

# Recombinant DNA and Biohazardous Spill Guidelines for BSL-1 and BSL-2 Research and Teaching Laboratories at UWM

The University of Wisconsin-Milwaukee, as a receiving grant institution from the National Institutes of Health (NIH), is required to adhere to the NIH Guidelines for Research Involving Recombinant and Synthetic Nucleic Acid Molecules ([NIH Guidelines, April 2016](#)). Part of the compliance is to maintain a set of spill guidelines for researchers and instructional staff to follow in the event of a biohazardous spill or exposure event. All significant spills or exposures involving rDNA must be reported to the NIH Office of Science Policy (OSP). The implementation, communication, and training of these guidelines is the responsibility of the principal investigators, deans, directors, lead course teaching faculty, or lead clinical laboratory managers overseeing personnel in a laboratory setting. These individuals are also responsible for ensuring a biohazardous spill kit is available for such events and properly maintaining their spill kits, or designating a responsible person to oversee this task.

## Injury Reporting





If an incident involves an employee or student being injured, the following forms must be completed and submitted within 24 hours of the incident if possible.

- ☠ Supervisors must complete the following forms:
  - [Employer's First Report of Injury or Disease](#)
  - [Supervisor's Accident Analysis and Prevention Report and Evaluation of Repetitive Motion and/or Materials Handling Activities](#)
- ☠ Employees (including student employees) must complete:
  - [Employee's Work Injury and Illness Report](#)
- ☠ Students must complete:
  - [General Incident Report 300A2 for student injuries or incidents](#)





Biohazardous spills and accidental release events must be reported promptly. Spills can create additional risks to surrounding personnel, the public, and/or the environment. Spill events and accidental release incidents can initially be reported via: <https://uwm.edu/safety-health/first-report-of-biological-exposure-or-release-event/>. If there is a large spill event, contact the biosafety program office at (414) 588-4261 or [uwm-biosafety@uwm.edu](mailto:uwm-biosafety@uwm.edu) to assist with clean-up.

## Incident Reporting

PIs are asked to consider the potential consequences of exposure to the biological hazards they are working with and to have a developed response procedure for this potential exposure on file with their IBC protocol. Complete the First Report of Biological Exposure or Release Event Form online in the event of any exposure or release event. Information that should be kept on file in case of accidental exposure should include the following (UW Biosafety, 2017):

-  A description of the pathogen(s), including signs and symptoms of an infection from this pathogen.
-  Distinct characteristics of the strain(s) used in the laboratory, including antibiotic resistance, transmissibility, atypical tissue tropism, foreign genes that alter pathogenicity, etc.
-  Recommendations for treatment, including effective medications, quarantine, etc.
-  A detailed record of a history of exposure to the agent(s) in question for some pathogens from start of employment (work with BSO to determine need for this)

Complete an accidental exposure/release form within 24 hours of any incident and submit to the BSO. This form must be used when any of the following occur:

-  Potential exposures or releases of organisms or biological toxins on the UWM campus and UWM off-site facilities.
-  Potential exposures including needle sticks, animal bites, aerosol exposures, and other incidents potentially resulting in disease.
-  Potential releases including spills outside of primary containment as well as potential releases to the environment.
-  Unauthorized releases of transgenic animals or plants

After completing the form online, select “Submit” at the bottom of the form. The information will be sent to designated individuals at the UWM Biological Safety Program, who will use the information to determine how our offices may help you and your laboratory and for mandatory federal reporting purposes. The submitter will be contacted for incident follow-up. If you need assistance completing the form or reporting an incident, please call the BSO at 414-588-4261.

## Spill Outside of Containment











If a spill happens outside of containment (such as a biosafety cabinet or BioBubble), aerosol generation is a possibility, as well as other exposure risks to the personnel in the laboratory. If a spill happens outside of containment, the following are the guidelines:

- ☠ **ALERT** co-workers and **EVACUATE** lab area if in a BSL-2 or higher laboratory. If it is an exposure incident, wash exposed area or flush mucous membranes with copious amounts of water. Post a **DO NOT ENTER** sign on door.
- ☠ **ASSESS** personnel, if medical attention is needed contact 9911 if on a campus phone or (414) 229-9911 if using a cell or off campus phone.
- ☠ **REMOVE AND DECONTAMINATE** all contaminated garments- they must be autoclaved prior to washing.
- ☠ **WASH HANDS:** Even if you were not directly exposed, wash hands after removing PPE.
- ☠ **CONTACT** the Biosafety Program and Environmental Protection. If necessary, call 9911 for campus police and emergency personnel from a campus phone or (414) 229-9911 from a cellular or other non-campus phone.
- ☠ **WAIT 30 MINUTES:** Wait at least 30 minutes before re-entry to allow aerosols to dissipate.
- ☠ **DON PPE:** Wear PPE upon re-entry (disposable gown, mask/eye protection, double gloves). Only trained personnel should clean up the spill.
- ☠ **DISINFECT:** Cover spill with disinfectant soaked paper towels and pour an appropriate disinfectant solution around spill (e.g., 1:10 dilution of bleach). Take care not to create aerosols while pouring. Let stand for at least 20 minutes.
- ☠ **REMOVE BROKEN GLASS:** Use tools (tongs, broom & dustpan) rather than hands to pick up sharps, broken glass, and other contaminated materials whenever possible.
- ☠ **DECONTAMINATE BIOHAZARDS:** Transfer all contaminated materials into an autoclave bag for decontamination. Sharps and broken glass should be placed in a sharps container.
- ☠ **FINAL DISINFECTION:** Wipe down entire area with disinfectant (including autoclave bags, disinfectant container, and other contact surfaces).
- ☠ **DOFF PPE:** Remove and discard PPE (autoclave prior to disposal).
- ☠ **DECONTAMINATE SELF:** Shower or wash hands with soap/antimicrobial agent and water.
- ☠ **DECONTAMINATE WASTE:** Autoclave all contaminated materials.
- ☠ **REPORT INCIDENT:** Report incident to the PI (if not already contacted) and the BSO (Biological Safety Officer) using the online [First Report of Biological Exposure or Release](#) form (on UWM Biosafety site) within 24 hours.

## Spill Inside Containment (i.e. Biological Safety Cabinet, BIObubble, enclosed centrifuge, etc.)

When a spill occurs inside of containment, there is a lower hazard to the personnel present in the lab space. However, the proper disinfection and decontamination of the containment area is necessary to ensure that personnel are not exposed after the event and to maintain future function of the containment engineering controls.

A properly functioning and up-to-date BSC should contain potentially hazardous biological aerosols from spills within its unit on its own. Therefore, it is extremely important to have your biosafety cabinet checked annually. It is the responsibility of the PI to have a well-developed SOP in place for operation and cleanup of a BSC, as well as spill procedures, which are required in any approved research protocol. The following are general procedures:

-  **STOP WORK:** Immediately stop all work but leave BSC or hood blower fan on during clean-up.
-  **COMMUNICATE SPILL:** Notify other personnel in lab of spill in containment.
-  **DON PPE:** Wear PPE (gloves, lab coat, eye protection).
-  **FLOOD SPILL WITH DISINFECTANT:** Cover spill with disinfectant soaked paper towels and pour an appropriate disinfectant solution around spill.
-  **WIPE DOWN SURFACES:** Using paper towels and appropriate disinfectant detergent, wipe down walls, work surfaces and equipment.
-  **DECONTAMINATE DRAIN PAN:** Flood work surface and drain pan (Type II BSC) with disinfectant and let stand for at least 20 minutes. Wipe up all excess disinfectant and empty drain pan into a collection vessel with disinfectant. Flush drain pan with water and remove drain tube.
-  **DECONTAMINATE BIOHAZARDS:** Transfer all contaminated materials into an autoclave bag for decontamination. Wipe down autoclave bag, disinfectant container, and other contact surfaces with disinfectant.
-  **REMOVE AND DISCARD PPE:** Remove PPE (autoclave prior to disposal) and place in biohazard bag.
-  **WASH HANDS:** Wash hands thoroughly with soap & water.
-  **REPORT INCIDENT:** Report incident to the PI (if not already contacted) and the BSO (Biological Safety Officer) using the online [First Report of Biological Exposure or Release](#) form (on UWM Biosafety site) within 24 hours.

## Recommended Clean-Up Materials for Lab Facilities

A biological spill cleanup kit should be kept in the laboratory, and all personnel should be trained in where it is housed and how to use it. The spill kit should include all of the materials below, along with the lab's procedure for handling accidental spills.

- ☠ **Disinfectants:** Selection should be made based on the biological agent(s) it would be used against. If dilutions are made, such as with bleach, fresh solutions should be made on a schedule depending on the materials used and the manufacturer's recommendations.
  - **Recommended:** Highlight™ by Kinnos turns fresh bleach solutions blue. When the bleach+Highlight solution is sprayed on surfaces, a color change indicates effective decontamination.
- ☠ **Absorbent materials:** There should be, at a minimum, a sufficient quantity of paper towels on hand to soak up the maximum volumes of materials handled in the laboratory. There are other absorbent pads available, but paper towel will suffice.
- ☠ **Extra PPE:** This is dependent upon the biological agent, but when handling a spill, a gown, gloves, and eye protection should always be worn to prevent additional accidental exposure from occurring. Respiratory protection should be available.
- ☠ **Signage:** Signage available for posting until aerosols have settled after a spill.
- ☠ **Autoclavable Bags:** To autoclave contaminated materials after clean-up.
- ☠ **Sharps container:** To collect any sharps in the spill incident.
- ☠ **Biohazard stickers:** To label contaminated materials as biohazardous.