




MEMORANDUM

DATE: February 1, 2001

TO: Deans, Chairs and Principle Investigators.

FROM: Robert M. D'Alessandri, M.D. 
Vice President for Health Sciences
Dean, School of Medicine

SUBJECT: **Policy to Limit the use of Mercury within the Health Sciences Center and Procedure Guidelines for Managing Mercury and Mercury Spills.**

Historically, mercury has been used in pressure manometers, thermometers, pressure gauges, fluorescence lamps, batteries, paints, medicines, dental amalgam, preservatives, disinfectants, etc. Medical Clinics, Research Laboratories, and Hospitals use elemental mercury and many inorganic mercury salts that can be transformed into more toxic and soluble forms (i.e., methylmercury) of mercury. Organic mercury forms are neurotoxins while the inorganic forms are nephrotoxins and hepatotoxins. Inhalation, ingestion, and skin contact are potential routes for exposure. In the 1880's, mercury was used in the manufacturing of felt hats and the neurological symptoms of mercury poisoning of hat workers led to the familiar term, "mad hatter".

Modern technology has substantially reduced the use of mercury and mercury containing instruments and Research and Medical Institutions are limiting the use of mercury because of the health risks to humans and Federal Regulations targeting mercury as a highly toxic substance.

Federally mandated restrictions have been placed on treatment plants for the concentration levels of mercury in wastewater. Across the U.S., local treatment plants are targeting Health Sciences Centers and Hospitals as major industrial pollution sources and are establishing strict restrictions on mercury concentration levels of wastewater.

The local treatment plant monitors the waste stream from the WVU Health Sciences Center for high concentration levels of mercury.

Current O.S.H.A. and E.P.A. guidelines pertaining to the exposure and disposal of mercury as a hazardous material make it necessary to establish a WVU Health Sciences Center policy for limiting the use of mercury and for managing mercury, the disposal of mercury, and mercury spills.

Policy to Limit the use of Mercury within the Health Science Center and Procedure Guidelines for Managing Mercury and Mercury Spills

Purpose:

The purpose of this policy is to reduce the usage of mercury and mercury containing products that may contribute to non-compliance with regulatory agencies, including but not limited to, those governing occupational exposure to toxic materials in the work place and those governing disposal of hazardous materials. The policy addresses the proper disposition of mercury and all mercury containing products purchased, used, stored or disposed of at the WVU Health Sciences Center.

Definitions:

Purchase: The purchase of alternative non-mercury containing products such as: instruments, temperature and pressure devices, lamps, switches, etc. should be considered for new or replacement items whenever possible within the Health Sciences Center.

Usage: Items containing mercury currently in use, shall be carefully inspected for potential leakage. Broken devices shall be reported to the HSC Safety Office (293-6760) for pickup and disposal. Spills of mercury will immediately be treated as a hazardous material with all precautions and spill safety procedures must be followed.

Storage: Mercury containing items that are breakable must be stored within a secondary container that prevents breakage and spills.

Disposal: Obsolete unneeded mercury and items containing mercury cannot be disposed of by normal waste. They must be considered hazardous and must be properly drained and decontaminated of the mercury before discarding. All mercury, mercury products, waste, and spill clean-up material shall be collected and disposed of through the normal WVU chemical waste procedure.

Mercury Handling Procedure:

Careful handling of mercury and mercury containing devices, instruments and products is necessary because of their subtle cumulative poisonous effects upon humans that are not easily reversed. Metallic mercury is used in many experiments and laboratory apparatuses. *It is one of the most frequently spilled hazardous materials.* Every effort should be taken to prevent metallic mercury spills because the substance is extremely hazardous and time consuming and difficult to clean-up. Once spilled, small globules of mercury can roll into cracks and crevices, under furniture, equipment, into carpet, clothing, etc. These small globules are difficult to detect and can be easily overlooked. Mercury and its compounds can be absorbed into the body by inhalation, skin contact, and ingestion. The human lungs can absorb 80% of the inhaled mercury vapor. Repetitive spills of mercury in areas that are not managed properly add mercury vapor to the ambient air at room temperature and this vapor can exceed the toxic level of O.S.H.A. guidelines. Spilled mercury on clothing or on carpet is more difficult to remove. The clothing or carpet must be considered hazardous and disposed of as hazardous waste.

Mercury spills can be avoided by minimizing its use. However, if mercury or mercury containing devices must be used, proper handling is essential in preventing spills and for maintaining a healthy work environment within regulation guidelines. The following procedures shall be followed when handling mercury and mercury containing apparatuses.

1. Keep mercury containers closed and stored in secondary containers in a well-ventilated area.
2. Transfer small quantities of metallic mercury from one container to another in a hood over a plastic tray or container large enough to confine any spill. Always use a plastic funnel to fill the container and keep the funnel reserved for only

- mercury usage. Fragile items containing mercury should be protected from breakage during handling, use, or storage.
3. Provide mercury manometers and other apparatuses with spill control and containment devices such as plastic trays or pans large enough to contain the quantity of mercury.
 4. Move instruments or apparatuses containing mercury carefully in plastic containment vessels that can be cleaned easily and are large enough to contain the mercury volume if an accidental spill occurs. Never use metal containment vessels. Metal is readily coated when in contact with mercury thus contaminating the vessel.

Mercury Spill Procedures:

If a spill does occur, use the following procedures to reduce exposure and to assist in clean up of mercury. Spilled mercury must be collected for recycling.

1. Report all mercury spills to the **HSC Safety Office** at 293-6760 or to the **Facilities Office** at 293-6924.
2. Notify all individuals in the immediate area that a mercury spill has occurred and restrict traffic in the area to avoid greater contamination by tracking.
3. If the spill has occurred on or near a sink, do not flush globules down the sink drain. Mark the area of the spill. If the spill is in the sink and the mercury has entered the drain notify HSC Maintenance Engineering at 293-4394. *Do not flush the sink with water.*
4. If a spill occurs on the floor or a flat dry surface determine the extent of the spill. Use chalk to mark the boundary of the spill. To concentrate the small droplets of mercury when the spill is on a flat surface, use a 3"X 4" card to gently push the mercury into a single pool. Do not try to pick up the mercury with the card. The collection should be done by suction using a aspirator bulb or a vacuum trap. Place the mercury into a thick walled high-density polyethylene bottle and tighten cap.
5. If a spill occurs in a hot water bath, incubator, oven or equipment with elevated temperature conditions, and exposure to the mercury vapor is likely, shut off the temperature source and leave the area immediately until the device has cooled before attempting to cleanup the spill.

6. Always wear protective gear and plastic disposable shoe covers to prevent shoes from being contaminated when floor spill cleanup is involved.
7. All contaminated debris such as sponges, rags, towels, shoe covers, etc. used to pick up the mercury must be placed in a plastic bag, sealed and labeled as mercury waste. Disposal is to be made through normal WVU chemical pickup.
8. Spill kits are available commercially. Clinics, departments, and laboratories that use metallic mercury should purchase mercury spill kits. Spill kits come with sponges, sulfur powder, and zinc powder for amalgamating the mercury. After use these items should be placed into a plastic bag, sealed and labeled as mercury waste, then disposed of through normal WVU hazardous chemical waste pick up.
9. Collect large quantities of metallic mercury from broken thermometers, manometers and other apparatuses of clinic or laboratory activities in thick wall high-density polyethylene bottles and tighten the cap. The mercury and the mercury waste can be disposed of in a manner consistent with the hazardous chemical waste pick up.
10. *Do not use a normal house keeping vacuum cleaner* to pick up droplets of mercury. The vacuum cleaner can cause the mercury to vaporize

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