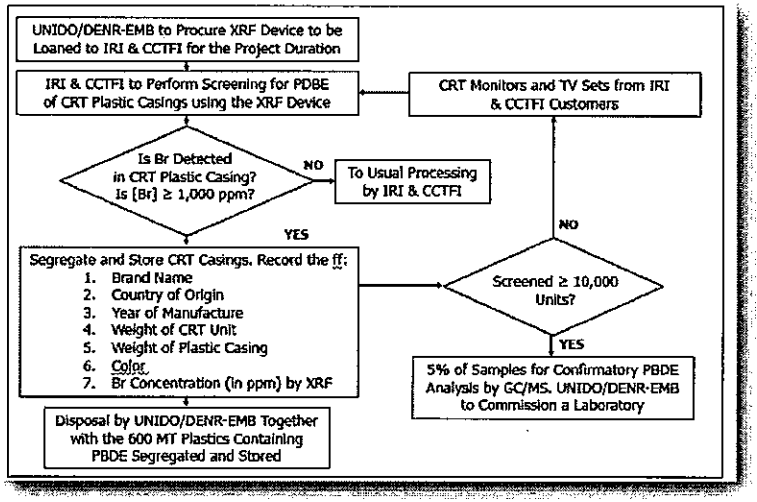
UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION

Screening of PBDE in CRT Casings

- ✓414 casings were analyzed in IRI Philippines (equivalent to 154 kg)
  - ➢Results showed the Br readings ranged from 1,023 ppm to 668,535 ppm (500 samples)
- ✓Using the screening method prepared by UNIDO, the samples were grouped in 3
  - ➢7 samples from each group were selected
- ✓21 samples of CRT tubes analyzed with PBDE using GC/MS analysis - received from SGS

UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION

PBDE Screening Methodology for WEEE



On- going project activities

- ✓ Training modules for identified stakeholders being developed
- ✓ Linking the informal sector and formal sector (Demonstrate BEP on the management of e waste in a selected MRF)
- ✓ E waste Collection events organized
- ✓ Production of Videos on E waste Management

Awareness Raising Campaigns

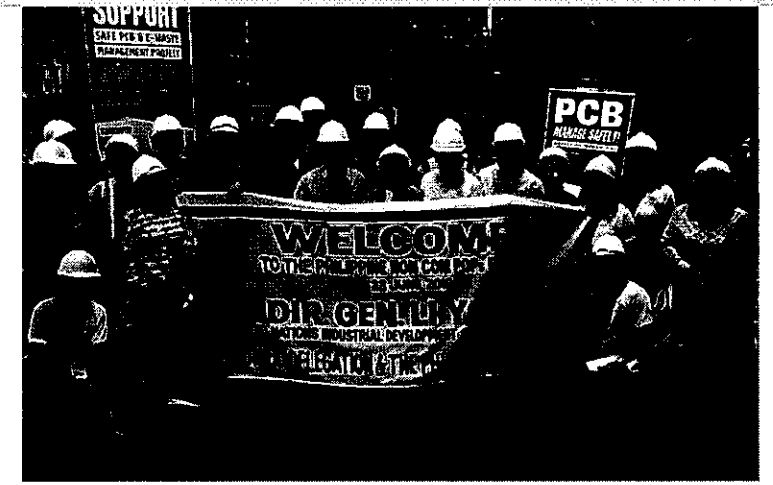
- ✓ Awareness-raising and IEC materials produced by EcoWaste Coalition
- ✓ E waste collection events, meetings with informal settlers
- ✓ Video production

Focus Group Discussions in WEEE Dismantler Communities

E-waste collection programs in partnership with malls and other institutions

- ✓ One-time e-waste collection program at Bangko Sentral ng Pilipinas-Manila Office held

UNIDO Director General LI Yong's Mission to the Philippines (June, 2018)



UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION

DG's Visit

UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION

BSP Ewaste Collection Event, July 2018

UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION

PCB FREE ENVI*RUN*MENT (July 2018)

E waste Collection Event on 29 Sept at the Ayala Heights, Quezon City as part of their Earth and Wellness Activity

EARTH & WELLNESS WEEKEND SCHEDULE

SEPT 29, SATURDAY

5:30AM– 1 PM	BODY COMPOSITION ANALYSIS
5:30 AM	COLOR WALK/RUN REGISTRATION
5:50	WARM-UP
6:00	START WALK/RUN
7:00	QI GONG (Doable for Wheelchair bound)
8:00	YOGA, ECO-BAZAAR OPENS
8:30	BOOTCAMP BODYWEIGHT EXERCISE
9:30	ZUMBA
11:00	GINA LOPEZ -HOW I BEAT CANCER
1:00	E-WASTE DISPOSAL LECTURE
1:30	VIC REYES - STAY HEALTHY W/ AGING
3:15	TALK: CLIMATE CHANGE & PLASTIC WASTE MANAGEMENT

SEPT 30, SUNDAY

9AM	ECO-BAZAAR OPENS
11:15	TEDDI DIZON
1 PM-6PM	ARCHERY ATTACK
1:15	COMPOSTING WORKSHOP
1:30	SWORDSMANSHIP CLASSES
2:15	URBAN GARDENING WORKSHOP
3:15	ESSENTIAL OILS WORKSHOP
3:15	ZUMBA

Bring your own shopping bags and containers!

ECO-BRICK DROP OFF at the Bazaar!

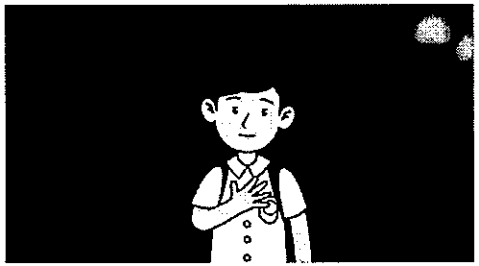
EVENT VENUE: Ayala Heights Village Clubhouse, Q.C.
PRE-REGISTRATION: > AHVA Office 8am - 5pm Mon to Sat
> Online: visit our Facebook page for the online reg form
CONTACT: 931-2714 931-7139, ayalaheights.office@gmail.com
@ahvearthandwellnessweekend Like and share our page!

FEES: A: P300 Color Run/Walk, All distances
B: P300 Yoga, Zumba, Qigong, Bootcamp (all)
C: P500 Covers both A & B
Archery Attack and Swordsmanship @P200/head
Talks & Workshops are Free

Activities during the E waste Week – Philippines

Awareness Raising Materials

POPs VIDEO



WEEE VIDEO

E waste collection Event in the DENR premises

gef

DENR-EMB E-Waste Collection Week
September 25-28
Safe PCB and E-Waste Management Project

Thank You !

Launching of Video on E waste Management

✓**English:** https://www.youtube.com/watch?v=EXll8D5w7JA&feature=youtu.be

✓**Filipino**: https://www.youtube.com/watch?v=Bwutn1pAmXs&feature=youtu.be

Contact Persons for the Project

DENR-EMB

1. Dir. Metodio Turbella – EMB
2. Asst. Director Vizminda Osorio, EMB
3. Mr. Geri Geronimo Sanez, Chief HWMS
4. Mr. Romel Navaluna , Chief Chemical Management Section

UNIDO

1. Ms. Leah U. Texon, National Project Manager (email address: L.Texon@unido.org)
2. Ms. Tonilyn Lim, Country Representative (email address: T. Lim@unido.org)
3. Dr. Carmela Centeno, Project Manager, UNIDO Headquarters, Vienna, Austria (email address: C.Centeno@unido.org)

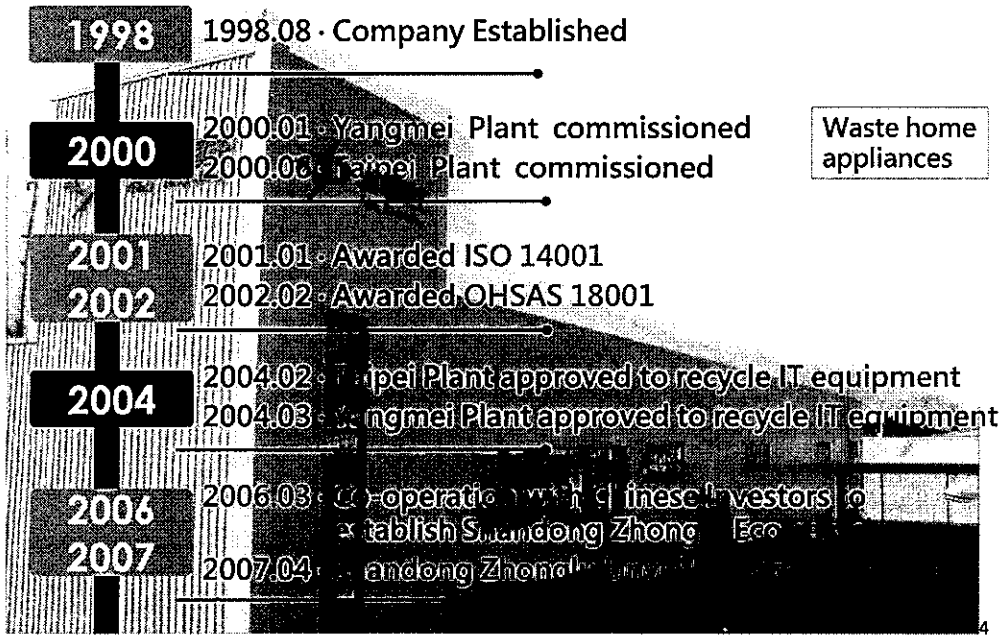
About E&E Recycling

ASIA'S FIRST & FINEST ELECTRONICS RECYCLING PLANT

- Establishment：1998.8.1
- Capital：500 million
- Chairman： Hong Min Chang
- Employee：119
- Head Office：
  Add：17F, No.39,Sec.1, Zhonghua Rd.,Taipei, Taiwan R.O.C.
  Tel：+886 2 2381-8000
  Fax：+886 2 2381-9000
  Website：www.eer.com.tw
- Yangmei Plant：Handles waste home appliances and IT devices
  Add：No.128, Aly.313, Taizun Rd., Yangmei Dist. Taoyuan County, Taiwan R.O.C.
- Yangmei Plant II：Handles waste IT equipment
  Add：No.130, Aly.313, Taizun Rd., Yangmei Dist. Taoyuan County, Taiwan R.O.C.

Company Milestone

ASIA'S FIRST & FINEST ELECTRONICS RECYCLING PLANT



- 1998 · 1998.08 · Company Established
- 2000 · 2000.01 · Yangmei Plant commissioned
  2000.08 · Taipei Plant commissioned
  Waste home appliances
- 2001 · 2001.01 · Awarded ISO 14001
- 2002 · 2002.02 · Awarded OHSAS 18001
- 2004 · 2004.02 · Taipei Plant approved to recycle IT equipment
  2004.03 · Yangmei Plant approved to recycle IT equipment
- 2006 · 2006.03 · Co-operation with Chinese investors to establish Shandong Zhong Eco
- 2007 · 2007.04 · Shandong Zhong

What's Up to the E-Waste in AI N &E

William Sui

2018.09.23

ASIA'S FIRST & FINEST ELECTRONICS RECYCLING PLANT

Establishment

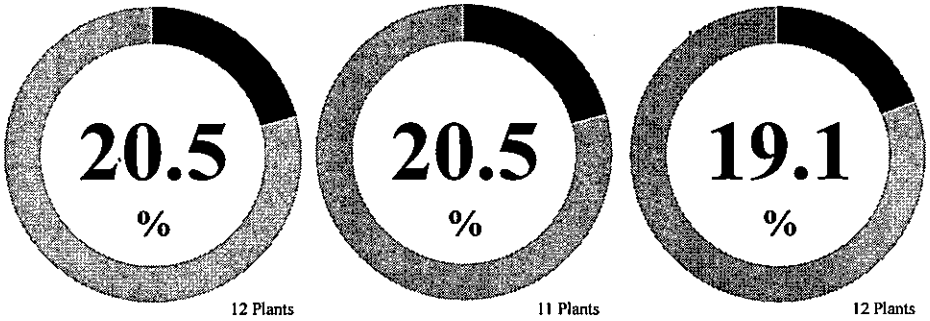
ASIA'S FIRST & FINEST ELECTRONICS RECYCLING PLANT

Extended Producer Responsibility

綠電再生 E&E Recycling

Market Share- Waste home appliances

ASIA'S FIRST & FINEST ELECTRONICS RECYCLING PLANT

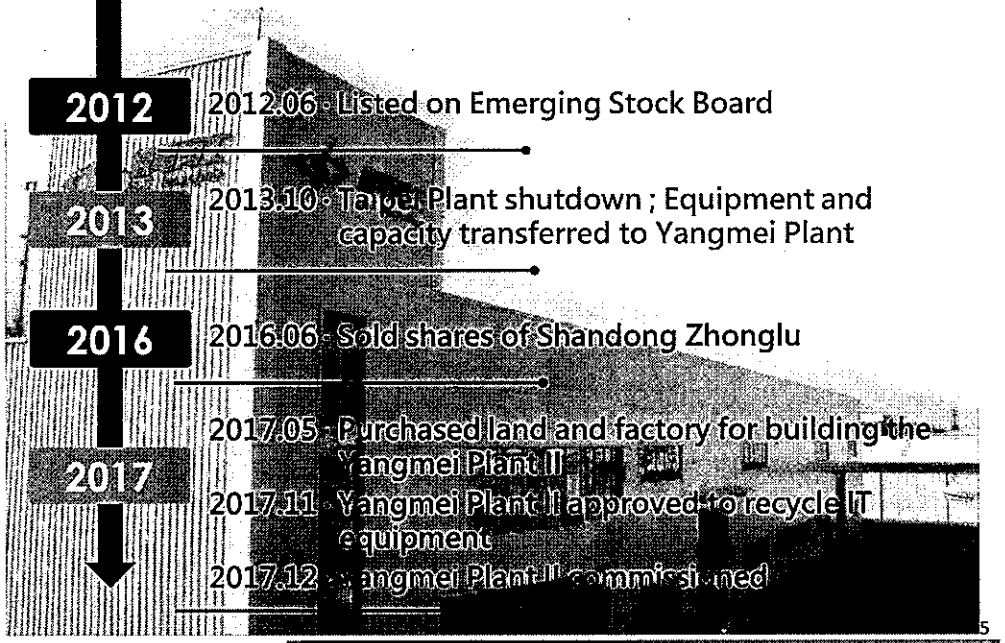


	2015	2016	2017
Total no. discarded	2,635,478	2,565,141	2,889,649

綠電再生 E&E Recycling

Company Milestone

ASIA'S FIRST & FINEST ELECTRONICS RECYCLING PLANT



綠電再生 E&E Recycling,Inc.

Main Output- Waste home appliances

ASIA'S FIRST & FINEST ELECTRONICS RECYCLING PLANT

Analysis of Output (Year 2000~2017)

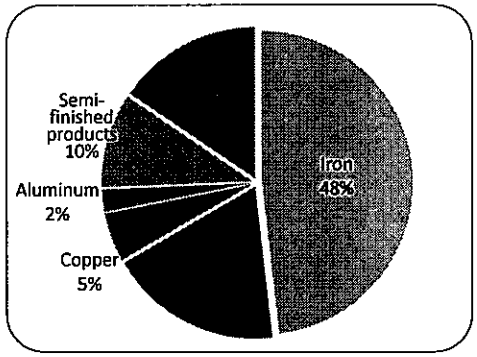
◎ Total number of Items treated in Taiwan : 33.687 million

Items treated by E&E : 8.15 million

E&E's share : 24.2%

◎ Valuable resources retrieved :

Resources	Weight (t)	%
Iron	136,781	48%
Plastics	52,606	19%
Copper	14,825	5%
Aluminum	6,897	2%
Semi-finished products	28,711	10%
Others	44,116	16%



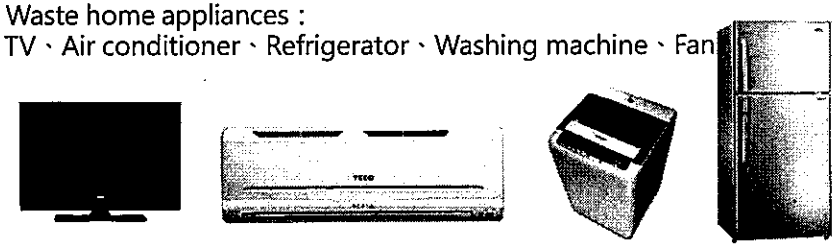
綠電再生 E&E Recycling,Inc.

Main Input

ASIA'S FIRST & FINEST ELECTRONICS RECYCLING PLANT

【Items recycled : Waste home appliances and IT equipments】

- Waste home appliances :
  TV、Air conditioner、Refrigerator、Washing machine、Fan

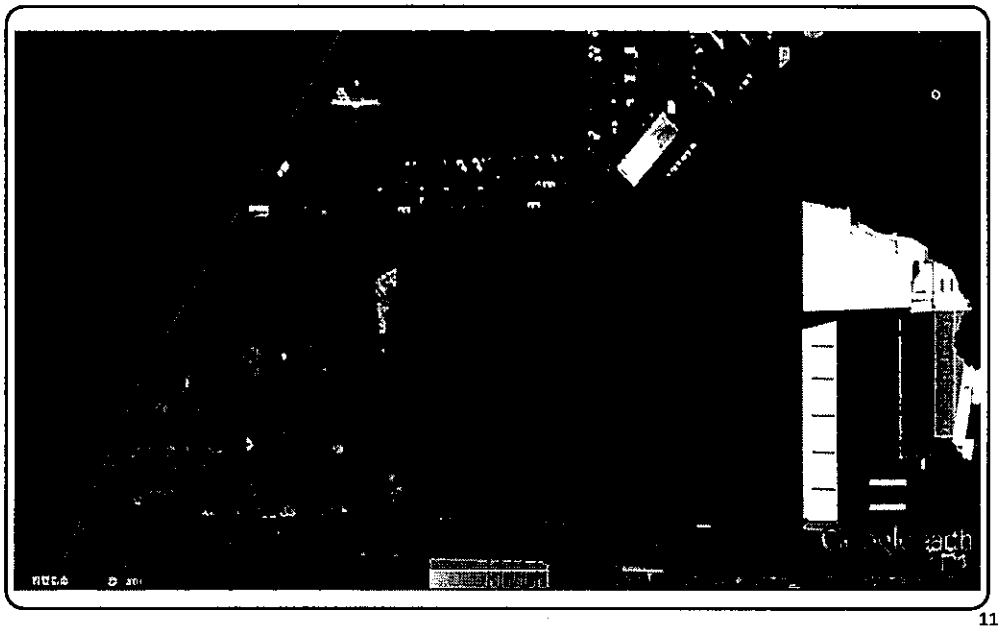


- Waste IT equipment :
  Computer、monitor、keyboard、printer、laptop、pad

綠電再生 E&E Recycling

Site Map

ASIA'S FIRST & FINEST ELECTRONICS RECYCLING PLANT



11

TV line

Washing machine line

Air con. line

IT Equipment handling

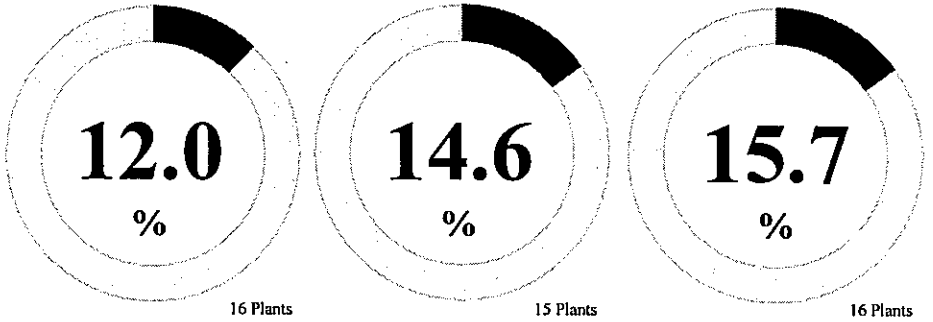
Refrigerator line

12

綠電再生 E&E Recycling

Market Share- IT Equipment

ASIA'S FIRST & FINEST ELECTRONICS RECYCLING PLANT



16 Plants | 15 Plants | 16 Plants

2015 | **2016** | **2017**

Total no. discarded	3,683,529

Total no. discarded	2,918,817

Total no. discarded	2,653,078

9

綠電再生 E&E Recycling Inc.

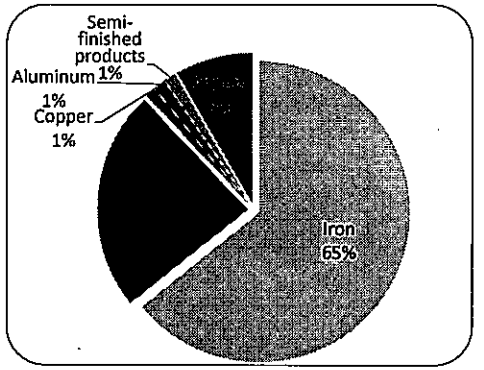
Main Output- IT Equipment

ASIA'S FIRST & FINEST ELECTRONICS RECYCLING PLANT

Analysis of Output (Year 2000~2017)

- Total number of Items treated in Taiwan : 46.484 million
  - Items treated by E&E : 7.186 million
  - E&E's share : 15.5%
- Valuable resources retrieved :

Resources	Weight (t)	%
Iron	21,540	65%
Plastics	7,970	24%
Copper	374	1%
Aluminum	438	1%
Semi-finished products	441	1%
Others	2,809	8%

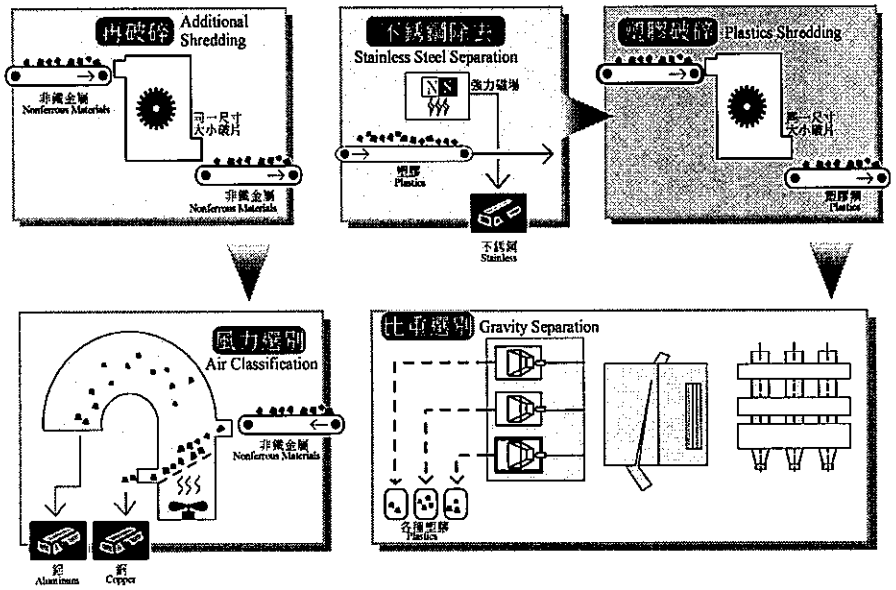


10

綠電再生 E&E Recycling

Treatment Process

ASIA'S FIRST & FINEST ELECTRONICS RECYCLING PLANT

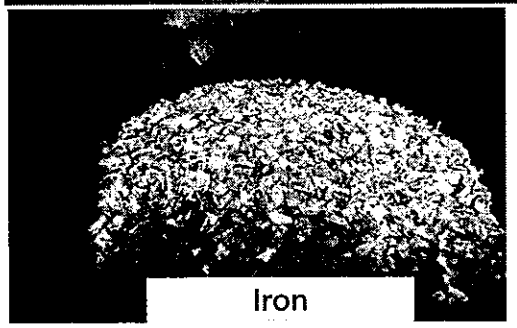


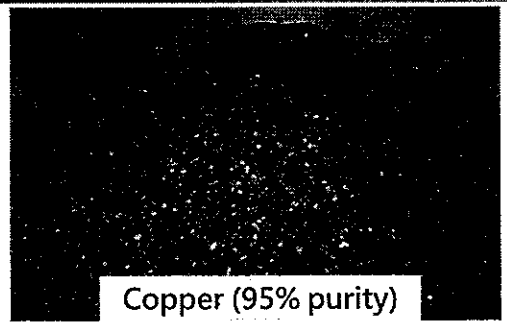
15

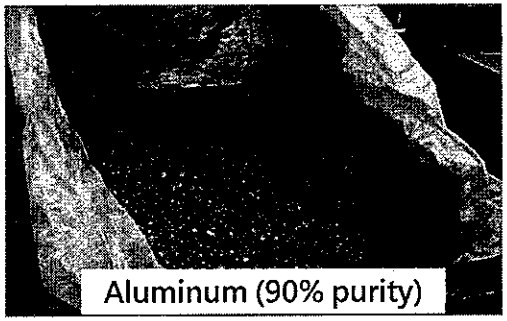
綠電再生 E&E Recycling

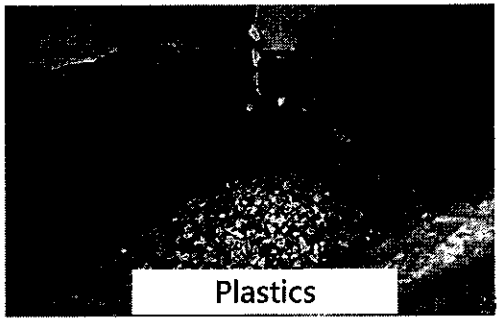
Separation of recycled materials

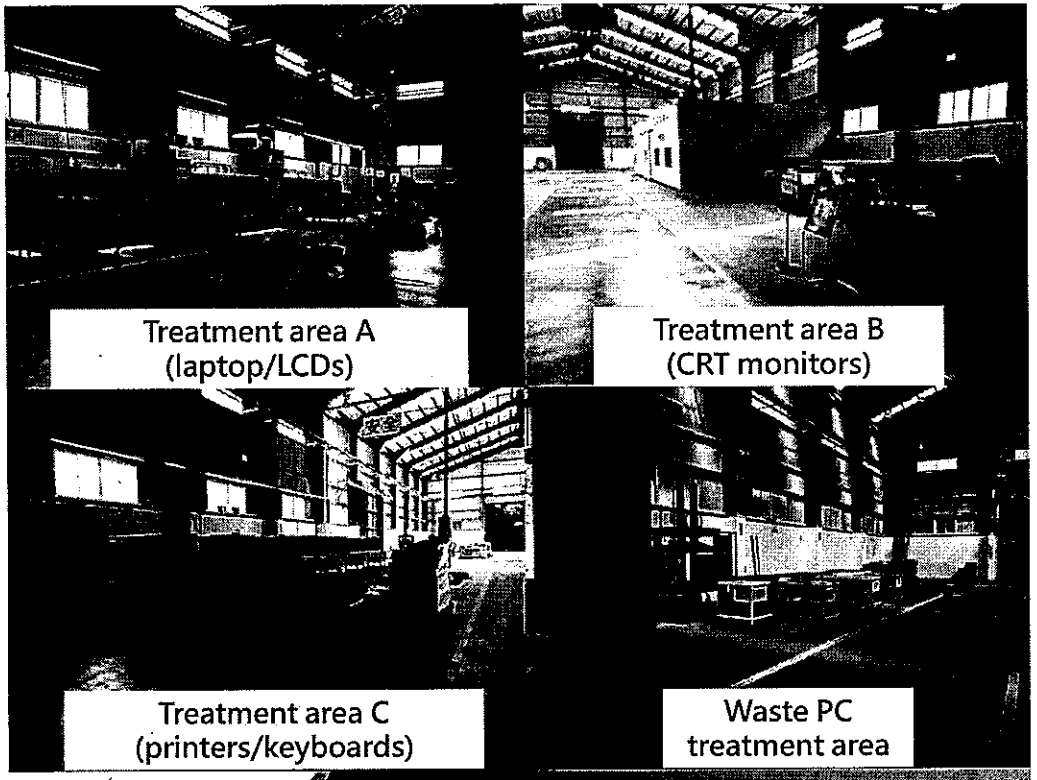
ASIA'S FIRST & FINEST ELECTRONICS RECYCLING PLANT


Iron


Copper (95% purity)


Aluminum (90% purity)

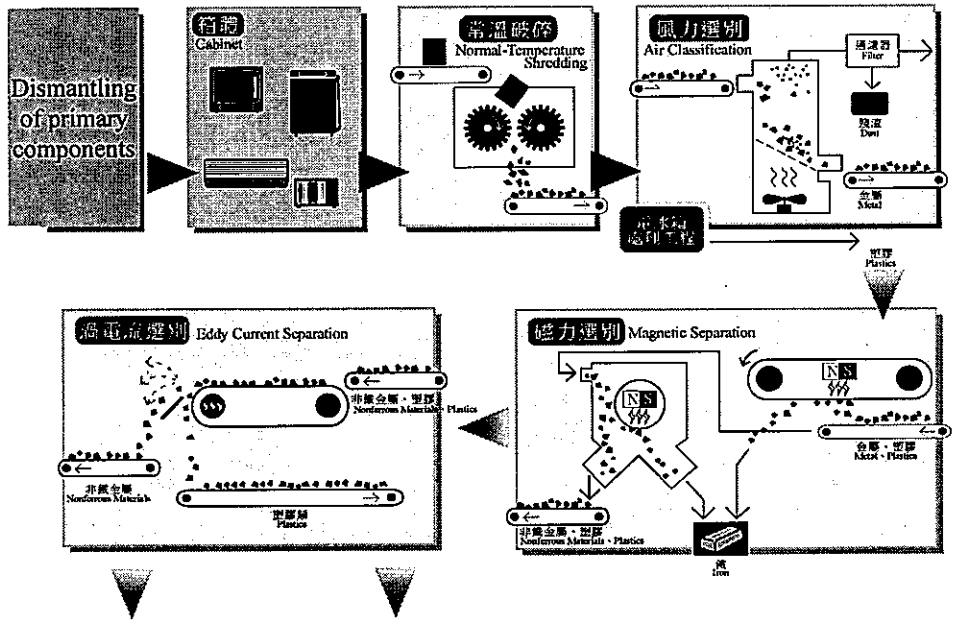

Plastics



綠電再生 E&E Recycling

Treatment Process

ASIA'S FIRST & FINEST ELECTRONICS RECYCLING PLANT



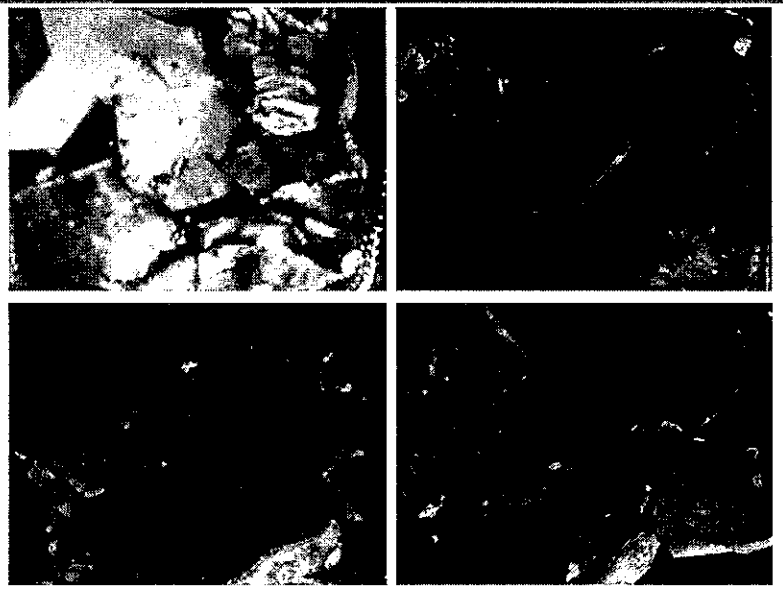
14

綠電再生 E&E Recycling

Comparison - Iron

ASIA'S FIRST & FINEST ELECTRONICS RECYCLING PLANT

Recycled Iron from E&E

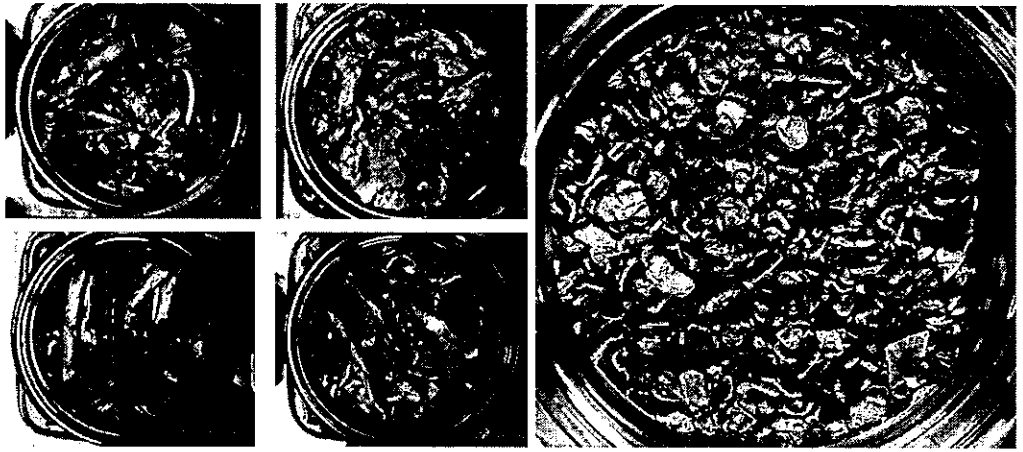


Recycled Iron from other E-waste treatment facilities in Taiwan (similar performance)

綠電再生 E&E Recycling

Comparison - Copper

ASIA'S FIRST & FINEST ELECTRONICS RECYCLING PLANT



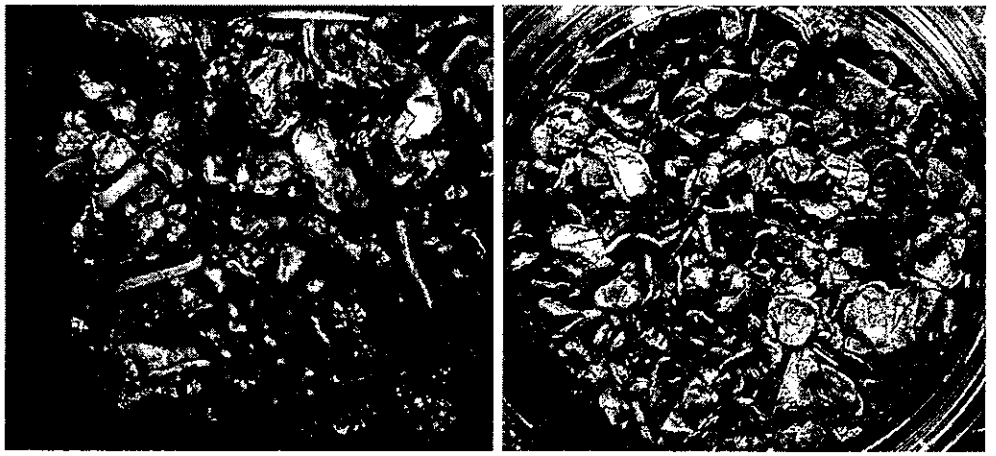
Recycled Copper from other E-waste treatment facilities in Taiwan (mixture of copper/aluminum)

Recycled Copper from E&E

綠電再生 E&E Recycling

Comparison - Aluminum

ASIA'S FIRST & FINEST ELECTRONICS RECYCLING PLANT



Recycled Aluminum from another E-waste treatment facility in Taiwan

Recycled Aluminum from E&E

What's else we can DO in AI N &E

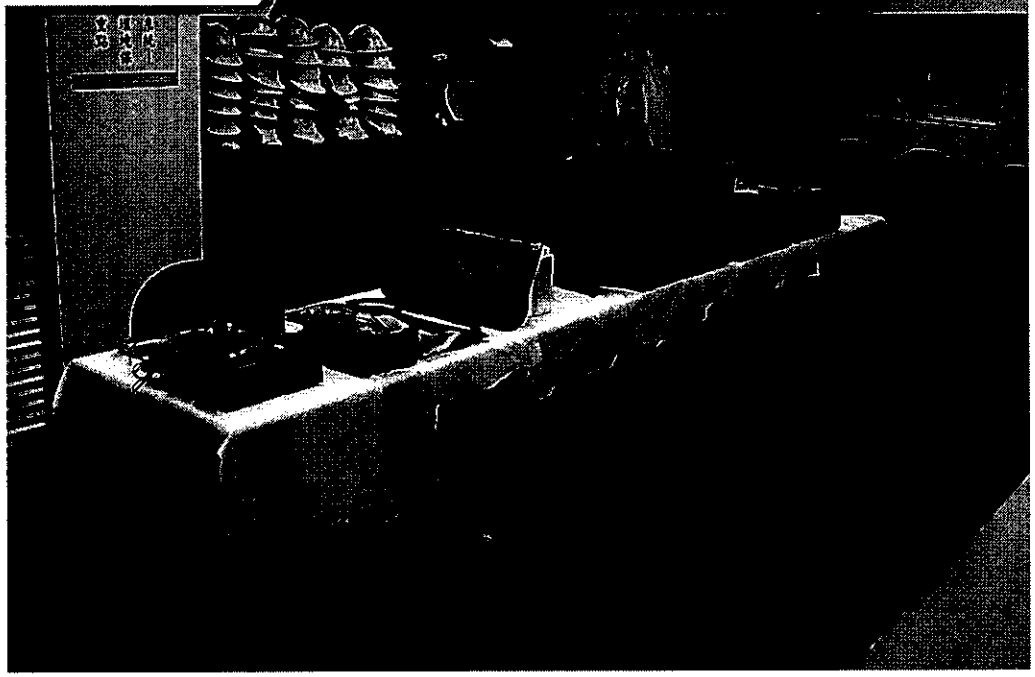
綠電再生 E&E Recycling, Inc.

ASIA'S FIRST & FINEST ELECTRONICS RECYCLING PLANT

綠電再生 E&E Recycling

Green Design – Single Material

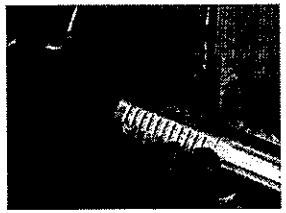
ASIA'S FIRST & FINEST ELECTRONICS RECYCLING PLANT

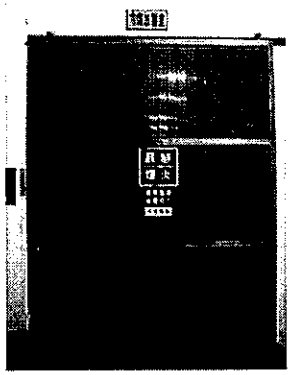


綠電再生 E&E Recycling

Collection and storage of CFCs

ASIA'S FIRST & FINEST ELECTRONICS RECYCLING PLANT



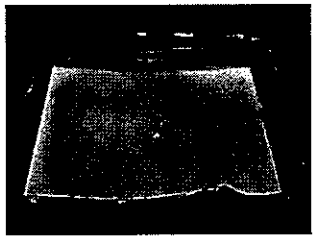


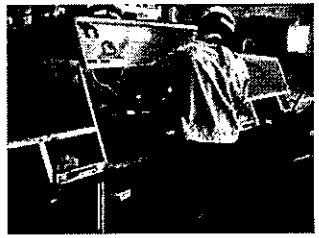
21

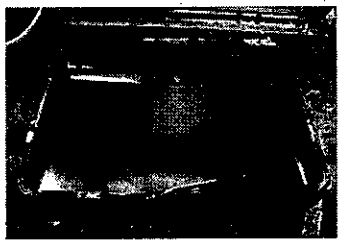
綠電再生 E&E Recycling

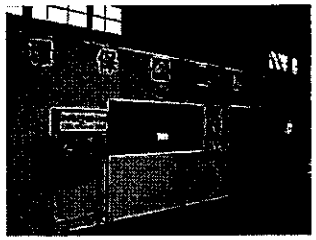
Collection and storage of fluorite powder

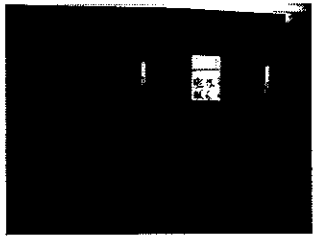
ASIA'S FIRST & FINEST ELECTRONICS RECYCLING PLANT

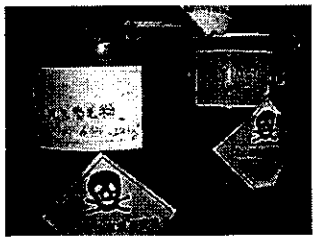










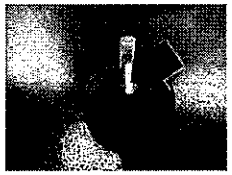


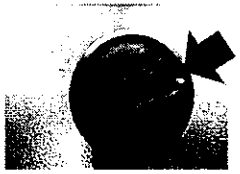
22

綠電再生 E&E Recycling

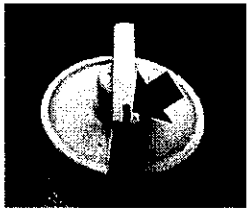
Green Design – Single Material

ASIA'S FIRST & FINEST ELECTRONICS RECYCLING PLANT

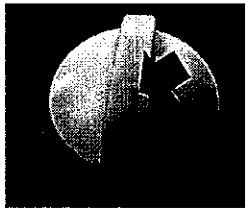




Buried injection molding



Substitution for Painting



Mold Forming

綠電再生 E&E Recycling

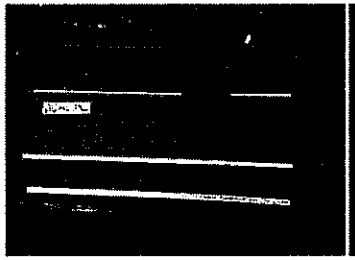
Green Design

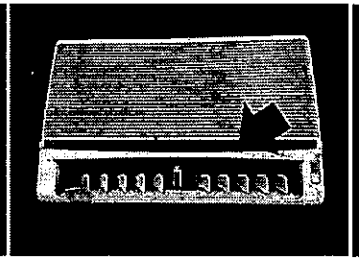
ASIA'S FIRST & FINEST ELECTRONICS RECYCLING PLANT

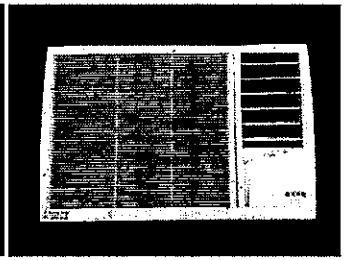
綠電再生 E&E Recycling

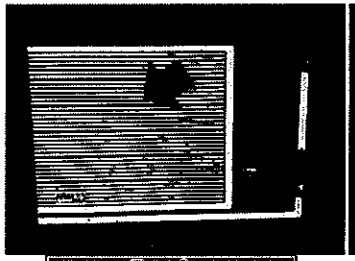
Green Design – Single Material

ASIA'S FIRST & FINEST ELECTRONICS RECYCLING PLANT

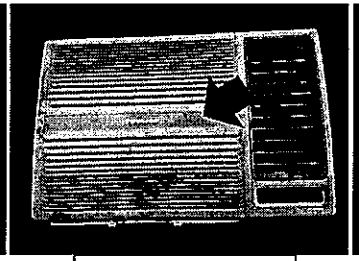




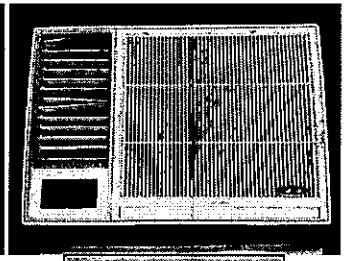




Coating electroplating composite



Intrusive plates



Single material design

綠電再生 E&E Recycling

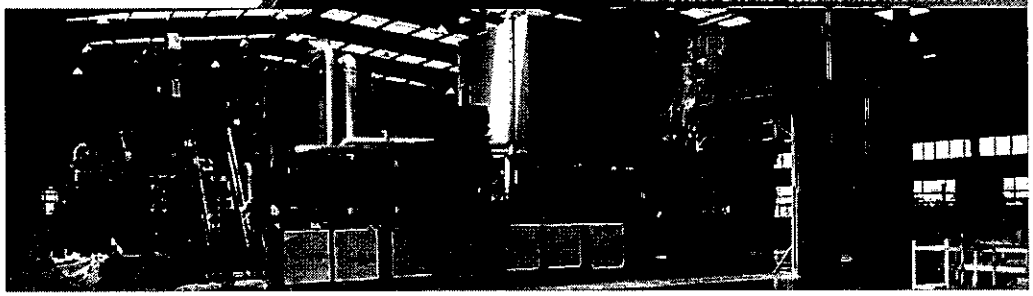
Green Design

ASIA'S FIRST & FINEST ELECTRONICS RECYCLING PLANT

綠電再生 E&E Recycling

Green Design – Hazard Labels

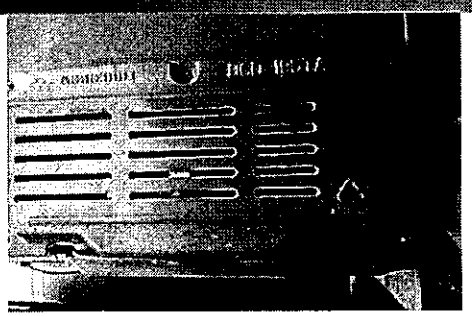
ASIA'S FIRST & FINEST ELECTRONICS RECYCLING PLANT

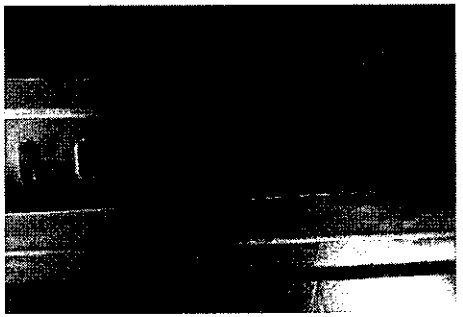


綠電再生 E&E Recycling

Green Design – Single Material

ASIA'S FIRST & FINEST ELECTRONICS RECYCLING PLANT



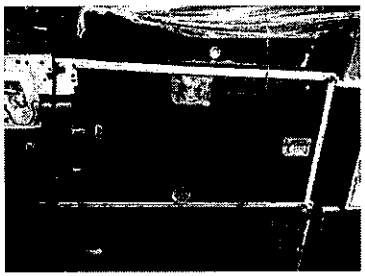


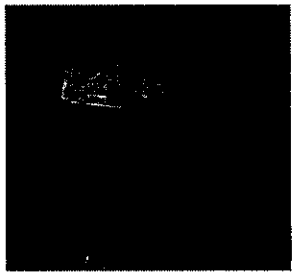
29

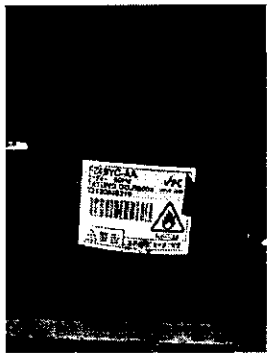
綠電再生 E&E Recycling

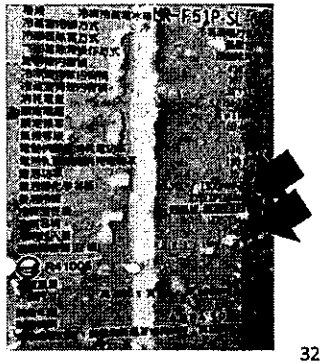
Green Design – Hazard Labels

ASIA'S FIRST & FINEST ELECTRONICS RECYCLING PLANT







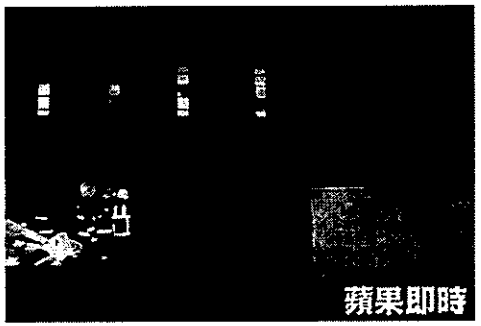


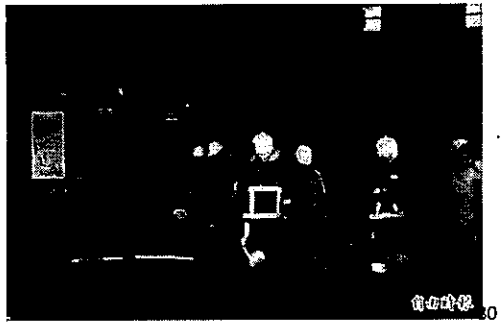
32

綠電再生 E&E Recycling

Green Design – Hazard Labels

ASIA'S FIRST & FINEST ELECTRONICS RECYCLING PLANT



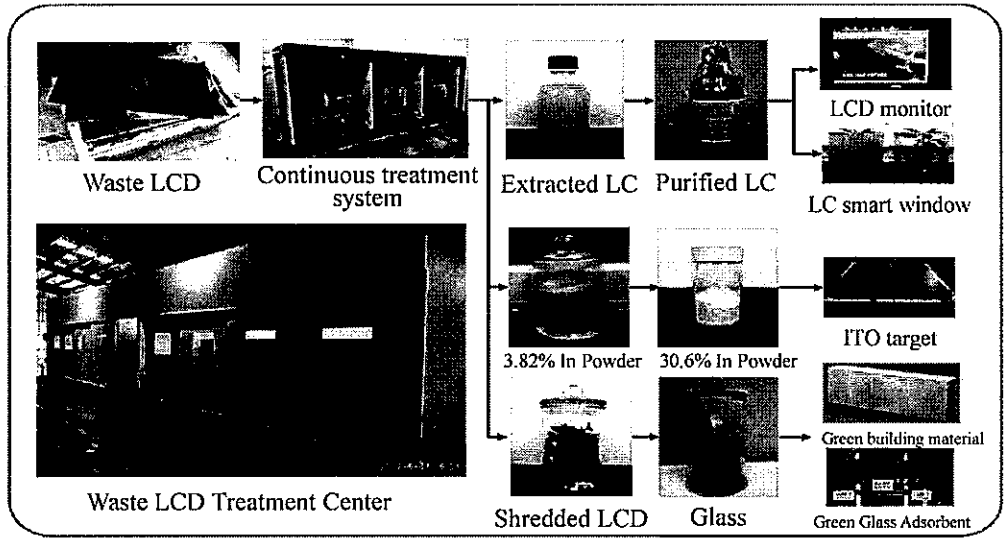


30

綠電再生 E&E Recycling

R&D – (1) Waste LC Recycling

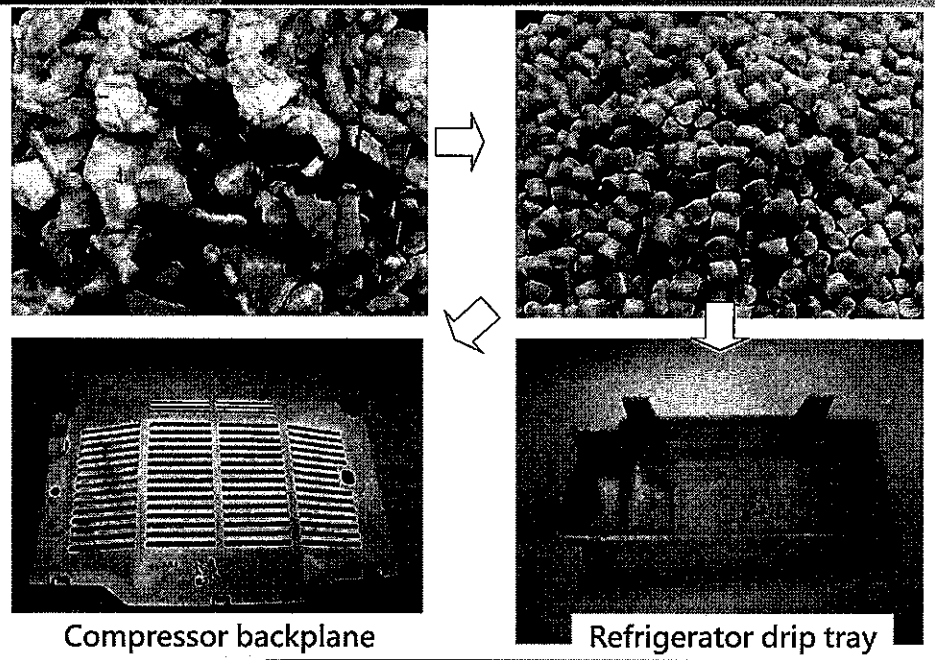
ASIA'S FIRST & FINEST ELECTRONICS RECYCLING PLANT



綠電再生 E&E Recycling

Green Design – Green Supply Chain

ASIA'S FIRST & FINEST ELECTRONICS RECYCLING PLANT



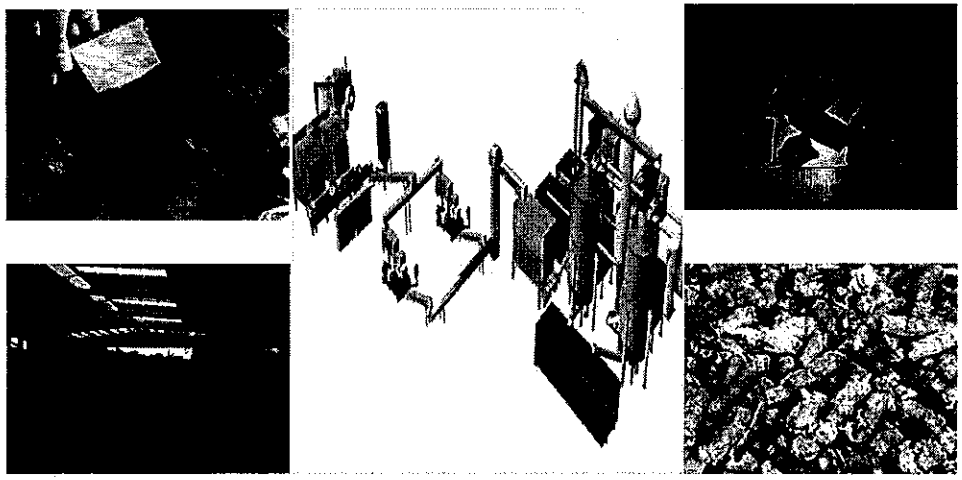
Compressor backplane

Refrigerator drip tray

綠電再生 E&E Recycling,inc.

R&D – (2) Waste PUR Recycling

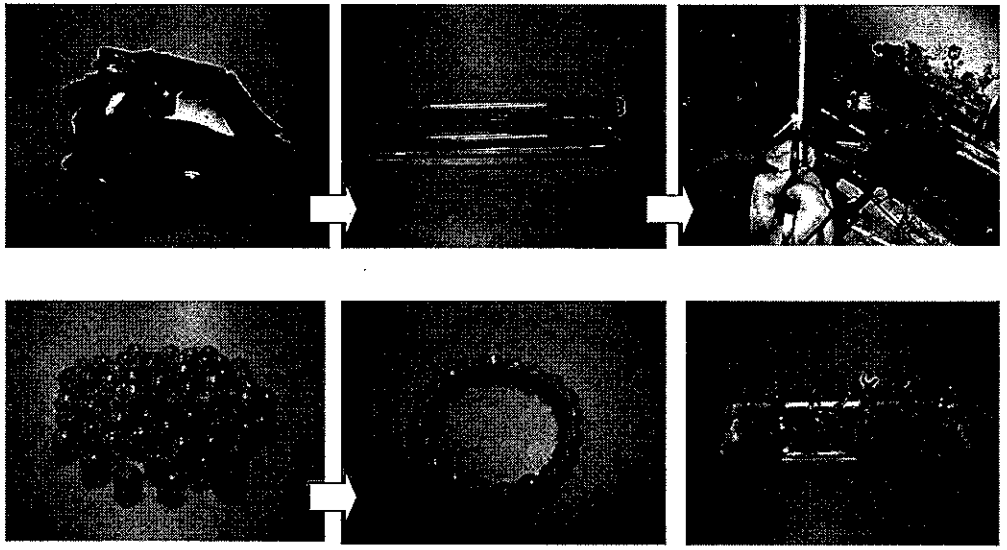
ASIA'S FIRST & FINEST ELECTRONICS RECYCLING PLANT



綠電再生 E&E Recycling

Green Design- Value Adding

ASIA'S FIRST & FINEST ELECTRONICS RECYCLING PLANT



William Sui
E-mail : william@eer.com.tw

What suggestions we offer from AI N &E

綠電再生 E&E Recycling,Inc.
ASIA'S FIRST & FINEST ELECTRONICS RECYCLING PLANT

綠電再生 E&E Recycling
SUGGESTIONS
ASIA'S FIRST & FINEST ELECTRONICS RECYCLING PLANT

☆ The type of the eliminate of the EEE

Can use → Good use

Safety service life → technological innovation

→ More eliminate

→ More environmental Pressure

→ More resource requirement

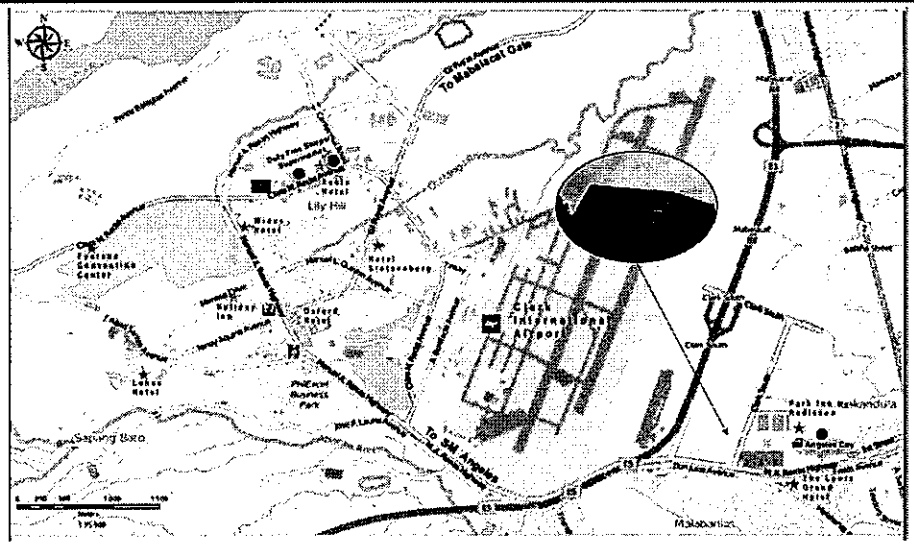
★ **Prefect Law & Regulations**

★ **Convenience Recollection & Execution**

★ **Improve Technology & Equipment**

★ **Environmental Treatment**

Our Location at Clark Freeport Zone



SRCI
SEMIRECYCLING Co., Inc.

Company Statement

SRCI believes that by transforming waste and scrap materials into useable resources, recycling provides a way to manage solid waste while reducing pollution, conserving energy and creating jobs.

SRCI aims to attain sustainable development for future generations by providing solutions to our problem of limited resources.

SRCI is committed to provide sound solutions to its customers who generate electronics, semiconductors, plastic and metal scrap in various forms with a high-level of performance and satisfaction

Our MAIN FACILITY

COMPANY PROFILE

Company Name:
Semirecycling Co., Inc.
(SRCI)

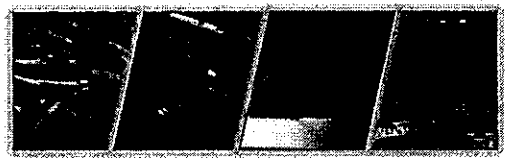
Business Type:
Material Recycling;
Treatment, Storage & Disposal Facility;
Scrap Buyer/Collector
Waste Management Provider;
Hazardous Waste Transporter

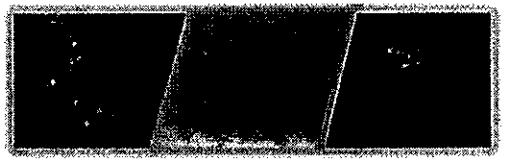
Business Items:
Gold, Palladium, Platinum, Silver, Indium, Tantalum, Tungsten, Cobalt, Nickel, Molybdenum, Titanium, HSS, SKD, Tin, Copper, Brass, Aluminum, Stainless, Iron/Steel Scrap; Semiconductor Scrap; Electronics Scrap;
Computer Scrap and Peripherals; Plastic Scrap;
Used and Scrap Machines; and other Packaging Materials

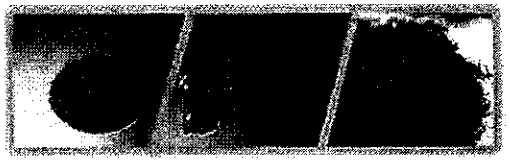
Year Established:
2003

SRCI is occupying 18,400m² area in Clark Freeport Zone with recycling and storage capacity of 5,300 tons per year.

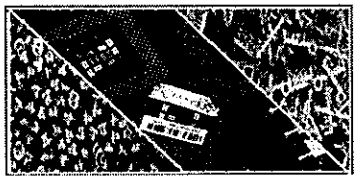
Non-Ferrous Metal Scrap


Copper Scrap

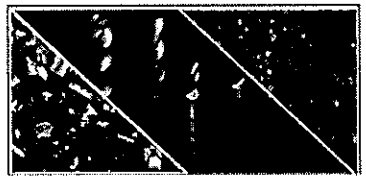

Nickel & Nickel Alloy Scrap

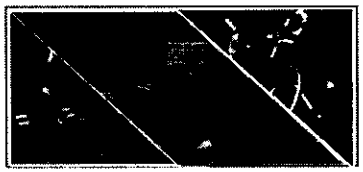

Tin Scrap

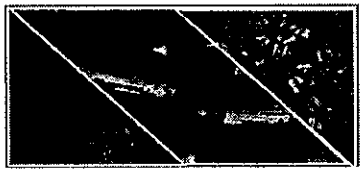

Scrap Wire · Stators · Target Scrap (W,Ir,Id,Ti, etc.)

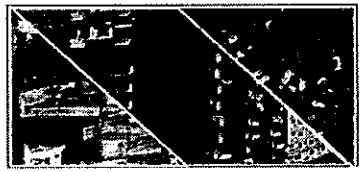

Precious Metal


Non-Ferrous Metal


Minor Metal


Ferrous Metal

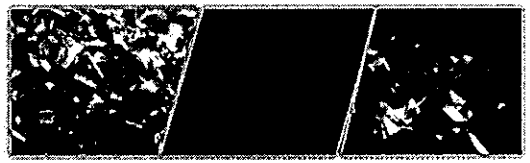

Hazardous Waste

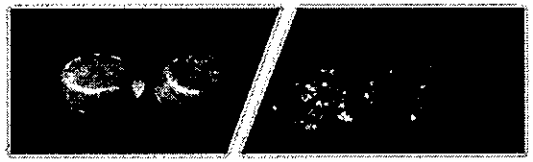

E-Waste

Presentation Material © 2018 SEMIRECYCLING Co., Inc.

Minor Metal Scrap

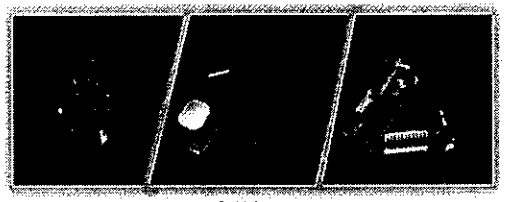

Tungsten & Cobalt Scrap

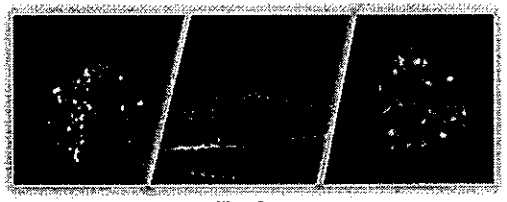

Molybdenum Scrap

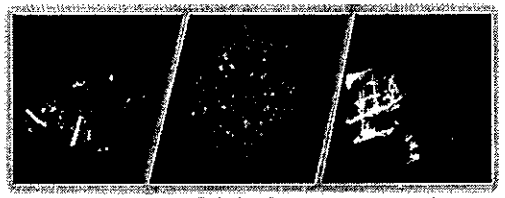

Indium Scrap

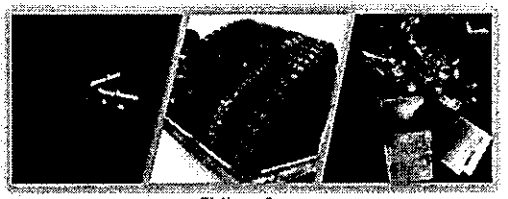

Titanium & Tantalum Scrap

Precious Metal Scrap


Gold Scrap


Silver Scrap


Palladium Scrap


Platinum Scrap

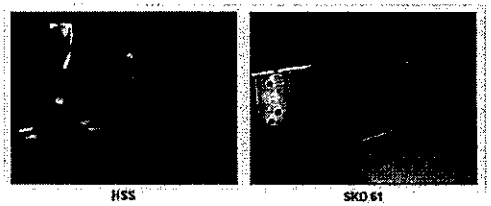
Presentation Material © 2018 SEMIRECYCLING Co., Inc.

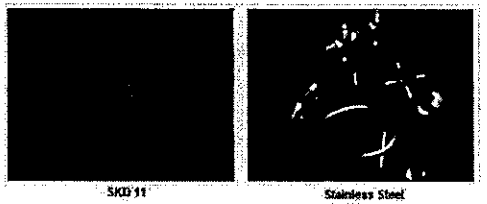
Presentation Material © 2018 SEMIRECYCLING Co., Inc.

OUR PROCESS

SRCI
SEMIRECYCLING Co., Inc.

Other Scrap


HSS SKD 61

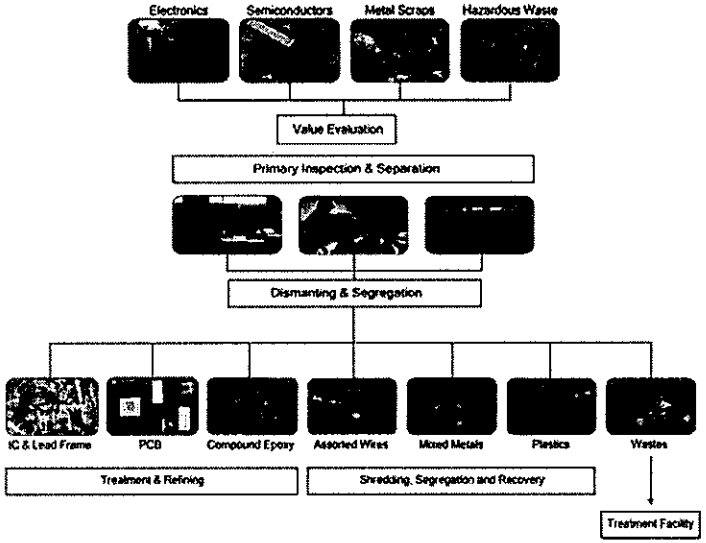

SKD 11 Stainless Steel


E-Waste


Equipment Scrap

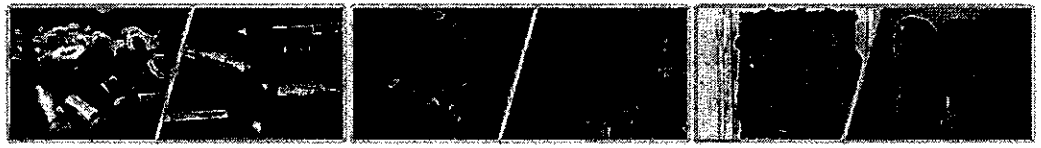
Presentation Material © 2018 SEMIRECYCLING Co., Inc

Recycling Workflow



Presentation Material © 2018 SEMIRECYCLING Co., Inc

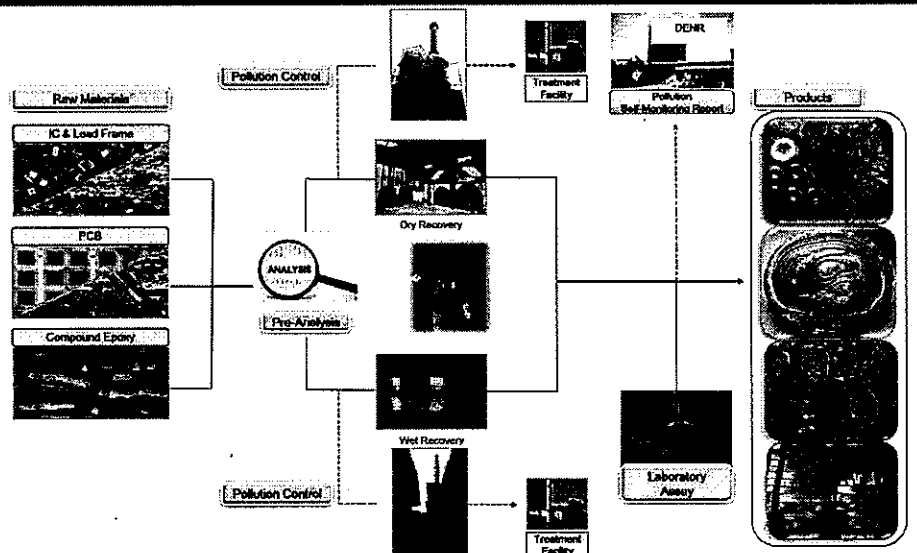
Valuable Hazardous Wastes


Epoxy Sludge Paste

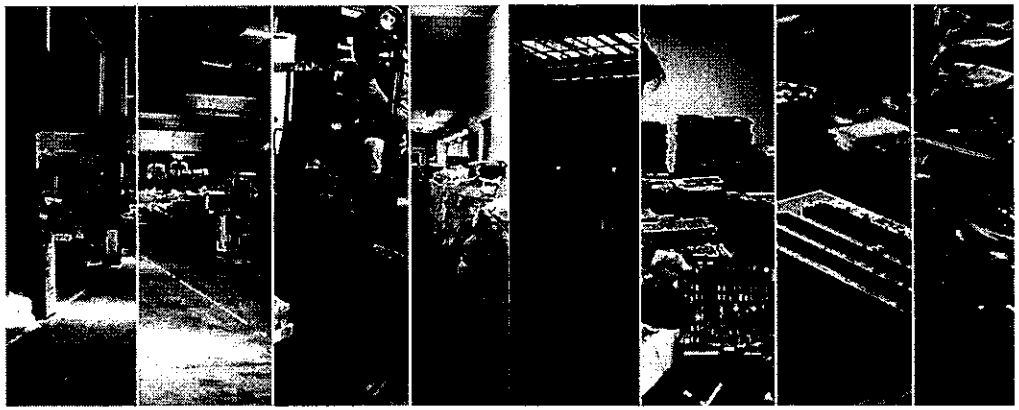
Presentation Material © 2018 SEMIRECYCLING Co., Inc

Metal Recovery Process

What we have?



Production Area



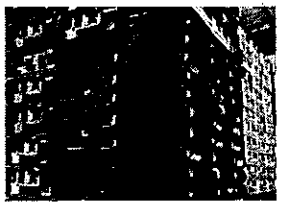
Intellectual Property Protection

Secure Data Destruction

Securely remove all clients' Data

Asset Registry Service

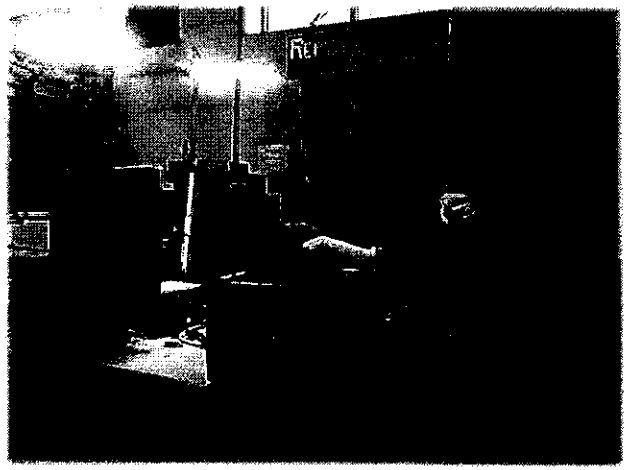
To be able to provide an asset disposal report



Metal Recovery Area

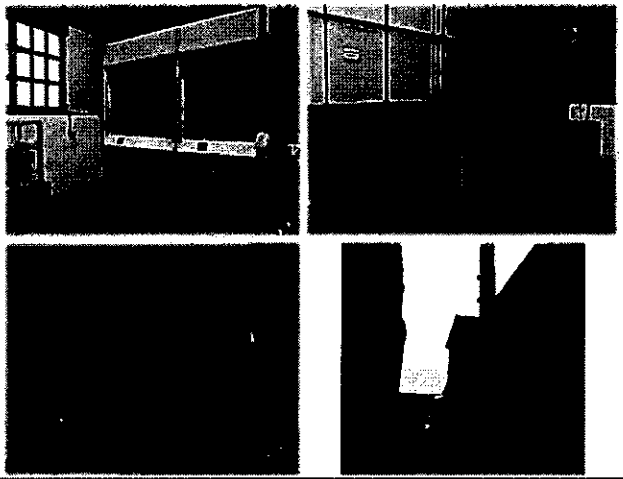
Wet Recovery Facilities

Production Area



Metal Recovery Area

Laboratory & Chemical Storage

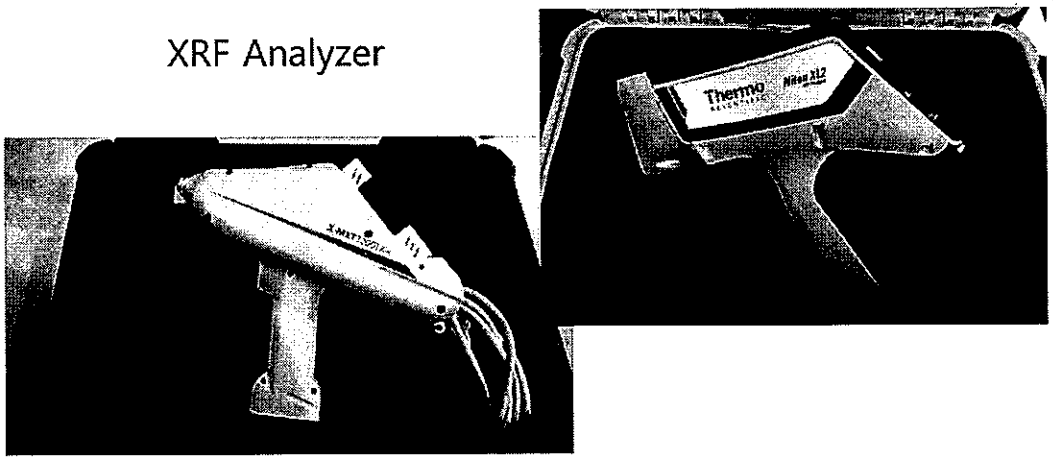


Metal Recovery Area

Dry Recovery Facilities

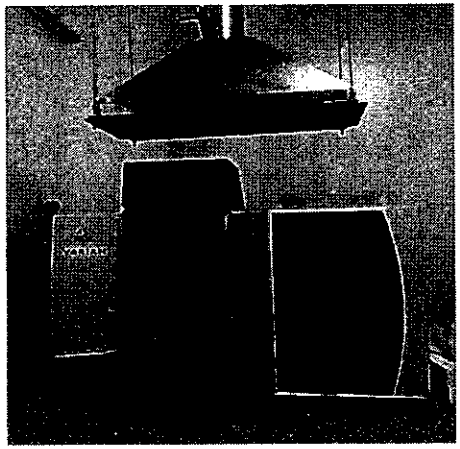
RND/Laboratory Equipment

XRF Analyzer

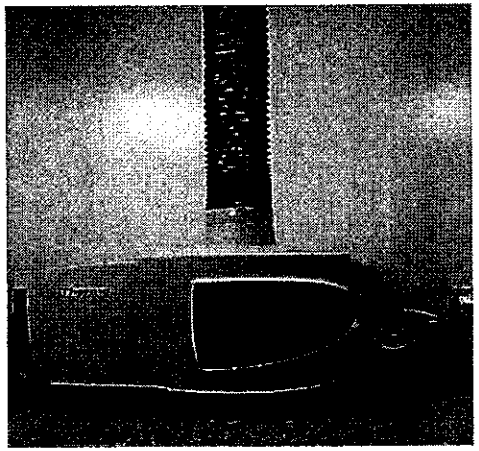


R&D/Laboratory Equipment

Atomic Absorption Spectrometer



Inductively Coupled Plasma Spectrometer

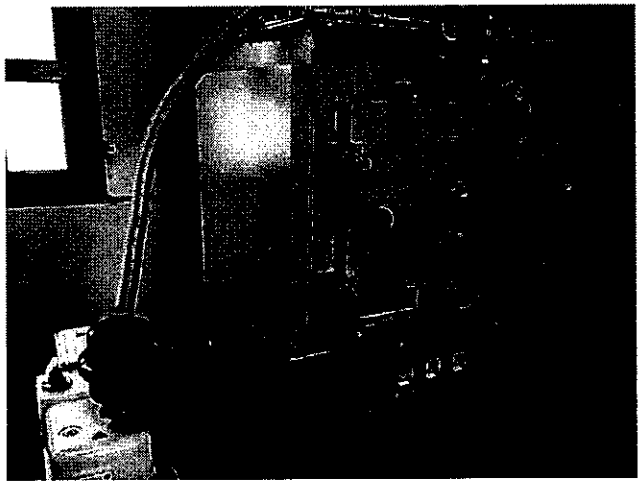


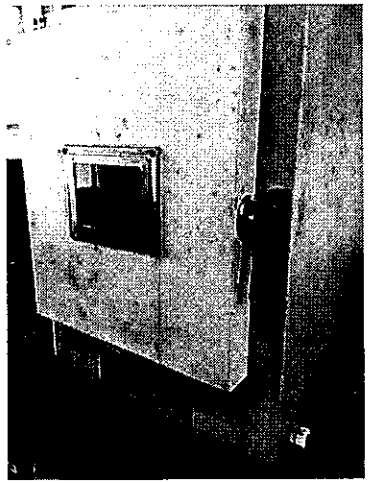
Production Equipment

Crusher

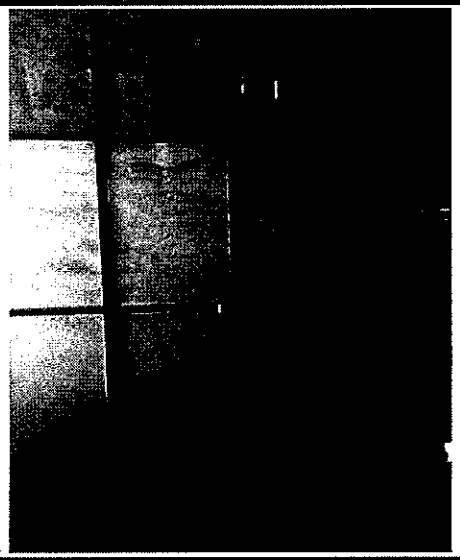
RND/Laboratory Equipment

Furnace & Oven





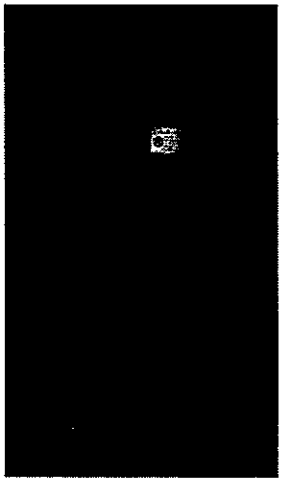
Production Equipment

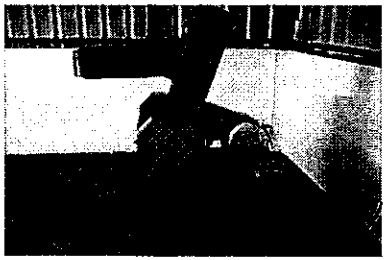


Styrofoam Melting Machine

Production Equipment

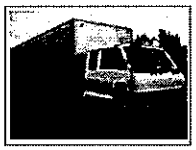
Portable Crusher

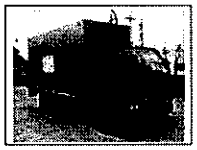
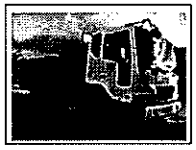
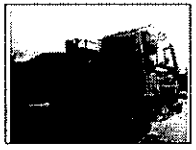




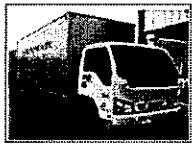
Transport Equipment







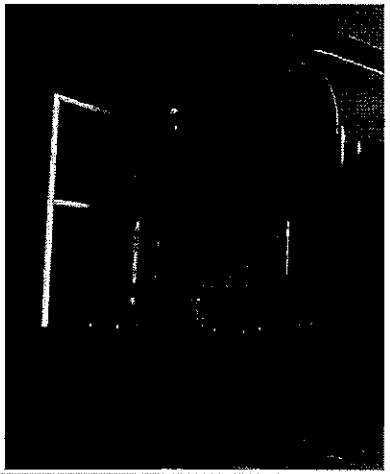


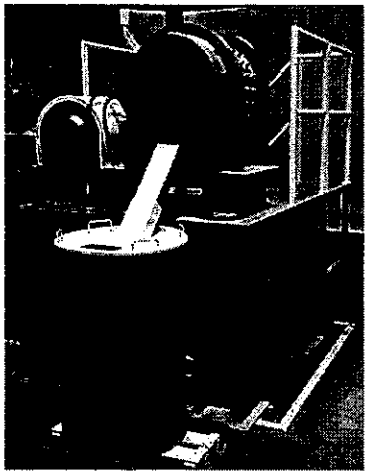
Our Trucks

- have comprehensive insurance
- are well maintained following preventive maintenance check-up
- are equipped with fire extinguisher and medical kit

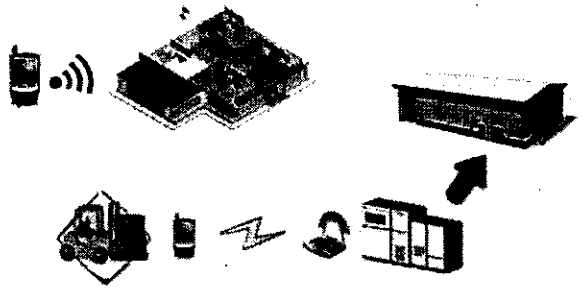
Production Equipment

Granulator/Impact Mill





Warehouse Management System



Semirecycling Co., Inc. is currently in the process of implementing Warehouse Management System through Barcode-scanning technology that will enable us to manage well our recycling and disposal process.

Our Contribution to the Community

Participating in City Government Event

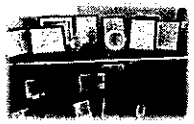
Semirecycling Co., Inc. is actively participating in City Government and Freeport Zone event as Major Recycler. "There's Money in a Garbage", it provides awareness to society on how to protect our Mother Nature.

Recycling Center

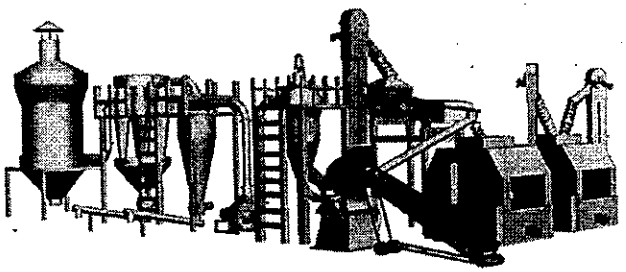
Semirecycling Co., Inc. set-up a recycling center to change waste materials into usable materials to prevent waste of potentially useful materials.

Social Contribution

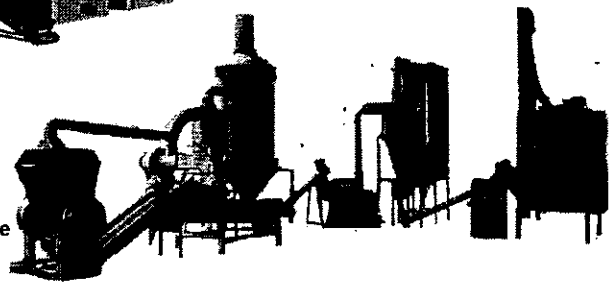
As a way of our social contribution, Semirecycling Co., Inc. is donating computers and its peripherals to the public, schools and barangay communities. And we also sponsor community projects of Rotary Club of Magalang.



Incoming machineries



Printed Circuit Boards Recycling Machine



Copper Wire Recycling Machine

International Standard Certification

Presentation Material © 2018 SEMIRECYCLING Co., Inc.

How to reach us?

Semirecycling Co., Inc. (SRCI)

Phase II, Lot 1-A, Clark Premiere Industrial Park,
Industrial Estate 5, M.A. Roxas Hi-way, Clark Freeport Zone
Philippines 2023

Telephone: 63-45-599-6953/499-3150 Fax: 63-45-499-3151

E-mail : srci@semirecycling.com
Website : www.semirecycling.com

Management System ISO 14001:2004

Presentation Material © 2018 SEMIRECYCLING Co., Inc.