DEPAUL UNIVERSITY

Mercury Spill Clean Up Manual

Environmental Health & Safety

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1.0 INTRODUCTION

Mercury is found in thermometers, manometers, vacuum pumps, switches, discharge tubes and as a component in chemical reactions. It is the only metal that is liquid at room temperature. When elemental mercury is spilled, it fragments into small beads that can bounce and roll, with the potential to quickly contaminate a large area. Mercury is classified as a neurotoxin (see Appendix A for more information on its health effects) and requires extreme caution when cleaning up. It is also particularly costly to dispose of. Individuals who are or may become pregnant or have a history of kidney damage should not work with mercury or be present during spill clean ups.

2.0 PREVENTION

The best way to avoid the health hazards and high disposal costs of mercury is to eliminate its use wherever possible. Mercury in experiments and devices can be replaced with a variety of substitute materials that pose less risk.

If mercury must be used, a mercury spill kit should be obtained and kept nearby. A typical spill kit includes specially treated sponges, absorbent powder, a spray bottle, nitrile/latex gloves, shoe coverings, a flashlight, dust pan, plastic scoop and small plastic bags. Mercury spill kits and refill materials are available from most lab safety supply companies.

Mercury should not be stored in areas with poor ventilation. Place mercury containers inside second containment as an added precaution. Do not store mercury near acetylene, fulminic acid or ammonia. When mixed with these materials, explosive reactions may occur.

3.0 SPILL RESPONSE

If a spill occurs, take all necessary steps to prevent others from entering the area. Lock doors, use barricades, warning signs, etc.

3.1 Simple Spill

A spill is considered simple if it involves a single thermometer or other small device containing 30 milliliters of mercury (approximately 1 pound/2 Tablespoons) or less, and is limited to non-porous surfaces in a well ventilated room (i.e. a lab).

3.2 Complex Spill

A spill is considered complex if it involves more than 30 milliliters of mercury (approximately 1 pound/2 Tablespoons), on a porous surface (e.g., carpet, upholstery, concrete), in an area that is not well ventilated, or difficult to clean for any other reason. **Assessing and cleaning complex spills requires specialized equipment, knowledge and training. Contact EHS immediately.**

- **EHS:** 773-325-3344 or 773-325-8985

If a complex spill occurs after hours, on a weekend or holiday, seal off the room and contact Public Safety immediately.

- **LPC:** 773-325-7777

- **LOOP:** 312-362-8400

4.0 SIMPLE SPILL PROCEDURES

If you are not comfortable cleaning up a simple mercury spill, follow the complex spill response above.

The following guidelines should be followed when cleaning up a simple mercury spill:

- **DO NOT** sweep with a broom or vacuum. Doing so will disperse mercury droplets, increase the amount of airborne mercury and contaminate the equipment used.
- Remove all metallic jewelry. Mercury bonds easily to a variety of metals.
- Use protective gloves (nitrile or latex), goggles, lab coat and disposable shoe coverings.
- Using a flashlight to help illuminate the mercury beads, which are usually pinhead size or smaller, create a perimeter around the contamination. Pay special attention to cracks and crevices where beads may be hiding.
- Begin clean up at the outer perimeter. Work carefully and slowly. It is easy to miss contamination or spread it around if work is rushed.
- The preferred way to collect mercury is to dust the spill area with absorbent powder. The powder binds with mercury to create a mercury-metal amalgam that is much safer and easier to handle than elemental mercury. Follow the instructions on the powder to form and collect the amalgam. For vertical or overhead surfaces, use treated sponges rather than powder.
- Another method is to use an index card or rubber squeegee to form a pile that can then be amalgamated with powder or sucked up with a disposable pipette.
- Place all materials used during the clean up into a sturdy, sealed plastic bag for disposal. Do not mix these items with any free mercury you may have collected. Label the bag as mercury spill waste. Contact EHS for pick up and disposal.
- Submit an Incident Report Form describing how the spill occurred and was handled.

APPENDICES

APPENDIX A: HEALTH EFFECTS

Mercury is a neurotoxin that can affect a person's health based on a number of factors including:

- The form it is in (elemental or in organic/inorganic compounds)
- The amount
- The age and health status of the exposed person
- The route and length of exposure

Elemental mercury mainly causes health effects when inhaled as a vapor (which is odorless and colorless). Mercury can also be absorbed through the skin.

Symptoms include:

- Tremors
- Emotional changes
- Insomnia
- Neuromuscular changes
- Headaches
- Disturbances in sensations
- Changes in nerve responses
- Poor performance on tests of mental function

Higher exposures may cause kidney effects, respiratory failure and death.

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