

# **Biosafety**

# **Spill Response**

# **Guide**

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# Biosafety Spill Response Guide

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This section outlines the basic procedures for dealing with some of the biological spills that you may encounter in your research laboratory. All lab personnel should refer to the relevant spill response procedures before initiating their experiments.

## 1 Composition of a Basic Spill Kit

Microbiological and biomedical research laboratories should prepare and maintain a biological spill kit. A spill kit is an essential safety item for labs working with microbiological agents classified at Biosafety Level 2 or higher and for groups working with large volumes ( $\geq 1$  liter) of Biosafety Level 1 material. A basic spill kit should include:

- Concentrated household bleach
- A spray bottle for making 10% bleach solutions
- Forceps, autoclavable broom and dust pan, or other mechanical device for handling sharps
- Paper towels or other suitable absorbent
- Biohazard autoclave bags for the collection of contaminated spill clean-up items
- Utility gloves and medical examination gloves
- Face protection (eye wear and mask, or full face shield)

Additional personal protective equipment, such as Tyvek jump suits and powered air-purifying respirators (PAPR's), may be required for response to spills in Biosafety Level 3 laboratories.

Representatives from the EHS Occupational Health and Safety section are available if you have any questions regarding biological spill response procedures or decontamination (785 - 3550). All spills in a BL3 laboratory shall be reported to EHS immediately.

## 2 Biosafety Level 1 (BL1) Spill

Notify others in the area, to prevent contamination of additional personnel and environment. Remove any contaminated clothing and wash exposed skin with disinfectant.

### 2.1 Clean-up of BL1 Spill

Wearing gloves, lab coat, and face protection, cover spill with paper towels, pour concentrated disinfectant around the spill allowing it to mix with spilled material. Allow suitable contact time.

Pick up any pieces of broken glass with forceps and place in a sharps container.

Discard all disposable materials used to clean up the spill into a biohazard autoclave bag.

Wash hands with soap and hand-washing disinfectant.

## 3 Biosafety Level 2 (BL2) Spill

Avoid inhaling airborne material, while quickly leaving the room. Notify others to leave. Close door, and post with a warning sign.

Remove contaminated clothing, turning exposed areas inward, and place in a biohazard bag.

Wash all exposed skin with soap and water.

Inform Supervisor, and, if assistance is needed, consult the Biosafety Office (785-3550).

### 3.1 Reporting of Spills Involving rDNA Materials

Spills or accidents in BSL2 laboratories involving recombinant DNA materials resulting in an overt exposure must be immediately reported to EHS at 203-785-3555. EHS will assist in reporting the

incident to the NIH Office of Biotechnology Activities (OBA) as required under the *NIH Guidelines for Research Involving Recombinant or Synthetic Nucleic Acids* (NIH Guidelines).

### **3.2 Clean-up of BL2 Spill**

- Allow aerosols to disperse for at least 30 minutes before reentering the laboratory. Assemble clean-up materials (disinfectant, paper towels, biohazard bags, and forceps).
- Put on protective clothing (lab coat, face protection, utility gloves, and booties if necessary). Depending on the nature of the spill, it may be advisable to wear a HEPA filtered respirator instead of a surgical mask.
- Cover the area with disinfectant-soaked towels, and then carefully pour disinfectant around the spill. Avoid enlarging the contaminated area. Use more concentrated disinfectant as it is diluted by the spill. Allow at least a 20 minute contact time.
- Pick up any sharp objects with forceps and discard in a sharps container. Soak up the disinfectant and spill using mechanical means, such as an autoclavable broom and dustpan, since there may be sharps under the paper towels, and place the materials into a sharps container. Smaller pieces of glass may be collected with cotton or paper towels held with forceps. If no sharps were involved in the spill discard the materials into an autoclave bag.
- Wipe surrounding areas (where the spill may have splashed) with disinfectant.
- Soak up the disinfectant and spill, and place the materials into a biohazard bag.
- Spray the area with 10% household bleach solution and allow to air-dry (or wipe down with disinfectant-soaked towels after a 10-minute contact time). Place all contaminated paper towels and any contaminated protective clothing into a biohazard bag and autoclave.
- Wash hands and exposed skin areas with disinfectant or antiseptic soap and water.

### **3.3 Blood Spills**

For blood or other material with a high organic content and low concentration of infectious microorganisms:

- Wear gloves, eye protection, and a lab coat.
- Absorb blood with paper towels and place in a biohazard bag. Collect any sharp objects with forceps or other mechanical device and place in a sharps container.
- Using a detergent solution, clean the spill site of all visible blood.
- Spray the spill site with 10% household bleach and allow to air-dry for 15 minutes.
- After the 15 minute contact time, wipe the area down with disinfectant-soaked paper towels.
- Discard all disposable materials used to decontaminate the spill and any contaminated personal protective equipment into a biohazard bag.
- Wash your hands.

## **4 Spill of a Biohazardous Radioactive Material**

A biohazardous spill involving radioactive material requires emergency procedures that are different from the procedures used for either material alone. Use procedures that protect you from the radiochemical while you disinfect the biological material.

Before any clean up, consider the type of radionuclide, characteristics of the microorganism, and the volume of the spill. Contact the EHS Radiation Safety Office (785-3550) for isotope clean-up procedures.

Avoid inhaling airborne material, while quickly leaving the room. Notify others to leave. Close door, and post a warning sign.

Remove contaminated clothing, turning exposed areas inward, and place in a biohazard bag labeled with a radioactive materials label or a radioactive waste container labeled with a biohazard label.

Wash all exposed skin with disinfectant, following it with a three-minute water rinse.

Inform supervisor and Radiation Safety Office of spill, and monitor all exposed personnel for radiation. If assistance is needed in handling the microorganism, contact the Biosafety Office at 785-3550.

#### **4.1 Clean-Up of a Biohazardous Radioactive Material**

Allow aerosols to disperse for at least 30 minutes before reentering the laboratory. Assemble clean-up materials (disinfectant, autoclavable containers, forceps, towel, and sponges), and confirm with the Radiation Safety Office that it is safe to enter the lab.

Put on protective clothing (gown, surgical mask, gloves, and shoe covers). Depending on the nature of the spill, it may be advisable to wear a HEPA-filtered respirator instead of a surgical mask.

Cover the area with disinfectant-soaked towels, and carefully pour disinfectant around the spill. Avoid enlarging the contaminated area. Use more concentrated disinfectant as it is diluted by the spill. Allow at least 20 minutes contact time.

**Do Not** use bleach solutions on iodinated material, radioactive gas may be released. Instead, use an alternative disinfectant such as an iodophor or phenolic.

Handle any sharp objects with forceps. Wipe surrounding areas, where the spill may have splashed, with disinfectant.

Soak up the disinfectant and spill, and place the biologically decontaminated waste, along with all contaminated protective clothing, into an approved radiation container and label it according to Radiation Safety Guidelines. Contaminated protective clothing must also be biologically decontaminated prior to disposal as radioactive waste.

**Do Not** autoclave the waste unless the Radiation Safety Officer approves this action. If waste cannot be autoclaved, add additional disinfectant to ensure biological decontamination of all the materials.

Wash hands and exposed skin areas with disinfectant; monitor personnel and spill area for residual radioactive contamination.

If skin contamination is found, repeat decontamination procedures under the direction of the Radiation Safety Officer.

If the spill area has residual activity, determine if it is fixed or removable and handle accordingly.

Discarding items contaminated with radioactive materials:

Place the contaminated item(s) on absorbent paper.

Spray disinfectant (10% household bleach) on the contaminated areas and allow 20 minute contact time.

Wrap the item(s) inside the paper and dispose of as radioactive waste.