Wisconsin's Experience with Chlor-Alkali Plant Mercury Storage

Presentation to the

Commodity-Grade Mercury Stakeholder Panel

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Overview

- Background
- Storage Request at Mercury Waste Solution Inc. (MWSI)
- Classification of HoltraChem Manufacturing Company (HCMC) Elemental Mercury
- Observations & Summary

Mercury Processing at MWSI

Machine to process lamps

- **Crushes lamps**
- **Collects and separates metal end caps, phosphor powder, glass**

Dismantling of equipment

- **Table to dismantle equipment (switches, etc)**

Continuous-flow retort furnace for phosphor powder

- **Operates via a pneumatic conveyance system**
- **Phosphor powder is delivered to velocity drop boxes**
- **Operated under negative air pressure**
- **Uses HEPA and carbon filters**

Retort ovens

- **Four ovens - 8.5 foot diameter by 12 feet long**
- **Operated under a vacuum**
- **Heated electrically**
- **Capacity to treat 20 to 25 55-gallon drums**
- **Treatment time is typically 48-72 hours**
- **1000^{o} F held for 24 hours (BP Hg 674^{o} F)**
- **Liquid nitrogen used as a carrier gas to the collection system**
- **Collection system cools Hg vapors with a non contact ethylene glycol mixture. Vapors enter at ~750^{o} F leave at ~60^{o} F.**

Mercury distillation room

- **Hg is purified to three/four 9s with a water/nitric acid bubbler**

Waste Activities at MWSI

Hazardous Waste License # 6028, 6027 (June, 2000)

- **Tank Storage:**

  Two 3000 gallon poly tanks used for the storage of waste water contaminated with mercury. MWS recycles mercury from wastewater using precipitation and filtration. The treated waste water is shipped off-site as a HW for final treatment and disposal.

  MWS also has two non license tanks at 500 gallons.

- **Container Storage:**

  MWS can store hazardous waste on site for up to one year

  Container storage area: 560 55-gallon drums (30800 gallons).

  Oven batch storage area: 135 55-gallon drums (7425 gallons).

  Roll-off storage area: One 20 yard roll-off box.

- **Large Quantity Generator (LQG) EPA ID # WIR000000356**

  MWS generates over 2205 pounds (1000 kg) of hazardous waste from facility operations.

Exempt Recycling Facility

The retorting of the mercury is not a license activity under RCRA.

Solid Waste License # 4381

- **PCB Processing**

  Storage of PCB and non-PCB ballast

  PCB Ballast Storage area has a capacity of forty (40) 55-gallon drums.

  Non PCB Ballast Storage area has a capacity of forty (40) 55-gallon drums.

Universal Waste Handler

Stores and process lamps, batteries and other mercury contain devices. Universal waste are hazardous waste, that if recycled, are subject to less regulation than other hazardous waste

Storage Request - Chronology

- Spring 2002: WDNR notification of sale and potential storage of HCMC mercury @ MWSI
  - May 10, 2002 request from Mallinckrodt, Inc. for US EPA regulatory interpretation on classification of free-flowing Hg as a commercial chemical product
- July 23, 2002: Analytical Results of HCMC mercury
- August 1, 2002: Draft Agreement between Mallinckrodt Inc., MWSI and Natural Resource Council of Maine (NRCM)
- August 1, 2002: Regulatory Interpretation from Marvin Rosenstein, US EPA, Region 1
- August 22, 2002: WDNR confirmation on HCMC mercury classification

Decision-Making on Status of Hg

- US EPA Interpretation
  - Hg is at least 99% pure and of product quality
  - Commercial chemical product stored for recycle/sale back into commerce and not retired, is not considered discarded and therefore not subject to RCRA regulations (length of storage not an issue for product status)
- Wisconsin Department of Natural Resources Interpretation
  - Agree with EPA interpretation based on Wisconsin Statutory definition of Solid Waste (ch. 289.01(34), Wis. Stats.): "Solid Waste means garbage, refuse,….and other discarded or salvageable materials…"
  - Other Relevant Factors:
    - Value of the material
    - How it came to be
    - Where it is stored
    - What would be done with it – viable markets

Observations & Follow-Up

- Public Interest Minimal
- Hg contained in special flasks, manifested to MSWI and managed at the TSD as if hazardous waste
- WDNR visits every 6 months (part of TSD inspection)
- Discussion on sale of Mercury in March, 2005
  - Representation of Security Risk/Liability Concern => sell
  - Commodity, therefore no formal role for WDNR

Summary….

- Facility equipped to manage waste initially
- Security risk and insurance issues to address
- Public involvement – no process for public to be involved
- Lack of State role in the sale
- Lack of State Legislation in packaging, transport, tracking of commodity-grade mercury