



## ***THE PUNJAB HEALTH SYSTEMS CORPORATION***

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**dated 21.09.11**

**To**

- 1. All Civil Surgeons**  
In the state of Punjab
- 2. Medical Superintendents**  
CH Jalandhar & MKH, Patiala
- 3. All Deputy Medical Commissioners**  
Punjab Health systems Corporation

**Subject:- Guidelines on Mercury, hazards and clean-up response to spillage in bio-medical waste management of PHSC hospitals.**

Reference to the subject cited above.

Please find enclosed the guidelines on Mercury, hazards and clean-up response to spillage in PHSC hospitals. You are requested to circulate the guidelines to SMO.I/c of PHSC hospitals for:

- (a) Staff training.
- (b) Safe handling of mercury equipments.
- (c) Proper mercury spill clean-up response.

Kindly treat it as **MOST URGENT**.

**Managing Director  
PHSC, Mohali**



Please visit: [www.punjabhealth.co.in](http://www.punjabhealth.co.in)

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## **GUIDELINES ON MERCURY, HAZARDS AND CLEAN UP RESPONSE TO SPILLAGE**

### **Background**

Mercury is a naturally occurring heavy metal. At ambient temperature and pressure, mercury is a silvery-white liquid that readily vaporizes and may stay in the atmosphere for up to a year. When released to the air, mercury is transported and deposited globally.

### **Contribution from the health-care sector and regulation**

Health-care facilities are one of the main sources of mercury release into the atmosphere because of emissions from the incineration of medical waste. Mercury is significantly associated with health care industry, and is used in thermometers, blood pressure measuring instruments (sphygmomanometers), esophageal dilators and dental amalgams.

### **Health hazards**

Mercury is highly toxic, especially when metabolized into methyl mercury. It may be fatal if inhaled and harmful if absorbed through the skin. Around 80% of the inhaled mercury vapour is absorbed in the blood through the lungs. It may cause harmful effects to the nervous, digestive, respiratory, immune systems and to the kidneys, besides causing lung damage. Adverse health effects from mercury exposure can be: tremors, impaired vision and hearing, paralysis, insomnia, emotional instability, developmental deficits during fetal development, and attention deficit and developmental delays during childhood. Recent studies suggest that mercury may have no threshold below which some adverse effects do not occur.

### **Appropriate labelling and collection**

Another preventive step to stop mercury from entering the medical waste stream is to label infectious waste and ensure that broken mercury devices do not enter wrong waste streams. It is vital to ensure that waste amalgam, broken equipment and elemental mercury are disposed of in designated boxes in designated areas of the hospital/medical facility or delivered to specific hazardous waste facilities.

### **Mercury Spill Management**

Spill kits are essential for the management of mercury spills and breakages. These kits do not have to be very sophisticated or expensive. Each facility should have two or three kits that are replaced once used. Kits need to

be used by trained personnel to prevent further exposures and each kit should have clean up instructions that are specific to the hospital/facility. A description of a sample spill kit follows below:

### **Contents of a Spill Kit**

1. *Four to five zip lock-type bags*
2. *Waste bags (2 to 6 mm thick)*
3. *Plastic container with lid that seals. (35 mm film canister for example)*
4. *Latex gloves*
5. *Paper towels*
6. *Cardboard strips (index cards for example)*
7. *Eyedropper or syringe (without needle)*
8. *Face mask*
9. *Duct or other sticky tape (30 cm or so)*
10. *Flashlight*
11. *Powdered sulphur or zinc (this can easily be obtained at a pharmacy)*

### **Waste Collection Plan**

It is vital to prevent the mercury from entering the municipal waste streams. Mercury waste should be disposed of in specific containers and labelled as per the facility's hazardous waste protocol.

### **Disposal Methods**

Mercury is classified and regulated as hazardous waste and has to be treated accordingly. Healthcare facilities should have designated storage spaces for waste mercury. Broken and/or obsolete mercury devices should be placed in separate collection containers along with any spilled mercury from the facility.

## **Eleven Step Guide to Cleaning-Up a Mercury Spill**

This guide only applies to small spills, such as a broken thermometer. In the event of large spills, turn down the temperature, turn off internal ventilation, open the window, and inform your local health and safety authority.

### **1. Evacuate area**

Remove everyone from the area that has been contaminated and shut the door. Turn off interior ventilation system to avoid dispersing mercury vapour throughout the facility.

### **2. Put on face mask**

In order to prevent breathing of mercury vapour, wear a protective face mask.

### **3. Put on old clothes**

Change into old clothes and shoes that can be discarded if they become contaminated.

### **4. Remove jewellery**

Remove all jewellery from hands and wrists so that the mercury cannot combine (amalgamate) with the precious metals.

#### **5. Wear gloves**

Put on rubber or latex gloves. If there are any broken pieces of glass or sharp objects, pick them up with care. Place all broken objects on a paper towel. Fold the paper towel and place in a zip lock bag. Secure the bag and label it as containing items contaminated with mercury.

#### **6. Identify surface**

Wood, linoleum, tile and any other like surfaces can easily be cleaned. Carpet, curtains, upholstery or other such surfaces cannot. These items should be thrown away according to the method outlined below. (For carpets, only the affected portion needs to be cut out and removed.)

#### **7. Locate mercury beads**

Locate all mercury beads, then carefully use the cardboard to gather them together. Use slow sweeping motions to prevent accidentally spreading the mercury. Small and hard-to-see beads can be located with the flashlight: hold it at a low angle close to the floor in a darkened room and look for additional glistening beads of mercury that may be sticking to the surface or have gathered in small cracks in the surface. Mercury can move a surprisingly long distance on hard and flat surfaces: be sure to carefully inspect the entire room.

#### **8. Use eyedropper and sticky tape**

Use an eyedropper or syringe (without a needle) to draw up the mercury beads. Slowly and carefully transfer the mercury into an unbreakable plastic container with an airtight lid (such as a plastic film canister). Place the container in a zip-lock bag. Label the bag as containing items contaminated with mercury. After you remove larger beads, use sticky tape to collect smaller hard-to-see beads. Place the sticky tape in a zip lock bag and secure. Powdered sulphur or zinc stains mercury a darker colour and can make smaller beads easier to see. Be careful not to breathe the powder, as it can be mildly toxic.

#### **9. Leak-Proof Bag**

Place all materials used during the cleanup, including gloves, into a leak-proof plastic bag or container. Seal and label it.

#### **10. Final disposal**

Contact your local hospital manager responsible for toxic cleanup and proper disposal to ensure that all mercury contaminated waste now secured in labelled bags is dealt with in accordance with PPCB guidelines.

#### **11. Outside ventilation**

Keep the affected area ventilated to the outside (with windows open and ventilation running) for at least 24 hours after your successful cleanup. If sickness occurs, seek medical attention immediately.

**Six things you should NEVER do:**

- 1.** Never use a vacuum cleaner to clean up mercury: the vacuum cleaner will vaporise the mercury and drastically increase exposure in the area.
- 2.** Never use a broom to clean up mercury: it breaks up the mercury droplets and moves them around, making it harder to decontaminate the area.
- 3.** Never pour mercury down the drain: it can lodge in the plumbing, and contaminate the septic tank and sludge in sewage treatment plants.
- 4.** Never wash mercury-contaminated items in a washing machine: mercury can contaminate the sewage system and the washing machine.
- 5.** Never continue wearing shoes and clothing that might have been contaminated in the mercury spill: this increases the wearer's exposure and helps spread contamination.
- 6.** Never burn shoes, clothing, fabric or anything that has been contaminated with mercury: this puts mercury into the atmosphere.