

## SPILL MANAGEMENT IN HEALTHCARE SETTINGS

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### ABSTRACT

Spill management for blood and bodily substances is essential in the health department. Staff can minimize the risk to themselves, visitors, and patients by following the standard protocol of spill management. The basic principles of handling blood and substances are personal protective equipment (PPE) and maintaining the essential precautions. The Spill should be cleaned up before the area is cleaned, and the aerosol formation should be avoided.

Key Words: Spillage, Biological Spill, Cytotoxic, Mercury Spill

### INTRODUCTION

A spill kit is used to clean and disinfect the sites where blood has been split. The kit may contain safety disposal of sharps, blood or body fluid contaminants. Cleaning types of equipment like a mop, bucket, and cleaning agent. This should be stored in an area that everybody knows (1).

#### Content Of Spill Kit

Plastic overshoes at least two

- Two waste bags which are yellow in colour.
- Two pairs of disposable gloves.
- Goggles.
- Plastic apron.
- Surgical gown.
- Absorbent pad to contain liquids Spill.
- Absorbent towel to clean up spills.
- Freshly prepared 1 % of Sodium Hypochlorite.
- Label with `contaminated with the biological Spill.
- Incidence form.
- Copy of spillage procedure.

#### Steps For Spillage Cleaning

- Act immediately.

- Restrict access to the spillage area. (Use of caution boards)
- After the spillage, clean up and dispose of the spillage waste material in the yellow bag.
- Obtain the spill kit and wear a protective gown, gloves, mask and goggles.
- Open waste disposable bag (Double bag).
- Inform the sister-in-charge to ensure prompt assistance

### **Types Of Spills**

1. Biological Spill
2. Cytotoxic Spill
3. Mercury Spill

### **1-Biological Spill-Spillage Of Blood or Body Fluid**

#### **Types Of Spill**

- Spot spill
- Small Spill
- Large Spill
- SPOT CLEANING

### **Spot Spill Management**

- Wear appropriate protective clothing and gloves.
- Wipe up the spot immediately with a solution of 1% Sodium Hypochlorite.
- Wipe the area with a cloth, paper or tissue.
- The contaminated particle should be discarded in the yellow bag.
- Wash hands.

### **Small Spills Management (Up To 10cm Diameter)**

- Select proper PPE.
- Cover the area of the Spill with a paper towel.
- Spray freshly prepared 1% of Sodium Hypochlorite or pour gently from periphery to centre.
- Immediately wipe the Spill with absorbent material.
- Place contaminated porous material into the container or plastic bag for proper disposal.
- Clean the area with a detergent solution, using a disposable cloth or sponge.
- Wipe the area with 1% sodium hypochlorite and allow it to dry.
- Dispose of all materials safely following biohazard guidelines.
- Perform hand hygiene. (2)

### **Large Spill( Diameter More Than 10cm) Management**

- arranges cleaning material and equipment.
- Wear disposable gloves, goggles and a plastic apron.
- With a paper towel, cover the area of the Spill.
- Spray freshly prepared 1% of Sodium Hypochlorite or pour gently from periphery to centre.
- Collect the disposable paper towel from edge to centre and discard it in the yellow bag.

- Wipe the area with another paper towel to remove any remaining blood.
- Mop with 1% Sodium Hypochlorite.
- Use warm water and detergent, wash the hard surface at least twice, and allow to dry.
- Discard the previously used yellow bag into another yellow bag with the label 'biological hazardous'.
- Wash hands.
- Inform the sister-in-charge and fill the incidence form as per hospital policies.

## 2-Cytotoxic Spill



Figure:1. Source: <https://www.helapet.co.uk/article.php?id=215>



Figure:2. Source: <https://www.enviroguardsolutions.com/cytotoxic-spill-kit>



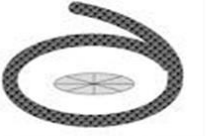


## Articles


- Two plastic shoes cover.
- Two yellow clinical waste bags.
- Two pairs of latex gloves.
- Goggles.
- Particular respirator mask for powder spills.
- Plastic apron.
- Surgical gown.
- Absorbent pad to contain liquid spills.
- Absorbent towel to clean up spills.
- Small scoop to collect glass Particles.
- Container of 1% Sodium Hypochlorite solution.
- Label: 'contaminated with cytotoxic drugs.
- Copy of spillage procedure.

## Steps To Follow

### Cleaning up Chemical Spills

EHS: 609-258-5294 PUBLIC SAFETY: 609-258-3333

<b>1. Call Public Safety at 609-258-3333 if...</b> <ul style="list-style-type: none"> <li>• anyone is hurt,</li> <li>• the spill is greater than one gallon</li> <li>• there is a release to the environment</li> <li>• there is a violent reaction or fire</li> </ul>	<b>2. For spills less than one gallon, use this spill kit.</b> 
<b>3. Put up "Caution: Chemical Spill" tape. Notify people in the surrounding area.</b> 	<b>4. Protect nearby floor drains with a spill sock.</b> 
<b>5. Put on the appropriate PPE.</b> 	<b>6. Pour absorbent from the outside of the spill to the center.</b> 





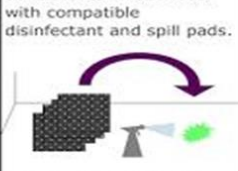
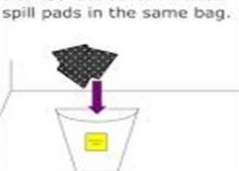


<b>7. Collect absorbent in a bag. Label the bag as hazardous waste and the contents.</b> 	<b>8. Take extra caution with regard to shards of glass and chemical vapors. Call EHS for assistance at 609-258-5294.</b> 
<b>9. Decontaminate area with compatible disinfectant and spill pads.</b> 	<b>10. Collect contaminated spill pads in the same bag.</b> 
<b>11. Remove PPE and collect disposables in the same bag. Seal with a twist tie.</b> 	<b>12. Contact EHS at 609-258-5294 or ehs@princeton.edu to refill the spill kit. Report spills to your supervisor.</b> 

Figure:3.Source: <https://ehs.princeton.edu/chemical/spill/procedures>

## Liquid Spill

- If broken glass is present, pick it up with the disposable dustpan and place it in the puncture-proof container.
- Cover the area of the Spill with a paper towel.
- Spray freshly prepared 1% of Sodium Hypochlorite or pour gently from periphery to centre.

- If liquids spilt on a hard surface, immediately clean the area with absorbent paper towels that start at the external site of the Spill and move in a circular motion towards the middle to contain the Spill.
- Pick up the absorbent pad surrounding the Spill; place it in the yellow plastic bag, and dry the area with a fresh absorbent pad.
- It is essential to wash the surface with soapy water and dry with paper towels. The floor should then be given a routine clean immediately.
- Remove protective clothing, place all disposable goods in a yellow plastic bag, and then in the hazardous waste container.
- Wash hands.

### Powder Spill



Figure:4. Source <https://food-hacks.wonderhowto.com/how-to/clean-up-liquid-spills-more-easily-with-flour-0158639/>

- If the spillage is powder, carefully cover it with an absorbent pad dampened with water.
- Continue clean-up as per liquid spillage.
- Ensure a replacement of the spill kit immediately.
- In case of acute exposure of personnel to chemotherapeutic materials;
- Exposed body surfaces shall be washed with copious amounts of soap and water,
- If the spillage is on the clothing, remove and change clothes immediately.
- Sterile isotonic eyewash shall be used for flushing of eyes.
- The person involved in the exposure incident shall report directly to the emergency room or clinic for evaluation and treatment.

- If spillage is on bed linen, wear gloves and an apron, remove it immediately, and treat it as soiled linen.
- Notify the physician if the drug spills on the patient and follow the same steps and document into the patient record and incident report

### **3-Mercury Spillage**

- Glass bottle with a lid that seals.
- Latex gloves.
- Paper towels.
- Cardboard strips (index cards, for example), Eyedropper or syringe (without needle).
- Face mask.
- Duct or another sticky tape (30 cm or so).
- Flashlight.
- Two clinical waste bags (yellow bag).
- Powder of sulphur or zinc can be obtained at the pharmacy.
- Follow the waste collection and disposal protocols

### **Mercury Spill Management**

- Wear a PPE kit.
- It is essential to remove jewellery or cover it with rubber or gloves as mercury binds with metal.
- Any glass fragments should be put into a sharp container
- Pick up broken glass carefully and discard it in a sharps container(puncture-proof container).
- Mercury droplets may be sucked by a syringe, and tiny beads are collected and scooped carefully. Then place it in a water glass container.
- Using the flashlight, locate the remaining mercury, which will also collect carefully.
- Check the remaining beads and place them in the water glass container.
- Label the glass container as “MERCURY WASTE” after tight sealing.
- Place all the things used for cleaning in a yellow bag and keep it in a safe area.
- Use neutralizing agents like 20% calcium sulphate or sodium thiosulphate clean the area.
- Keep the room ventilated for at least 48 hours and wash your body that is exposed to mercury.
- Clean your hand correctly.
- Mercury should be disposed of by handing it over to the appropriate agency.

### **Things that shouldn't be done**

- Never use a broom; it will break up the mercury.
- Do not pour mercury down the drain.
- It is important that you never walk around the contaminated shoes or clothes.
- The mercury-contaminated items are never put in washing.

### CONCLUSION

People who are working in the hospital field are in very close proximity to hazardous substances like body fluids, drugs and cytotoxic chemicals. Such Spill may cause infection to the staff, visitors and patients. Each hospital has its own hospital policy for following Spill management and has well-trained staff to act immediately to minimize the severity of the complications.

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