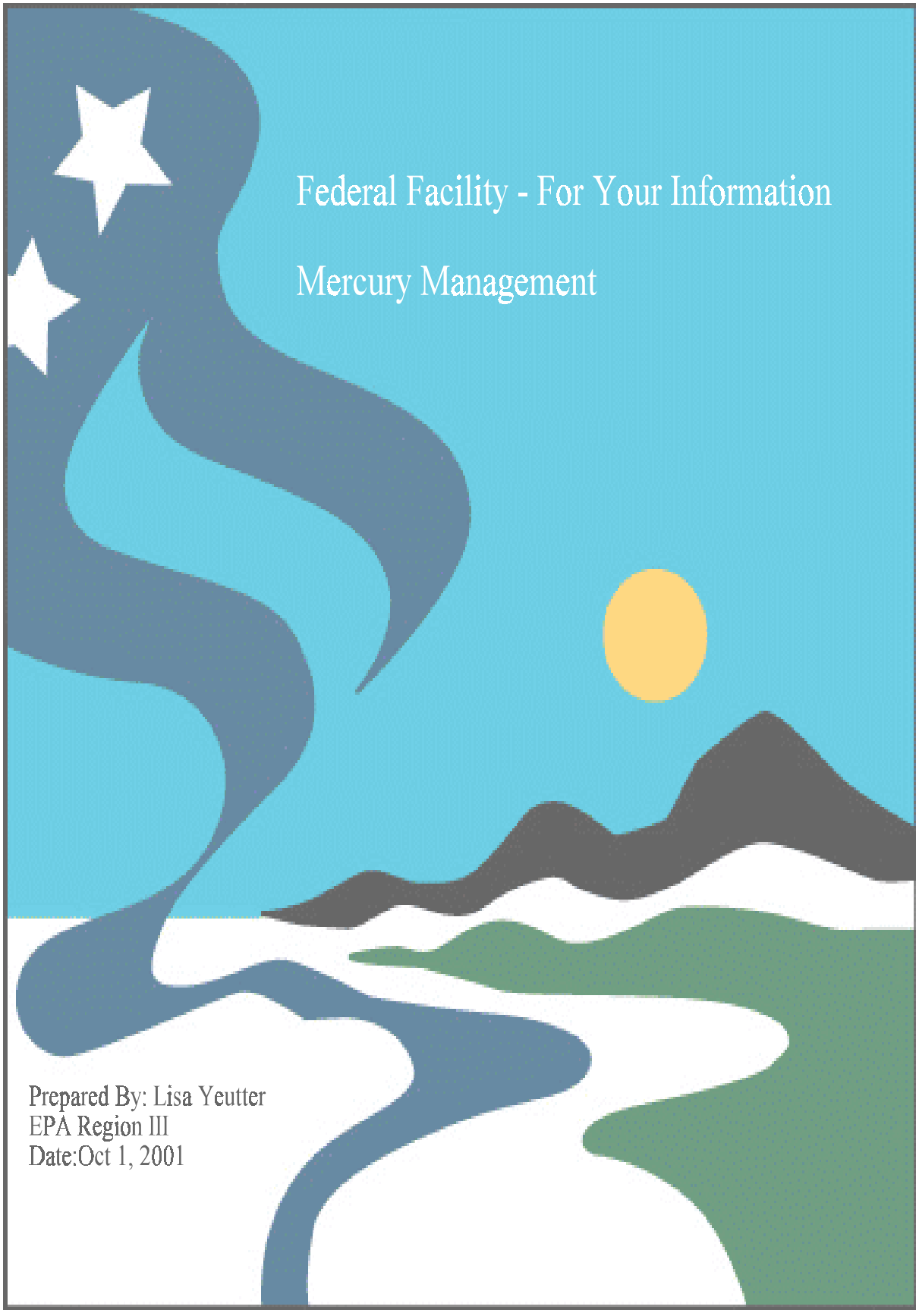
Federal Facility - For Your Information
Mercury Management
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Contents

Acknowledgments and Sources of Information

EPA Region III would like to thank the EPA New England Office, the Northeast Waste Management Official's Association (NEWMOA) and the Massachusetts Department of Environmental Protection for the Mercury log sheets and the mercury management information provided in this booklet

Mercury: A Federal Facility Assessment developed by the Northeast Waste Management Officials' Association, the Massachusetts Department of Environmental Protection, and the Environmental Protection Agency Region I.

Mercury Use Reduction & Waste Prevention in Medical Facilities developed by the Environmental Protection Agency, Purdue University and the Agriculture & Biological Engineering Department.

A Case Study of Environmental, Health and Safety Issues Involving the Burlington, Massachusetts Public School System - Mercury Management prepared by Todd H. Dresser, Burlington Board of Health.

Did you know MERCURY has been found in at least 714 of 1,467 National Priorities List sites identified by the Environmental Protection Agency?

Why Should You Be Concerned About Mercury?

- Mercury has many industrial uses and applications. Upon inspection you may find it is present in a number of items commonly found in your facility. Mercury contamination is a serious environmental and public health problem.
- Mercury is a neurotoxin which means it can adversely effect the central nervous system. Upon exposure, it tends to accumulate quickly in the brain where it tightly binds with the tissue and is released at a very slow rate. Mercuric compounds can pose the following types of health hazards: toxic to **lethal** via ingestion or absorption, toxic to the following organs or systems: central nervous system, digestive system, kidney, liver and skin. Many of these materials may also be teratogenic or capable of causing birth defects.
- Mercury possesses the properties of both a liquid and a metal, and is an added component of many products including flourescent lamps and certain types of thermometers, electrical switches, and measuring devices.
- Mercury can volatilize at room temperature enabling it to constantly circulate in the air, water, and soil. When spilled mercury is poured down the drain or a mercury containing item is thrown into the trash, it doesn't disappear. The mercury enters the environment after it passes through the waste incinerator, landfill or wastewater treatment plant.

How Do You Manage Mercury?

Raise awareness of mercury hazards, products that contain mercury, and proper disposal practices. Review the health hazards associated with elemental mercury and mercuric compounds with your staff. Train employees in best management practices. Establish procedures for activities that involve mercury. These activities can result in a mercury release and the creation of a long-term exposure risk to the occupants if the material is not properly abated.

Identify sources of mercury. Conduct a facility-wide survey in order to identify the type, location, and amount of mercury bearing material present. This should be an on-going process as we continue to discover additional items that contain mercury. Keep an inventory of how much mercury is in use or stored on the premises, and how much has been spilled, recovered, or discarded. This inventory can also serve as a baseline from which to measure future mercury reduction efforts.

Inspect all equipment containing mercury. The primary concerns with equipment include: a) equipment failure could result in accidental exposure or a release of material, or b) improper disposal of the mercury containing equipment could result in an environmental release of mercury. The key is knowing what the equipment contains and what safe guards are required to be maintained in order to safely operate the device.

Correctly store mercury. All mercury containing devices should be clearly labeled. Store mercury in tightly closed containers in a cool, well-ventilated area away from acetylene, ammonia, and nickel. Mercury must also be stored to avoid contact with chlorine dioxide, nitric acid, nitrates, ethylene oxide, chlorine, methyl azide since violent reactions occur.

Eliminate or replace sources of mercury. Due to the difficulty in remediating a mercury spill, it is recommend that you strongly consider replacing or removing mercury bearing items wherever possible. As items are damaged or consumed locate replacements which are mercury free or contain less mercury. Discontinue the purchase and use of mercury-containing products where feasible. This approach provides a safer and healthier environment while also reducing your regulatory compliance burden as defined by state and federal Universal Waste Regulations. In addition, improper spill mitigation or waste disposal may also create civil liability for your facility.

Train and equip your staff for mercury releases. Unfortunately, you probably won't be able to completely eliminate mercury from your facility, so plan ahead and be prepared. Mercury spill kits should be distributed to all locations that use mercury or have mercury-containing products. The spill response designee(s) at each location should be trained on the proper use of the kit, and to record and report all spills. Dispose of mercury recovered from the spill in accordance with all federal, state, and local hazardous waste disposal regulations. Arrange for professional hazardous waste handlers to manage any large mercury spill.

Develop a mercury recycling/disposal program. Establish polices and procedures for promoting recycling and disposal of mercury and its compounds in order to prevent its release to the environment. This will require you to remove batteries, fluorescent lights and other mercury containing products from your solid waste stream. Check with state and federal Universal Waste Disposal requirement to make sure you are in compliance. These requirements are only going to become more stringent over time so be ahead of the learning curve and do it now.

What Products Contain Mercury?

Mercury is present in a number of products that become part of the solid waste stream, including certain thermometers, flourescent lamps, button batteries, thermostats, manometers, switches, relays, and dental supplies. Of the mercury that ends up in products, a portion is eventually disposed of or recycled as municipal solid waste, while other portions may be disposed of as hazardous or medical waste or discharged to a sewage treatment facility. There are numerous mercury-containing products in today's waste stream that are no longer produced, including cylindrical alkaline batteries, certain pesticides, and certain latex paints made before the early 1990s.

The following sections provide brief and incomplete list of some of the most common uses and/or sources of mercury. There are mercury-free alternatives available for a significant number of these products.

Wiring Devices & Electrical Switches, Including Thermostats
This is currently the largest category of mercury consumption and the biggest single use of mercury in this category is the mercury relay. Many mercury containing switches are used in fuel combustion, i.e. coal, oil, and natural gas power and heating plants.

Examples: Thermostats, light switches, industrial switches, float switches, pressure switches, flow controllers

Electric Lighting
Flourescent lamps are the major source of mercury in electrical lighting.

Examples: Flourescent, high pressure sodium, metal halide

Measuring Device & Control Instruments
Thermometers (fever and laboratory), barometers, sphygmomanometers (blood pressure cuffs), manometers, hydrometers

Medical/Dental Uses
Dental amalgam, pharmaceuticals, disinfectants, diagnostic reagents

Button Cell Batteries
Certain button cell batteries, including those used in hearing aids, some wrist watches, and other products that require a very small battery, contain mercury. There are also speciality batteries used in hospitals, military facilities and commercial applications that require mercury to function. These specialty batteries may contain higher amounts of mercury.

Laboratory and Pharmaceutical Chemicals, Paints and Coatings
There are numerous uses of mercury in laboratory and pharmaceutical products as well as a small number of coatings. Mercury can be an active ingredient, a preservative or a contaminant introduced in the manufacture of one of the ingredients in a chemical foundation.

Clinical Laboratory Examples: Zenker's solution, B5 solution, certain hematoxylin solutions, thimerosol

Other Laboratory Examples: Reagents, preservatives, electro analysis, slide preparation

Chemical Products: Chlorine, caustic soda, sodium hydroxide, fungicides/pesticides, preservatives, pigments

Which Compliance Requirements Apply to Mercury?

The following is a description of some of the federal environmental regulations for controlling mercury releases. This is not a comprehensive listing, but gives a broad overview of some of the applicable federal rules. Additionally there are state regulations that may be more stringent than the federal rules.

The Resource Conservation and Recovery Act (RCRA) requires waste material that exhibits the characteristic of toxicity for mercury to be managed as hazardous waste (see 40 C.F.R. § 261.24). Additionally, discarded commercial chemical products containing mercury must be managed as hazardous waste (see 40 C.F.R. § 261.33). Under EPA's Universal Waste Rules (see 40 C.F.R. § 273 et seq.) states may provide alternative options for management of mercury thermostats and mercury containing lamps. Please check with state regulations to see how RCRA and Universal Waste Rules apply.

The Clean Air Act (CAA) regulations contain national emission standards for mercury from a limited number of specific stationary sources that process or use mercury-containing substances and that emit mercury to the air (see 40 C.F.R. § 61.50 et seq.). Additionally, the CAA requires municipal waste combustors and medical waste incinerators to limit their mercury emissions (see 40 C.F.R. § 60.50b et seq.).

The Emergency Planning and the Community Right-to-Know Act regulations require facilities that manufacture, process, or otherwise use mercury compounds in excess of 10 pounds during a calendar year to report the quantities released to EPA (see 40 C.F.R. § 372.22). The 10 pound reporting threshold for mercury was recently changed from the original minimum reporting threshold of 10,000 pounds.

The Clean Water Act requires that any discharge to a surface water cannot negatively impact the water quality standards established. With EPA approval a state establishes the water quality standards for each of its surface waters. Each state must establish minimum water quality standards for certain priority pollutants such as mercury. The regulations establish an acute and chronic mercury concentration for surface waters (see 40 C.F.R. § 131.36).

Finally, the **Safe Drinking Water Act** regulations require a public water system to provide drinking water with a maximum contaminant level of 2 micrograms per liter (or ppb) for mercury (see 40 C.F.R. § 141.51). Therefore, the concentration of mercury should not exceed 2 ppb for water supply to homes.

Where To Go For More Information?

US Environmental Protection Agency Mercury Web Site
http://www.epa.gov/mercury/index.html

Agency for Toxic Substances & Disease Registry
http://www.atsdr.cdc.gov

Occupational Safety & Health Association
http://www.osha.gov

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You are invited to join the new Mercury Policy, Legislation, and Regulations Listserve!

We are inviting you to join a new Mercury Policy, Legislation, and Regulations Listserve for federal, state and local government officials in the U.S. The purpose of this list is to provide a forum for posting news items and announcement and facilitating discussion of issues related to mercury policy, legislation, and regulations. List members are individuals at federal, state, tribal, and local government agencies that are actively involved in mercury issues and topics and who want to connect with others around the country and share information and ideas. Any discussion related to mercury policy, legislation and regulations is appropriate for this list.

This Listserve is being developed and will be managed by the Northeast Waste Management Officials Association (NEWMOA) as part of its efforts under the Pollution Prevention Resource Exchange (P2Rx), which is funded by the U.S. EPA.

How Does a Listserve Work?

A Listerve is a e-mail-based list of subscribers who want to share information and ideas on a topic. Participants can send a message to the Listserve that will automatically be sent to the other subscribers. If a participant wants to respond to a message, they can send the reply to the Listserve and the response will be automatically sent out to all of the subscribers. The Listserve is regularly monitored to make sure that it is working properly and that the messages and correspondence are appropriate for the topic of the Listserve. Subscribers can un-subscribe at any time by sending a message to the Listserve manager. NEWMOA will archive the messages for future use by the Listserve participants. If you subscribe, NEWMOA will send you all of the details on how to participate and how to send and receive messages.

How Do You Sign-Up?

If you are interested in participating in this Listserve, you can sign up by sending a blank e-mail message to join-Mercury_Policy@lyris.newmoa.org. There may be a slight time delay in starting new subscriptions because subscription requests must be approved by the list manager. This feature has been set up to monitor the make-up of the group. This is a Listserve for federal, state, tribal, and local government officials only. NEWMOA has sent this announcement to over 150 potential subscribers. If you have any questions or concerns about this Listserve, please contact Andy Bray, the list manager at abray@newmoa.org. Thanks for your interest in this effort. If you want to suggest additional potential subscribers, please send their e-mail address to Andy Bray so that he can send them this invitation.

FEDERAL FACILITIES MERCURY LOG SHEET

Note: Some devices may contain one of the following forms of mercury: elemental mercury, inorganic mercury, an inorganic mercury compound, or an organo-mercury compound.

	Quantity	Weight/Unit	Total Weight	Source of Product
Mercury Chemicals				
Elemental Mercury CAS# 7439-97-6				
Merthiolate CAS# 54-64-8				
Mercurochrome CAS# 129-16-8				
Mercury Chloride CAS# 10112-91-1				
Mercury (II) Chloride CAS# 7487-94-7				
Mercurous Chloride CAS# 7546-30-7				
Mercuric Iodide (Red) CAS# 7774-29-0				
Mercury (II) Oxide (Red or Yellow) CAS# 21908-53-2				
Mercury Nitrate (Millon's reagent) CAS# 10045-94-0				
Mercury (II) Sulfate CAS# 13766-44-4				
Mercuric Sulfate CAS# 7783-35-9				
Nessler's reagent CAS# 7783-33-8				
Zenker's Solution				
Arsenic-calcium reagent				
Precision reagent				
CPK reagent				
Mercury Containing Products				
Latex paint, pre 1991				
Oil-based paint (maybe)				
Mercury alkaline batteries				
Mercury / zinc "button" batteries				
Carbon / zinc batteries				
Silver oxide batteries				
Mercury oxide batteries				

	Quantity	Weight/Unit	Total Weight	Source of Product
Pressure and Flow Rate Measurement and Control Devices				
Sphygmomanometers				
Barometers				
Lab and Commercial / Industrial Manometers				
Hydrometers				
Gas Meters				
Flow Meters				
Pressure gauges				
Vacuum gauges				
Thermo-Electric				
Thermometers				
Thermostats				
Thermoregulators				
Electrical Properties				
Tilt switches				
Relay switches				
Sensors				
Timers				
Balances				
Electrical Discharge Properties				
Fluorescent lamps				
Mercury vapor lamps				
Neon lamps				
Metal halide lamps				
High pressure sodium lamps				
Strobe lights				
Germicidal lamps				
Mechanical Properties as a High-Density, Low-Friction Fluid				
Lighthouse lamp bearing				
WWTP Pivot Arm bearing				
Telescope mirrors				
DC watt hour meters				

Note: Most of these sources came from Gilkeson, John. Minnesota Products Study. Minnesota Pollution Control Agency. April 1996 (revised August 1998).