BIOLOGICAL SPILL PROCEDURES

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I. BIOLOGICAL SPILL PROCEDURES

A spill kit should be kept in each laboratory where work with microorganisms is conducted. As a minimum, the spill kit should contain:

- Diluted disinfectant (such as 10% chlorine bleach or 1% SDS solution)
- Paper towels or other sorbent material to cover and absorb spilled material
- Disposable gloves
- Autoclave bags
- Biohazard bags
- SHARPS container
- Tongs/forceps to pick up broken glass.

A. GENERAL SPILL CLEANUP GUIDELINES

- Wear disposable gloves and lab coat.
- Use tongs/forceps to pick up broken glass and discard into SHARPS container.
- Cover spilled material with paper towels or other sorbent material.
- Add diluted disinfectant in sufficient quantity to ensure effective microbial inactivation.
- Dispose of spill cleanup and sorbent materials in autoclave bag.
- Wipe spill area with diluted disinfectant.
- Autoclave contaminated spill cleanup materials and place autoclaved bag into opaque trash bag, tape closed and dispose of as non-hazardous domestic waste.
- Wash hands with soap and water when finished.

B. SPECIFIC SPILL CLEANUP GUIDELINES

For any biological spill, first notify others in the laboratory so they will not unknowingly spread the contamination.

Note: For definitions as to what constitute BL1, BL2, or BL3 materials, consult Biosafety in Microbiological and Biomedical Laboratories (BMBL) - 4th edition published by CDC/NIH.

(http://www.cdc.gov/od/ohs/biosfty/bmbl4/bmbl4toc.htm**)**

1. **SPILL OF BL1 MATERIAL**

   a. Wearing disposable gloves and a lab coat, pick up broken glass with forceps/tongs and place in SHARPS container.

   b. Absorb the spill with paper towels or other absorbent material.

   c. Discard these contaminated materials into autoclave bag.

   d. Wipe the spill area with the appropriate dilution of a disinfectant effective against the organism.

   e. Collect all contaminated spill cleanup materials such as towels, gloves, etc., place into autoclave bag and autoclave.

   f. Wash hands with soap and water.

   g. Place autoclaved spill cleanup materials into an opaque trash bag, tape closed and dispose of as non-hazardous domestic waste.

2. **SPILL OF HUMAN BLOOD**

   a. Wear disposable gloves and lab coat to clean up spill.

   b. If broken glass is present, use forceps to pick up and place in SHARPS container.

   c. Absorb blood with paper towels or other sorbent material and discard in biohazard waste container.

   d. Using an appropriate detergent solution, clean the spill site of all visible blood.

   e. Wipe the spill site with paper towels soaked in a disinfectant such as 10% bleach solution (1part laundry bleach: 9 parts water).

   f. Discard all contaminated cleanup materials into red biohazard bag and tape closed.

   g. Wash hands with soap and water.

   h. Contact EHS at (410) 704-2949 or at safety@towson.edu to request disposal of spill cleanup materials.

3. SPILL OF BL2 MATERIAL

a. Keep other workers out of the area to prevent spreading spilled material. Post warning sign, if needed.

b. Remove contaminated clothing and put into a biohazard bag for decontamination later.

c. Wash hands and exposed skin and inform the Principle Investigator (PI) of the spill. Contact EHS at (410) 704-2949 for assistance, if necessary.

d. Put on protective clothing (lab coat, disposable gloves and if needed, eye/face protection and shoe covers) and assemble clean-up materials (disinfectant, autoclave bags, tongs/forceps, SHARPS container, and paper towel/sorbent materials).

e. Pick up any broken glass with tongs/forceps and dispose into SHARPS container.

f. Cover the spill with paper towels/sorbent materials and add appropriately diluted disinfectant working from the outside of the spill inward towards the center. Avoid splashing.

g. After at least 20 minutes contact time, pick up the paper towels and re-wipe the spill area with diluted disinfectant.

h. Collect all contaminated materials into autoclave bag and autoclave.

i. Wash hands with soap and water.

j. Place autoclaved spill cleanup materials into a red biohazard bag and tape closed.

k. If necessary, decontaminate tongs/forceps with disinfectant. Contact EHS at (410) 704-2949 or at safety@towson.edu to request disposal of autoclaved spill cleanup materials.

4. SPILL OF A BL3 MATERIAL

a. Stop work immediately.

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

c. Remove contaminated clothing, turn exposed area inward, and place in an autoclave bag. Wash hands with soap and water.

d. Notify the Principal Investigator. Contact EHS at (410) 704-2949 during normal hours and through the TUPD (after hours and weekends) for assistance if necessary.

e. Allow 30 minutes for aerosols to disperse before re-entering the laboratory to begin clean up.

f. Put on personal protective equipment (HEPA filtered respirator, gown, gloves, and shoe covers) and assemble clean-up materials (disinfectant, autoclave bags, tongs/forceps, SHARPS container, and paper towels).

g. Contain the spill with absorbent paper towels or disposable pads. Carefully add 10% chlorine bleach to the spill; avoid creating aerosols when pouring the disinfectant. Leave the room and allow 30 minutes for the bleach to inactivate the material.

h. Pick up broken glass with tongs/forceps and discard in SHARPS container.

i. Clean up liquid with paper towels and collect all contaminated materials into autoclave bag. Remove all spilled materials and decontaminate the area again with an appropriate disinfectant. Autoclave all contaminated spill cleanup materials.

j. Autoclave (or soak in 10% bleach solution) lab coat, gloves, and other protective equipment that was worn for clean-up.

k. Place autoclaved spill cleanup materials into a red biohazard bag and tape closed.

l. Wash hands thoroughly with soap and water.

m. If necessary, decontaminate tongs/forceps with disinfectant.

n. Contact EHS at (410) 704-2949 or at safety@towson.edu to request disposal of autoclaved spill cleanup materials.

5. SPILL IN A BIOLOGICAL SAFETY CABINET

a. Leave the cabinet turned on.

b. Wearing gloves and lab coat spray or wipe cabinet walls, work surfaces, and equipment with disinfectant such as 70% ethanol. If necessary, flood work surface, as well as drain pans and catch basins below the work surface, with disinfectant. Allow at least 20 minutes contact time.

c. Soak up the disinfectant and spill with paper towels, and drain catch basin into a container. Lift front exhaust grille and tray, and wipe all surfaces. Ensure that no paper towels or solid debris are blown into area below the grille.

d. Surface disinfect all items that may have been spattered before removing them from the cabinet.

e. Discard all clean-up materials into autoclave bag and autoclave.

f. Place autoclaved spill cleanup materials into a red biohazard bag and tape shut.

g. Wash hands and exposed skin areas with soap and water.

h. EHS should be notified if the spill overflows into the interior of the cabinet. It may be necessary to do a more extensive decontamination of the cabinet.

6. SPILL OF BIOLOGICAL RADIOACTIVE MATERIAL

A spill involving both radioactive and biological materials requires emergency procedures that are different from the procedures used for either material alone. As a general rule, disinfect the microorganism using a chemical disinfectant, then dispose of all clean-up materials in a separate bag/container labeled to indicate that the radioisotope is mixed with a chemically disinfected microorganism.

- Do not use bleach solutions as a disinfectant on materials that contain iodinated compounds such as I_{125}, because radioactive iodine gas may be released.

- Do not autoclave biological radioactive materials unless approved by the RSO.

Be sure to use procedures to protect yourself from the radionuclide while you disinfect the biological material. Before any clean up, consider the type of radionuclide, the characteristics of the microorganism, and the volume of the spill. Contact the Radiation Safety Officer (RSO) at (410) 704-2949 for specific radioisotope clean-up procedures.

a. Preparation for Clean-up

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

2. Remove contaminated clothing, turn exposed area inward, and place in a biohazard bag.

3. Wash all exposed skin with soap or hand washing antiseptic, followed by a three-minute water rinse.

4. Inform the PI and the RSO at (410) 704-2949 of the spill, and monitor all exposed personnel for radiation.

5. Allow aerosols to disperse for at least 30 minutes before reentering the laboratory. Assemble clean-up materials (disinfectant, autoclave bags, forceps, paper towels, SHARPS container, etc.).

6. Confirm with the RSO that it is safe to enter the lab.

b. **Clean-up of Biological Radioactive Spill**

1. Put on protective clothing (lab coat, 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. In setting up your spill plan, contact EHS for advice since the use of many types of respirators requires prior training, fit-testing, and medical approval.

2. Pick up any sharp objects with forceps and put in SHARPS container labeled according to Radiation Safety guidelines.

3. Cover the area with a sorbent material such as paper towels, and carefully pour diluted disinfectant around and into the spill. Avoid enlarging the contaminated area. Use additional disinfectant as it becomes diluted by the spill. Allow at least 20 minutes contact time.

CAUTION

DO NOT USE BLEACH SOLUTIONS ON IODINATED MATERIALS SUCH AS I^{125}: RADIOIODINE GAS MAY BE RELEASED. INSTEAD, USE AN ALTERNATIVE DISINFECTANT SUCH AS AN IODOPHOR

4. Wipe surrounding areas where the spill may have splashed with disinfectant.

5. Absorb the disinfectant and spill materials with additional paper towels, and place into an approved radioactive waste container. Keep separate from other radioactive waste.

CAUTION

DO NOT AUTOCLAVE CONTAMINATED WASTE UNLESS APPROVED BY THE RADIATION SAFETY OFFICER.

6. Disinfect contaminated protective clothing prior to disposal as radioactive waste.

    i. Place contaminated item(s) on absorbent paper and scan for radioactivity. If none is detected, dispose of these items as biohazard waste.

    ii. If radioactive, spray with disinfectant and allow a 20-minute contact time.

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

7. Wash hands and exposed skin areas with soap and water, and monitor personnel and spill area for residual radioactive contamination. If skin contamination is detected, repeat decontamination procedures under the direction of the RSO. If spill area has residual activity, determine if it is fixed or removable and handle it accordingly.

8. If necessary, decontaminate tongs/forceps for radioactive and biological contamination using appropriate solutions.