

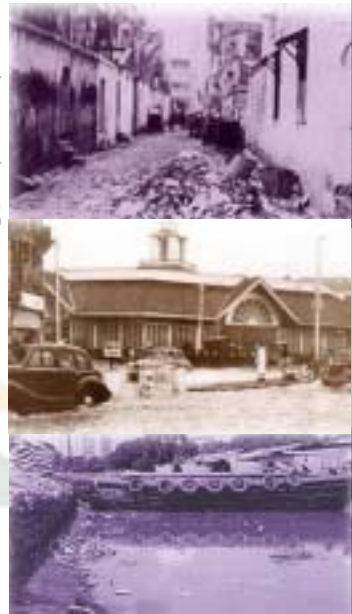
# ELECTRONIC AND ELECTRICAL WASTE MANAGEMENT IN SINGAPORE

**Singapore**



# Background of Ministry of the Environment and Water Resources

- Formed in 1972 as a full fledged Ministry
- Primary focus then was to
  - Prevent and control pollution
  - Establish infrastructure for waste, wastewater management
  - Achieve a high standard of public health



# Ministry of the Environment and Water Resources

- Public Utilities Board
  - Water Management
- National Environment Agency
  - Environmental Protection
  - Environmental Public Health
  - Metrological Services



## E-Waste

### **E-waste**

- encompasses a broad and growing range of electronic devices ranging from large household appliances such as refrigerators, air conditioners, etc, and consumer electronics to computers.



# Post-Consumer E-Waste Management

- Post-consumer e-waste
  - ✓ Used computers
  - ✓ Used Refrigerators
  - ✓ Used television sets
- Traders who go door-to-door in residential estates collect for free .
- Charitable programmes that refurbish them to give to voluntary welfare organizations or needy households
- Unwanted electronic and electrical equipment that is beyond economical repair are sold to recycling companies for recycling



# Post-Consumer E-Waste Management

- Pre-consumer e-waste
  - ✓ mainly generated from large electronic manufacturing industry
  - ✓ off-spec PCBs
  - ✓ test wafers for calibration of processing equipment
- e-waste recycling companies collect and recover the precious metals found in these e-wastes
- Other valuable metals or plastics generated from e-waste recovery/recycling process are exported to other countries for further recovery



# CHALLENGES OF E-WASTE MANAGEMENT



## Awareness

- Electronic products does not carry any label on heavy metals content
- No instruction manual on environmentally sound disposal method
- Important to educate consumers and workers (doing the collection, repair and recycling) to raise their awareness of the environmental and health hazards the e-waste poses



## Transboundary Movement of Hazardous E-Wastes

- Singapore acceded to the Basel Convention on 2 Jan 96. Prior to the accession, Singapore was already adopting and practising the principles of the Basel Convention.
- To fulfill Singapore's obligations under the Basel Convention and strengthen the implementation of the Basel Convention requirements, Singapore proceeded to enact the following laws:
  - ✓ The "Hazardous Waste (Control of Export, Import and Transit) Act
  - ✓ The Hazardous Waste (Control of Export, Import and Transit) Regulations



## Transboundary Movement of Hazardous E-waste

E-waste classified as hazardous waste under Basel Convention:

- Waste electrical and electronic assemblies or scrap containing components such as accumulators and other batteries included on list A, mercury-switches, glass from cathode-ray tubes and other activated glass and PCB-capacitors, or contaminated with Annex I constituents to an extent that they possess any of the characteristics contained in Annex III



## Transboundary Movement of Hazardous E-waste

- Precious metal ash from incineration of printed circuit boards not included on list B
- Glass waste from cathode-ray tubes and other activated glasses



## Transboundary Movement of Hazardous E-waste

- Difficult to obtain information on other e-waste that is regarded as hazardous waste by other countries
- Singapore does not control the transit unless they are hazardous wastes under the Basel Convention.



# Hazardous Waste (Control of Export Import and Transit) Act

- The Act was passed by Parliament on 19 Nov 97
- Both the Act and its Regulations came into operation on 16 Mar 98



## Penalties

### Maximum Penalties:

- \$300,000 fine(Corporate)
- \$100,000 fine and/or
- 2 years imprisonment (Individual)
  
- Illegal Import of Hazardous Wastes
- Illegal Export of Hazardous Wastes
- Illegal Transit of Hazardous Wastes





# INITIATIVES IN SINGAPORE



## Initiatives

<b>Types of initiative</b>	<b>Authorities/companies involved</b>
E-waste take-back project (collaboration between retailer and recyclers)	Harvey Norman (under Pertama Merchandising Pte Ltd) (retailer), Citiraya Industries Ltd and NatSteel Asia (S) Pte Ltd (recyclers)
E-waste recycling awareness programme. This programme involved collection of e-waste and ink/toner cartridges from certain schools and Residents' Committee centers for recycling.	North-West Community Development Council, Town Council, Hewlett Packard Asia Pacific Pte Ltd, SembWaste Pte Ltd, Citiraya Industries Ltd



## Initiatives

<b>Types of initiative</b>	<b>Authorities/companies involved</b>
Programme to take back and recycle computer and printing hardware products from corporate clients	Hewlett-Packard Singapore Pte Ltd
Programme to take back and recycle PCs and related peripherals from corporate clients and household consumers.	Dell Asia Pacific Sdn



## Initiatives

<b>Types of initiative</b>	<b>Authorities/companies involved</b>
Programme to allow consumers to return and recycle handphones and handphone batteries	Nokia Pte Ltd
Regional conference on e-waste management and extended producers responsibility	National Environment Agency, Hewlett-Packard Asia Pacific Pte Ltd and Canon Singapore Pte Ltd



## Conclusion

- The quantity of e-waste generated globally is increasing rapidly
- Control on transboundary movement of e-waste is required in order to reduce the impact of e-waste to the environment
- Environmentally sound management of e-waste will benefit the local electronic industry and recycling industry, as well as reducing the impacts of rapid technological advancement on the local environment.



# Thank You

