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## Reducing UPOPs and Mercury Releases from The Health Sector in Africa

# *Module 38: Mercury Spillages*

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# Small – large spill

- ▶ Depending on the accidentally emitted mercury
- ▶ Small spill: e.g. breaking of a thermometer
- ▶ Major event – large mercury spill
  - If more than 30 ml two tablespoons has been spilled and gets into the environment, i.e., outdoors, sewer, groundwater or surface water, or that threatens public health, it must be reported immediately

(<https://www.dhs.wisconsin.gov/mercury/smspills.htm>)



# General: Mercury Spill Kits

1. Prepare spill kits with all the items listed in the preceding slides
2. Include a step-by-step clean-up procedure as a guide
3. Place spill kits in readily accessible locations
4. Train staff on the use of the spill kits
5. Replace spill kit contents that have been used after every spill



# Managing a Small Mercury Spill

- Personal protective equipment (PPE) needed to
- clean a spill:
  - A pair of rubber or nitrile gloves
  - Safety goggles or protective eyewear
  - Coveralls, apron, and other protective clothing
  - Disposable shoe covers
  - Face Mask

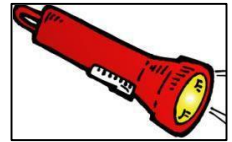




# Managing Small Mercury Spills

- Other things needed to clean a spill:

- Flashlight
- Plastic-coated playing cards or thin pieces of plastic
- Small plastic scoop or plastic dust pan
- Tweezers
- Eyedropper or syringe (without the needle)
- Duct tape or sticky tape
- “Danger: Mercury Waste” labels to put on waste containers





# Managing Small Mercury Spills

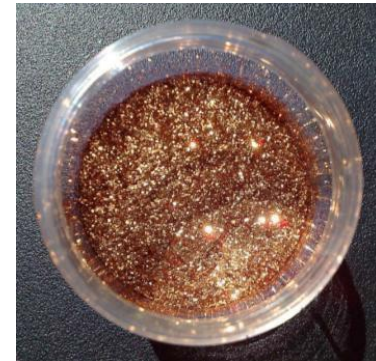
- Other things needed to clean a spill:  
Containers for mercury waste
  - Air-tight, sealable plastic bags (small and large sizes, thickness: 2 to 6 mils, or 50 to 150 microns)
  - Small, air-tight, rigid plastic container with some water or vapor suppression agent
  - Air-tight, puncture-resistant, rigid plastic or steel jar or container with a wide opening
  - Regular plastic waste bags (thickness: 2 to 6 mils, or 50 to 150 microns)
  - Plastic tray





# Managing Small Mercury Spills

- Other things needed to clean a spill: Vapor suppression agents
  - Sulfur powder (may be available from pharmacies) or
  - Zinc or copper flakes (may be available from hardware stores) or
  - Commercial absorbent pads or vapor suppressants, and
  - Brush to remove powder or flakes





# Managing a Mercury Spill

- Materials for decontamination recommended to clean a spill:
  - Decontamination solutions can be made of sodium thiosulfate solution (photographic fixer), or
  - A mixture of sodium thiosulfate and EDTA, or
  - Vinegar, hydrogen peroxide, and cotton swabs for final cleaning when using sulfur powder, or
  - Commercial decontaminant kit, and piece of soap and paper towels







# Procedure to clean up a small mercury spill

1. Quickly determine the extent of the spill
2. Immediately block off foot traffic for a radius of about 2 meters around the spill
3. Contain the spill – use rags or impervious materials to prevent mercury balls from spreading or falling into cracks or drains
4. Evacuate the immediate area – give priority to pregnant women and children
5. Minimize the spread of vapors to interior areas – close doors to interior areas, turn off ventilation or air conditioning that circulates air to other areas



# Procedure to clean up a mercury spill

6. Reduce vapor concentrations in the spill area if possible – open doors or windows that lead to outside areas that are free of people
7. Prepare for clean-up by getting the mercury spill kit and removing your jewelry, watch, mobile phone and other metallic items that could amalgamate with mercury; cover eyeglass metal frames
8. Put on PPE – put on old clothes, apron or coveralls, shoe covers, rubber or nitrile gloves, eye protection and respiratory protection
8. Use tweezers to remove broken glass
9. Place the wide mouth jar on the plastic tray



# Procedure to clean up a small mercury spill

## 10. Cleaning procedure:

### a) Hard surfaces:

- First remove visible mercury balls and broken glass beginning from the outer edge of the spill and moving towards the center of the spill
  - » Use playing cards or pieces of plastic to slide mercury balls into the scoop then into the jar over the tray to catch spillage
  - » Use the eye dropper or syringe to capture small mercury beads
- Search and remove tiny mercury droplets:
  - » Shine the flashlight at low angles to see reflections of tiny droplets; use sticky tape to pick up tiny droplets and place the tape with the mercury in a sealable plastic bag
- Sprinkle sulfur powder, zinc or copper flakes on cracks, floor crevices and hard surfaces that have come in contact with mercury;
- use a brush to collect the powder or flakes and put them in a resealable bag
- Wipe with vinegar-soaked and peroxide-soaked swab



# Procedure to clean up a mercury spill

## 10. Cleaning procedure (continued):

### b) Clean up of carpets, rugs, etc.

- Remove contaminated soft material – use a knife to cut out contaminated carpets, rugs, etc. and
- put in a resealable bag

### c) Clean up of drains:

- carefully transfer any mercury in the J or S trap and
- transfer to an air-tight container;
- replace the trap

## 11. Dispose of decontaminated material in leak-proof, sealable plastic bags and dispose as mercury waste

## 12. Label and seal all contaminated material



# Procedure to clean up a mercury spill

16. Wash hands and all exposed skin with soap and water
17. Ventilate the spill area
  - Place heaters and fans to volatilize residual mercury and to blow contaminated air to the outside (if possible 48 hours)
  - For facilities with central ventilation, increase air exchange rates for several days
18. Conduct medical monitoring for staff or patients that were exposed to high levels of mercury
19. Write a report on the spill incident and recommend improvements to prevent future spills (healthcare facilities)



# What NOT to do during a mercury spill

- Do NOT use a regular vacuum cleaner – it will spread more mercury vapors and will contaminate the vacuum cleaner
- Do NOT wash contaminated clothing or fabrics in a washing machine – it will contaminate the machine and wastewater
- Do NOT use a large broom to sweep mercury – it could break up mercury balls into smaller droplets
- Do NOT pour mercury down the drain – it will contaminate the plumbing system and septic or sewage treatment system for years to come
- Do NOT spread mercury with your shoes – use disposal shoe covers or decontaminate shoes



# Cartoon

- ▶ Mercury Spill by a broken mercury containing thermometer in households

