Sustainable management of mercury waste
Nomura Kohsan Co., Ltd.
Overview of Nomura Kohsan’s work
Overview of Nomura Kohsan’s work

Total area: 1,489,431 m²

Treatment Area

Landfill site
Overview of Nomura Kohsan’s work

TREATMENT

- **Wastes consisting of mercury/mercury compounds**
  - Metal mercury

- **Wastes containing mercury/mercury compounds**
  - Fluorescent lamps
  - Batteries
  - Measuring devices

- **Wastes contaminated with mercury/mercury compounds**
  - Sludge
  - Catalyst
  - Activated Carbon

… and more!
Consisting of mercury/mercury compounds

Metal Mercury
Containing mercury/mercury compounds

Fluorescent lamp
Containing mercury/mercury compounds

Clinical thermometer
Containing mercury/mercury compounds

Sphygmomanometer
Containing mercury/mercury compounds

Mercury Switch
Containing mercury/mercury compounds

Dry Cell Battery
Containing mercury/mercury compounds

Button Cell
Contaminated with mercury/mercury compounds

Oil sludge
Contaminated with mercury/mercury compounds

Catalyst
Contaminated with mercury/mercury compounds

Activated Carbon
Overview of Nomura Kohsan’s work

We treat a total of 26,500 tons of mercury waste in 2017

- 14,000 tons of dry-cell batteries
- 8,000 tons of fluorescent lamps
- 4,500 tons of other types of waste (i.e. measuring devices, etc.)
Treatment Process
Roasting process

- Waste is heated at a temperature between 600°C to 800°C
- The mercury evaporates, which is then collected through a cooling process.
Roasting process

Herreshoff furnace

- Entrance
- Center shaft
- Arm
- Heating unit
- Drying zone
- Roasting zone
- Cooling zone
- Exit

EXHAST GAS
Mercury recovery system

1. Pretreatment
2. Mercury sludge
3. Flue gas (Mercury stream)
4. Scrubbing dust collector
5. Cooling tower
6. Scrubber
7. Electrostatic precipitator
8. Adsorption tower
9. Blower
10. Stack
11. Multiple hearth furnace (Hereshoff furnace)
12. Heating unit
13. Dissolution test
14. Landfill site for waste

Mercury
Leachate-controlled Landfill Site

- Double water-sealing structure
- Reinforced concrete on the premises
- Only residues below the acceptance standard
  (Under the Japanese Leaching Test $\leq 0.005\text{mg/L}$)
- Discharged water and groundwater regularly analyzed
At Nomura Kohsan, used fluorescent lamp parts are crushed, separated, washed and made ready for distribution. Recycled glass can be transformed into glass wool insulation for homes and raw glass materials for fluorescent lamps. Recovered aluminum and metallic bases are converted into aluminum raw material. Mercury is recovered from wastewater and can be reused in new fluorescent lamps.
Dismantling mercury sphygmomanometers

Mercury tank

Removing screws by electric screwdriver

Screws

Main body under case

Iron

Metal dealer

Metal dealer

Sparing iron or aluminium

Plastic (Attached metallic mercury)

The process of roasting

Recovery (process of refining)

Metallic mercury

The process of roasting or incinerating

Cuff • Rubber bulb and tube
Stabilization & Solidification
Cases of neighboring countries
Import experience from overseas

Taiwan
- We have treated over 3,200 tons of mercury-containing waste which is dry-cell batteries, button cell batteries and HID lamps.

Philippines
- We have treated over 75 tons of fluorescent lamps

Indonesia
- We have treated over 700 tons of mercury waste from oil gas companies.
Mercury waste management scheme in the Philippines

**Target region:** Manila and Cebu

**Waste-types targeted for treatment**
- Used fluorescent lamps,
- Dry cell batteries
- Thermometers
- Sphygmomanometers
- Dental amalgams
- Mercury contaminated sludge

**Technology used**
Lamp crushers installed at FRP Corp. and CCTFI

**Treatment and recycling**
to be completed at Nomura Kohsan

**Export to Japan**

**Technology used**
- Proper collection
- Packing
- Transportation technology

**Export to Japan**

**CCTFI (Cebu)**
(Collection, Crushing lamps and storage)

**FRP Corp. (Manila)**
(Crushing lamps and storage)

**AMETCO**
(Collection (Manila) • Sales • Support)
Conclusion

We can treat ANY and ALL types of mercury wastes.

We have experiences of connecting mercury waste technology to developing countries.

We can contribute for mercury waste management with global scale.
Thank you!

For more information, please contact: info@nkcl.jp
Or visit our website at: www.nkcl.jp