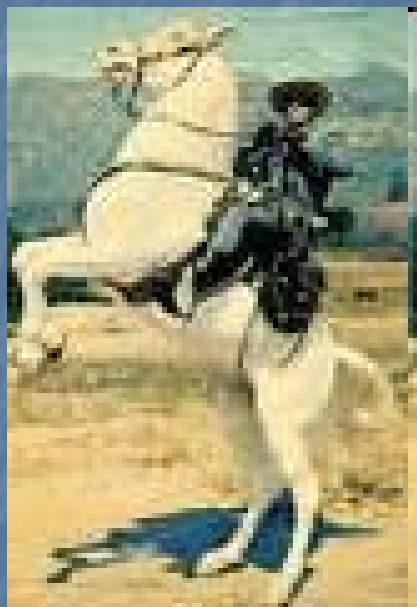


Quicksilver



Away!!

Mercury concerns during Building Renovation and Demolition

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The Messenger

God of Commerce

Hydrargyrum



Mercury

- A heavy, silvery transition metal,
- One of only five elements that are liquid at or near standard room temperature and pressure.
- It is also a known neurotoxin with sometimes severe effects.



Heavily Regulated

- Hazardous waste – D009 TCLP > 0.2 mg/l
- CERCLA RQ – 1 pound
- OSHA PEL 8 hour - 1 mg/10 cu m
- ACGIH TLV - 0.025 mg/cu m, skin
- IDLH - 10 mg/cu m (as Hg)
- CAA
- CWA
- Limits for organic mercury much lower

- Mercury has long been used in scientific apparatus, electronics and even as medicine.
- Remains a constituent or contaminant of many equipment and electronic devices.
- Found in many chemicals, reagents, cleaners, preservatives and test kits used in chemical, physical, and biological research.
- Bleach, paint, pesticides
- Dental amalgam, rubber floors

Hg

Annual Mercury Consumption

- In 2001, total estimated annual mercury consumption in products was approximately 276 tons.
- Annual mercury consumption in switches, relays, thermostats, and thermometers (and other measuring devices) was estimated to be 249 tons (approximately 90% of total annual mercury consumption in products.)

Mercury Product Reservoirs

- Approximately 2000 tons of mercury are in product reservoirs. Many mercury-containing products have long working lives; a small portion of this reservoir is expected to enter the waste stream each year.
- Assuming a 10 to 20 year period for the current reservoir to flow into the waste stream, approximately 100 to 200 tons of mercury would potentially be available for recovery annually.
- Reservoirs from Switches, Relays, Thermostats, and Thermometers (includes other instruments) are estimated to be about 821 tons (~42% of total mercury reservoirs in products.)

Sources

- Thermometers – 0.5 g and up
- Light bulbs – Fluorescent and HID – up to 250 mg
- Pressure devices - manometers
- Switches – tilt switch, float switch - 3 grams to pounds
- Silent wall switch - 2 grams
- Thermostats 3 grams per ampoule

Sources

- Appliances
 - Chest freezers – Tilt switch
 - Washing machines - Tilt switch
 - Gas appliances – flame sensor
- Large Flow meters for water or steam – kilos
- Rubber floors – rubber floors from the early 1970's
- Mechanical equipment - Regulatory and measuring devices can contain from a single gram up to kilograms of mercury

Plumbing

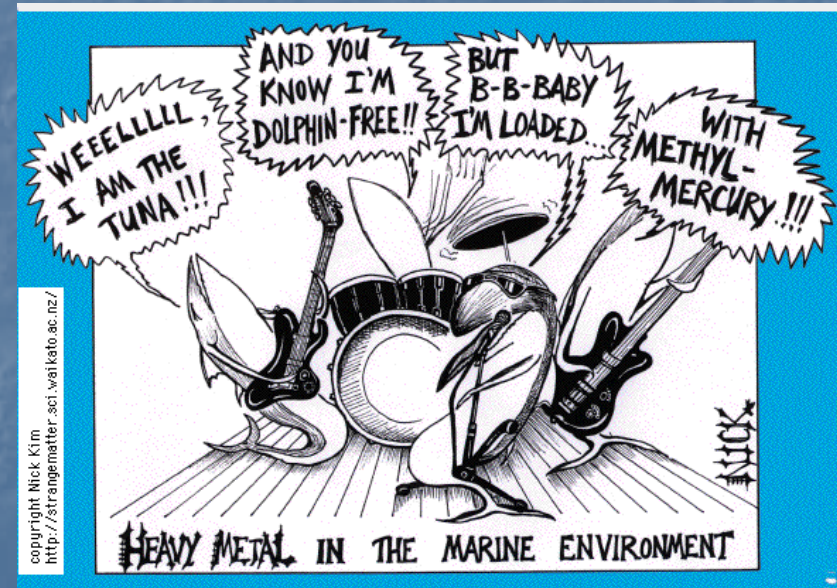
Mercury is likely to be present in traps and drains in office/laboratory/storage space within buildings:

- Health care: hospitals, clinics, nursing homes, veterinary, dental
- Medical, scientific, engineering laboratories
- Schools, especially in laboratory spaces

MWRA



- Discharge is Prohibited
- Enforceable at 1 PPB



Hunting Hydrargyrum

- Characteristic chemical trait of mercury is association
- Mercury is bio-accumulated by algae and bacteria in the pipes
- Levels are low and intermittent

Mercury Hiding

- Found in many materials at levels below 1%
- contaminant of many chlorinated materials including bleach
- widely used in biological sample preparation and preservation
- In Dental Amalgam
- Latex Paint

The source

Could be from historical use which has somehow re-entered the waste stream after sitting stable in plumbing for years

Could be from more recent sources where it is present as an unknown contaminant or minor constituent.

Or both.

Avoiding Mercury

- Evaluate the work areas and equipment
- Remove switches to suspect equipment
- Ensure there are sufficient controls to keep mercury or mercury containing materials out of sink drains.
- Evaluate if mercury free options are available

For More Information

- The Dana Farber Cancer Institute

http://research.dfci.harvard.edu/ehs/Mercury/mercury_at_dfci.htm

- MASCO - Medical Academic and Scientific Community Organization

http://www.masco.org/specialproject_mercuryworkgroup.htm

- Previous article on health effects of mercury for researchers

<http://web.mit.edu/environment/pdf/EHSNewsletter9Final.pdf>

Thanks

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