



# Response Guide For BSL-1 and BSL-2 Laboratories and Recombinant DNA Laboratories

Environmental Health and Safety  
Daytime Emergency Phone Number: 541-737-4557

## Table of Contents

Composition of a Basic Spill Kit	2
Exposure Incidents	2
Biosafety Level 1 (BSL-1) Spill	2
Clean-up of BSL-1 Spill	2
Biosafety Level 2 (BSL-2) Spill	3
Clean-up of BSL-2 Spill	3
Blood Spills	3
Spill in a Biological Safety Cabinet	4
Centrifuge Spill	4

**All spills, accidents or releases of pathogens, recombinant DNA or transgenic plants / animals must be reported to the Biological Safety Officer at 541-737-4557 or email at [matthew.philpott@oregonstate.edu](mailto:matthew.philpott@oregonstate.edu)**

Most Recent Revision: June, 2018

Approved by Institutional Biosafety Committee on: November 12, 2012

This guide outlines the basic procedures for dealing with exposures and some of the biological spills that may be encountered in a biological research laboratory: blood or other human source body fluids, cultures of infectious agents or those containing recombinant DNA – bearing microorganisms or cells. All lab personnel should refer to the relevant spill response procedures before initiating their experiments.

### **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 requiring handling using Biosafety Level 2 (BSL-2) or higher and for groups working with large volumes (> 1 liter) of recombinant DNA (rDNA) containing cultures or other rDNA material. The following items should be included in the spill kit:

- Concentrated household bleach
- A spray bottle for making 10% bleach solutions
- Forceps, autoclavable broom and dust pan, or other mechanical devices for handling sharps
- Paper towels or other suitable absorbent
- Biohazard 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)
- Sharps container

Clorox bleach is recommended as a standard disinfectant in this guide, but use of chlorine – based disinfectants is subject to some caveats. Other disinfectants may be used provided the disinfectant is effective against the agents in use at the appropriate dilutions and contact time. Disinfectants should be registered with the Environmental Protection Agency as “tuberculocidal” to meet the requirements of the Occupational Health and Safety Administration’s Bloodborne Pathogens Standard. The EPA list of approved disinfecting agents can be accessed <http://www.epa.gov/oppad001/chemregindex.htm>

Representatives from the EHS are available if you have any questions regarding biological spill response procedures or decontamination (541-737-4557).

### **Exposure Incidents**

Exposures are any eye, nose, mouth or parenteral contact with potentially infectious materials or recombinant DNA – containing materials.

- Needlesticks / puncture wounds / contact with cuts or scrapes and infectious materials:
  - Wash the affected area with antiseptic soap and warm water several minutes, then treat with antiseptic; seek medical attention as necessary.
- Mucous membrane exposure:
  - Flush the affected area for up to 15 minutes using an eyewash station. Seek medical attention as necessary; if exposure involves human source biological materials, always seek medical attention.
- Report all exposures to the Principal Investigator and Biological Safety Officer. Information to include in reporting is the type of materials involved, status of person(s) exposed (student, staff, faculty), route(s) of exposure.

### **Biosafety Level 1 (BSL-1) Spills**

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

### **Clean-up of BSL-1 Spill**

- Put on disposable gloves, lab coat, and splash protection (eye protection + surgical mask if a large spill with potential for splashes)
- Pick up any pieces of broken glass or other solid materials in the spill with forceps or tongs and place contaminated broken glass in a sharps container.
- Cover spill with paper towels or other absorbent material, pour or spray disinfectant around the spill allowing it to mix with spilled material. Allow suitable contact time, usually 5-10 minutes; material can be scooped up before this timeframe, but organisms may not be inactivated.
- Mechanically scoop up the absorbed spill using scoops or cardboard.
- Discard all disposable materials used to clean up the spill into a biohazard bag.
- Wash hands with soap and water.

### **Biosafety Level 2 (BSL-2) Spill**

- If agent poses an inhalation risk, quickly leaving the room. Notify others to leave. Most agents used at BSL-2 are not airborne pathogens. Close door, and post with a warning sign.
- If liquid spill has contaminated clothing, remove contaminated clothing, turning exposed areas inward, and place in a biohazard bag.
- Wash all exposed skin with soap and water.
- Inform Principal Investigator or supervisor, and, if assistance is needed, consult EHS at 541-737-4557 or call the WCC at 541-737-2969 and ask them to contact EHS On-Call by radio for assistance.

### **Clean-up of BSL-2 Spill**

- Allow aerosols to disperse for at least 15 minutes before reentering the laboratory. (If applicable.)
- Assemble clean-up materials from spill kit (disinfectant, paper towels or other absorbent, biohazard bags, and forceps).
- Put on protective clothing (lab coat, eye/face protection, gloves, shoe covers if necessary).
- Depending on the nature of the spill, it may be advisable to wear an N-95 filtering face piece. The N-95 should only be worn if there is an airborne hazard present, and only by those who have met the requirements of the OSU Respiratory Protection Program.
- Pick up any sharp objects with forceps or tongs and discard in a sharps container. Smaller pieces of glass may be collected with cotton or paper towels held with forceps.
- Cover the area of the spill with paper towels or other absorbent material sufficient to soak up the liquid, and then carefully pour or spray disinfectant around the spill. Avoid enlarging the contaminated area. Use more concentrated disinfectant as it is diluted by the spill. Allow at least 5-10 minute contact time.
- Using mechanical means, scoop up the absorbed spill material and discard in a biohazard bag for subsequent autoclaving.

- Spray and wipe surrounding areas (where the spill may have splashed) with disinfectant.
- Spray the area with disinfectant and wipe up with paper towels. Place all contaminated paper towels and any contaminated protective clothing into a biohazard bag and autoclave.
- Remove and discard gloves and wash hands and exposed skin areas with soap and water.

### **Blood and Body Fluids 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.
- 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% bleach or other disinfectant and allow 10 minute contact time.
- After the 10 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.
- Remove gloves and wash your hands with soap and water.

### **Spills within a Biological Safety Cabinet (BSL-2)**

- Leave the biological safety cabinet blower on and begin cleanup immediately.
- While wearing PPE (gloves and lab coat at minimum), cover the spill area with paper towels or disinfectant soaked paper towels. Do not place your head in the cabinet to clean the spill, keep your face behind the view screen.
- If necessary, flood the work surface as well as the drain pans and catch basins below the work surface, with disinfectant. Be sure the drain valve is closed before flooding the area under the work surface.
- Wipe cabinet walls, work surfaces, and inside the view screen with disinfectant.
- Lift the front exhaust grill and work surface; wipe all surfaces with disinfectant. Be sure no paper towels or soiled debris are blown into the area under the spill tray.
- If the work surface, as well as drain pans and catch basins under the work surface, have been flooded with disinfectant soak up the disinfectant in the work surface. Place a container under the drain valve and drain the disinfectant under the work surface into the container.
- Wipe the areas under the work surface to remove residual disinfectant.
- Collect all cleanup materials and used gloves in a biohazard bag for autoclaving.
- Wash hands and exposed skin with soap and water.
- Notify the PI or supervisor.
- If the spill overflows the drain pan/catch basin under the work surface into the interior of the biological safety cabinet notify Environmental Health & Safety. A more extensive decontamination of the biological safety cabinet may be required.

### **Centrifuge Spills (BSL-2)**

- Always use sealed safety buckets or sealed rotors with O-rings. Examine O-ring and replace if worn, cracking or missing. Check tubes and bottles for cracks and deformities before each use. Whenever possible, use centrifuge tubes and bottles with tight sealing caps.

- Wait several minutes before opening the centrifuge following the end of a run with potentially hazardous biological material. If a spill is identified after the centrifuge lid is opened, carefully close the lid and do not re-open for at least 30 minutes.
- Remove any contaminated protective clothing and place into a biohazard bag. Wash hands and any exposed skin surfaces with soap and water.
- Notify the PI or supervisor.
- After 30 minutes:
  - Enter the lab with personal protective equipment and spill cleanup materials. Eye / face protection, lab coat and gloves should be worn.
  - Transfer rotors and buckets to a biological safety cabinet, using a tub or other suitable secondary containment.
  - Spray rotor and/or buckets in 70% ethanol, quaternary ammonium compound, or other non-corrosive disinfectant effective against the agent in use. Intact tubes may be wiped down and placed into a clean rack or container.
  - Carefully retrieve any broken glass from inside the centrifuge using forceps and discard into a sharps container. Smaller pieces of glass may be collected with cotton or paper towels held with forceps. Carefully wipe the inside of the centrifuge with disinfectant.
  - Place contaminated items and disposable personal protective equipment in an autoclave bag and autoclave.
  - Remove gloves and wash hands with soap and water.