

This SOP is based on requirements established by the following standards:

- **NIH Guidelines for Research Involving Recombinant DNA Molecules (NIH Guidelines), National Institutes of Health**
- **Biosafety in Microbiological and Biomedical Laboratories, 6TH Ed., (BMBL), Centers for Disease Control and National Institutes of Health**
- **OSHA Bloodborne Pathogens Standard, 29 CFR 1910.1030, Occupational Safety and Health Administration**

Biohazardous materials are infectious agents or biologically-derived infectious materials that present a risk or potential risk to the health of humans, animals, plants, or the environment. The risk can be direct through infection or indirect through damage to the environment.

Biohazardous materials include:

- Recombinant and synthetic nucleic acids
- Biosafety Level-1 and Biosafety Level-2 organisms and viruses infectious to humans, animals or plants (e.g., parasites, viruses, bacteria, fungi, prions, rickettsia)
- Biologically active agents (i.e., toxins, allergens, venoms) that may cause disease in other living organisms or cause significant impact to the environment or community

OVERVIEW

Prevention is the most important part of any spill management plan.

- Be sure to read and understand all relevant standard operating procedures (SOP's) and protocols for safe manipulation of all biohazards before you begin work.
- Identify the nearest eye wash, and make sure access is clear and not obstructed. Verify that spill kits, spill containment and clean-up supplies, including the appropriate disinfectant, are readily available. Re-supply spill kits after each use so they will be ready the next time they are needed.
- If the biosafety cabinet (BSC) fails or isn't operating properly, contact the Biosafety Officer at EHS; report any loss of containment to the PI immediately.
- An outside vendor will have to be brought in to repair the BSC. Post an "Out of Service" sign on it and do not use.
- Report any potential biological exposure to the PI and the Occupational Health Nurse at Health Services.
- Always line the work surface of the BSC with absorbent matting before you begin working and tape the corners to hold it in place. If you have a spill it will be contained on the

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matting. Spray the spill with 70% Ethanol. At the end of your work, roll the matting up and dispose in the biowaste box.

- Work only in a certified BSC and alert fellow lab occupants when active manipulation is in progress. Restrict foot traffic behind the operator when a BSC is in use to minimize turbulence within the cabinet.
- Routinely practice spill clean-up procedures as part of the lab's training program. The best time to do this is the beginning of each semester when new personnel join the lab so everyone knows their roles and responsibilities in an emergency.
- Restrict access to the area by non-essential personnel during active manipulation of biohazards.

SPILL RESPONSE

The following guidelines provide a quick reference for anyone who has to respond to an incident.

Each lab that works with biohazards should have a biological spill kit and its own spill response procedures which will be specific to the way that laboratory is set-up and operated. If you work with biohazards, consult with your supervisor to be sure you have received specialized training for your area.

SMALL BSL-2 SPILL CLEAN-UP (< 100 mL)

- When a container is dropped, there will be splatter and an aerosol will be formed. Avoid inhaling aerosols and quickly leave the room. Notify others to leave. Close the lab doors, and post "Biohazard Spill – Do Not Enter" signs at entrances.
- Inform your supervisor, and, if assistance is needed, call the URI Police Dispatch non-emergency line at (401) 874-4910 to be connected to the EHS staff member on call.
- Allow aerosols to settle for at least 20 minutes before re-entering the lab.
- Assemble clean-up materials (disinfectant, paper towels, sharps container, biohazard bags, forceps, dustpan and small broom and a clear plastic bag).
- Put on protective clothing (lab coat, surgical mask, safety glasses, utility gloves, and waterproof shoe covers if the spill is on the floor).
- Cover the area with paper towels and carefully pour hospital-grade disinfectant over the spill, starting from the outside and working inward toward the center to keep from enlarging the contaminated area. Allow at least 10 minutes of contact time for proper

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decontamination.

- If the spill is large (but < 100 mL), apply a second or third round of disinfectant. Allow at least 10 minutes contact time between each application for proper decontamination.
- Pick up sharp objects with forceps, or use a dustpan and small broom, and discard in a sharps container if they will fit. If they don't fit, use a cardboard box lined with a clear plastic bag.
- If a hospital grade disinfectant was used, carefully pick up soaked paper towels and dispose to the trash in a clear plastic bag. If 10% bleach was used, collect paper towels in a clear plastic bag and dispose as chemical hazardous waste in your SAA. Don't forget to put a hazardous waste label on the bag!
- Collect decontaminated broken glass or plastic with wet paper towels held with forceps. Discard in the sharps container. If the pieces are too large, wrap them in paper towels, place them in a clear plastic bag, and put the bag in a cardboard box. Seal the box, label it "Broken lab glassware" then carry it out to the Dumpster.
- Wipe surrounding areas where the spill may have splashed with disinfectant.
- Remove contaminated lab coat, turning exposed areas inward. Spot-decontaminate with a hospital grade disinfectant or 70% Ethanol.
- Wash hands and exposed intact skin areas (no open cuts) with disinfectant or antiseptic soap and warm water and dry with clean paper towels.

LARGE BSL-2 SPILL CLEAN UP (> 100 mL)

Evacuate the lab and post "Biohazard Spill" signage at all entrances. You may have to physically block lab entrances with chairs since the doors between labs cannot be locked (College of Pharmacy and CBLS).

Request clean-up assistance from EHS by calling Police Dispatch non-emergency at (401) 874-4910

Tell Dispatch you have had a large biohazard spill and need help with clean-up. Be sure to give them your cell phone number so EHS can call you. Technical assistance will be dispatched.

BLOOD SPILLS (BL-2)

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

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microorganisms (as in a blood draw from an assumed to be healthy study participant):

- Wear gloves, eye protection, and a lab coat. If there has been a lot of splatter, shoe covers may also be necessary. Make sure they are in your spill kit.
- Pre-clean by absorbing blood with paper towels; place soiled towels in a red biohazard bag. Collect any sharp objects with forceps and place in a sharps container.
- Use a detergent solution to pre-clean the spill site of visible blood. Dispose paper towels in biohazard bag.
- Carefully pour freshly made 10% household bleach over the contaminated area.
- After 10 minutes of contact time, wipe up then rinse with water.
- Repeat with a second round of 10% bleach.
- Discard clean-up materials and contaminated personal protective equipment (except safety glasses) in a biohazard bag and place the bag in a biohazard waste disposal box.
- Wash your hands with soap and warm water.
- Document the spill and your spill response procedures in the lab's biosafety manual.
- Re-supply the spill kit so it is ready if there is another event.

OCCUPATIONAL EXPOSURES

Remember: Having an exposure does not mean you will develop an infection.

- If exposed to infectious agents or materials containing recombinant nucleic acids while working in the lab, wash the area thoroughly with soap and warm water and call the Occupational Health Nurse at Health Services for guidance.
- If the exposure occurred through mucous membrane contact of the eye, nose, or mouth, use the eye wash to rinse the area for 15 minutes.
- If it was due to accidental injection or piercing, wash the area thoroughly with soap and warm water then apply a triple antibiotic ointment and Band-Aid.
- An occupational exposure requires medical evaluation.

Biosafety
Appendix J
Spill Management
SOP

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- Faculty and staff must file a form USP-14a with Human Resources within 24 hours of the incident. This will generate a Worker's Compensation case number and ensure that any medical bills are sent to the University. If you do not do this, all hospital billing will be sent to you and you will have to sort it out!
- Faculty and staff should contact the Occupational Health Nurse at Health Services.
- Undergraduates and grad students should also call the Occupational Health Nurse. If you need a ride to Health Services, call Police Dispatch at 874-4910. If medically appropriate, the student will be transported to South County Hospital for post-exposure evaluation and follow-up.

If the exposure involves recombinant DNA, the Biosafety Officer will notify the URI IBC at the next meeting and the NIH Office of Biotechnology Activities (OBA) in writing within 30 days of the incident. The BSO will also perform a follow-up investigation to determine if additional training or changes in procedures are required to prevent a similar incident in the future.

NOTE: If BL-2 material simply comes in contact with intact skin, this is called an incidental exposure and is not a cause for concern. Wash the area thoroughly with soap and warm water. Medical follow-up is not required.