I. PURPOSE
To establish the generic emergency procedures for laboratory spills involving biohazards such as human blood, other potentially infectious materials (e.g. human body fluids), microorganisms, genetically-modified microorganisms, and recombinant or synthetic nucleic acid molecules.

Spill clean-up procedures for non-laboratory areas are addressed in the UR Exposure Control Plan for Bloodborne Pathogens.

This procedure does not apply to the BSL3 Lab. See the BSL3 Program Manual or the Medical School Comprehensive Emergency Management Plan 1.20.1 for BSL3 spill clean-up procedures.

II. PERSONNEL AFFECTED
Research lab staff who work with human blood or other biohazards

Environmental Health and Safety Spill Team

University Biosafety Officer

III. DEFINITIONS
BSC: Class II biosafety cabinet
BSL1: Biosafety level 1
BSL2: Biosafety level 2
BSL3: Biosafety level 3
CDC: Center for Disease Prevention and Control
EH&S: Environmental Health and Safety

Higher Risk Biological Spills: For the purposes of this SOP, moderate risk biological spills are defined as spills involving biosafety level 2 plus materials spilled outside of a biosafety cabinet.

Highest Risk Biological Spills: For the purposes of this SOP, moderate risk biological spills are defined as spills involving biosafety level 3 materials spilled outside of a biosafety cabinet.

Lower Risk Biological Spills: For the purposes of this SOP, lower risk biological spills are defined as spills involving (1) materials assessed by the UR Institutional Biosafety Committee for biosafety level 1 precautions, or (2) human blood / body fluids / tissues, or human cell lines spilled outside of a biosafety cabinet.
IV. RESPONSIBILITIES

It is the responsibility of the Principal Investigator and laboratory supervisor to ensure that (1) an appropriate spill response plan for their lab has been developed using these generic procedures as a basis, (2) each individual in their lab is familiar with it, and (3) an appropriate disinfectant, personal protective equipment, and waste containers are readily available.

It is the responsibility of the Principal Investigator and laboratory supervisor to ensure that the spill plan for their lab is adequate for the agents possessed and the type of techniques / experiments conducted with those agents.

The University Biosafety Officer approves spill procedures for higher risk agents (BSL2 plus and BSL3)

V. PROCEDURES

A. Risk Assessment:

It is important to understand the risks and transmission routes of each biological possessed by the lab. Much of this information can be found in the NIH Guidelines, the CDC / NIH 5th Edition Biosafety in Microbiological and Biomedical Laboratories or through the MSDS for Infectious Agents provided by Health Canada. When assessing a spill to determine what type of response is necessary and whether the clean-up should be done by EH&S, the following should be considered.

1. What was spilled? (What are the physical characteristics of the spilled material (e.g. liquid vs. solid), potential hazards of particular organism)
2. How much was spilled? (What is the volume and concentration of the organism)
3. Where is the spill? (In a BSC, in the lab, outside the lab, in a centrifuge)
4. What is the potential for release to the outside the lab?

B. Lower Risk Biological Spills: BSL1 materials, human blood / body fluids / tissues, or human cell lines spilled outside of a biosafety cabinet

1. Alert people in the immediate area of spill and if spill is in a laboratory ensure the doors are closed. Keep all unnecessary people out of the area. If the spill is in a hallway or running under the door, call Security at x13 for assistance in limiting access to the area. Environmental Health and Safety assistance in spill clean-up is available by calling Security at x13.

2. Attend to injured or contaminated persons and remove them from exposure. Immediate medical attention is available from OEMP / UHS (x5-1164) or SMH Emergency Department.

3. Anyone sustaining skin, mucous membrane, or percutaneous contact with a biological material must cleanse the affected areas as soon as possible.
   a. Intact skin - wash with soap and water.
   b. Non-intact skin and needlesticks/scalpel cuts - wash with soap and water.
   c. Intra-oral exposure - spit and rinse the mouth with water.
   d. Eyes - rinse well with sterile saline or water (if available), or tap water. (Note: Remove contact lenses first. After rinsing eyes, disinfect contacts per manufacturer’s recommendation.)

4. Research staff and students who have had an exposure are required to:
   a. Contact his/her supervisor
   b. Fill out an incident report form (www.safety.rochester.edu/SMH115.html)
   c. Report exposure, as soon as possible (ext. 5-1164).

5. Contain the spill by placing an absorbent material such as paper towels over the area involved.

6. A properly trained employee shall proceed with the clean-up and decontamination of the area involved. Environmental Health and Safety assistance in spill clean-up is available by calling Security at x13.
   a. Wear appropriate personal protective equipment to prevent human blood, other potentially infectious materials, or microorganisms from reaching work clothes, street clothes, undergarments, skin, eyes, mouth, or other mucous membranes. Appropriate personal protective equipment include gloves, shoe covers, lab coat, chin-length face shield, goggles, and mask.
   b. Cover the spilled material with freshly prepared 1 in 10 dilution of bleach or other approved disinfectant. (Disinfectants are approved by either
SMH Infection Prevention or the UR Institutional Biosafety Committee.)

Avoid splashing or splattering of biological material.

c. Pick up any broken glass or sharps by mechanical means, such as tongs or a broom and dustpan. This debris can then be deposited into a sharps disposal container. Never pick up sharps directly by hand.

d. Allow the disinfectant to be in contact with the biological for at least 10 minutes.

e. Working from the edges to the center, wipe up the spill with absorbent cloth or paper towels.

f. Re-clean area with fresh paper towels soaked with disinfectant.

g. If the spill was on or in equipment and bleach was used, rinse thoroughly to remove the bleach.

h. Discard disposable cloths/towels and disposable protective equipment into a red bag.

i. Remove non-disposable PPE.

j. Wash hands with soap and water.

k. If the spill was on the floor, contact Environmental Services to have the area cleaned with regular detergent-disinfectant. Eastman Dental Center employees are to call the Maintenance Department at x5-5070 to have their area cleaned with regular detergent disinfectant.

C. Moderate Risk Biological Spills: BSL2 recombinant/synthetic and non-recombinant/synthetic microorganisms spilled outside of a biosafety cabinet

1. Evacuate people in the immediate area of spill and if the spill is in a laboratory, ensure the doors are closed. Keep all unnecessary people out of the area. If the spill is in a hallway or running under the door, call Security at x13 for assistance in limiting access to the area. Environmental Health and Safety assistance in spill clean-up is available by calling Security at x13.

2. Attend to injured or contaminated persons and remove them from exposure. Immediate medical attention is available from OEMP / UHS (x5-1164) or SMH Emergency Department.

3. Anyone sustaining skin, mucous membrane, or percutaneous contact with a biological material must cleanse the affected areas as soon as possible.

a. Intact skin - wash with soap and water.

b. Non-intact skin and needlesticks/scalpel cuts - wash with soap and water.

c. Intra-oral exposure - spit and rinse the mouth with water.

d. Eyes - rinse well with sterile saline or water (if available), or tap water.

(Note: Remove contact lenses first. After rinsing eyes, disinfect contacts per manufacturer’s recommendation.)
4. Research staff and students who have had an exposure are required to:
   a. Contact his/her supervisor
   b. Fill out an incident report form (www.safety.rochester.edu/SMH115.html)
   c. Report exposure, as soon as possible (ext. 5-1164).
5. Allow aerosols to settle for 30 minutes.
7. Report spill to Biosafety Officer at Environmental Health and Safety (275-3014). After hours, the Biosafety Officer is reached by calling Security at X53333.
8. The Biosafety Officer investigates and reports the incident per EH&S SOP BS004 Biological Incident / Illness Evaluation and Reporting.

D. Higher Risk Biological Spills: BSL2 plus materials spilled outside of a biosafety cabinet
1. Evacuate people in the immediate area of spill and ensure the doors are closed. Keep all unnecessary people out of the area. If the spill is in a hallway or running under the door, call Security at x13 for assistance in limiting access to the area.
2. Attend to injured or contaminated persons and remove them from exposure. Immediate medical attention is available from OEMP / UHS (x5-1164) or SMH Emergency Department.
3. Anyone sustaining skin, mucous membrane, or percutaneous contact with a biological material shall cleanse the affected areas as soon as possible, as follows:
   a. Intact skin – wash with soap and water.
   b. Non-intact skin and needlesticks/scalpel cuts – wash with soap and water.
   c. Intra-oral exposure – spit and rinse the mouth with water.
   d. Eyes – rinse well with sterile saline or water (if available), or tap water.
      (Note: Remove contact lenses first. After rinsing eyes, disinfect contacts per manufacturer’s recommendation.)
4. Research staff and students who have had an exposure are required to:
   a. Contact his/her supervisor
   b. Fill out an incident report form (www.safety.rochester.edu/SMH115.html)
   c. Report exposure, as soon as possible (ext. 5-1164).
5. Allow aerosols to settle for 30 minutes.
6. Proceed with cleanup procedures previously approved by the University’s Biosafety Officer or call Security Services at x13 from a safe location for an emergency response from Environmental Health and Safety. Have a person knowledgeable of the incident and laboratory assist emergency personnel.
7. Report spill to Biosafety Officer at Environmental Health and Safety. After hours, the Biosafety Officer is reached by calling Security at X53333.
8. The Biosafety Officer investigates and reports the incident per EH&S SOP BS004 Biological Incident / Illness Evaluation and Reporting.

E. **Highest Risk Biological Spills:** BSL3 materials spilled outside of a biosafety cabinet
   1. Follow procedures in Biosafety level 3 Program Manual

F. **Spills inside a biosafety cabinet:**
   1. Keep the cabinet running
   2. Continue with Low Risk Biological Spill Procedure.
   3. Ensure that cabinet walls, work surface, and equipment inside the cabinet have been disinfected. Do not place your head in the cabinet. If your arm is not long enough to reach the back wall, then use an assist device such as a ‘Swiffer’ with a shortened handle to hold the disinfectant soaked towel.
   4. If necessary, and after ensuring the drain valve is closed, flood the work surface, as well as the drain pans and catch basins below the work surface with disinfectant. The drain pan should be emptied into a collection vessel containing disinfectant. A hose barb and flexible tube should be attached to the drain valve and be of sufficient length to allow the open end to be submerged in the disinfectant within the collection vessel. This procedure serves to minimize aerosol generation. The drain pan should be flushed with water and the drain tube removed.
   5. After clean-up is completed, allow the cabinet to run for ten minutes before resuming work.

G. **Spills inside a centrifuge**
   1. Turn off the centrifuge and do not open the lid for 30 minutes to allow the aerosols to settle.
   2. Notify others in the lab not to use the centrifuge and inform lab supervisor of the accident. Label the centrifuge with a “Spill – Do Not Use” sign.
   3. Wear appropriate personal protective equipment to prevent human blood, other potentially infectious materials, or microorganisms from reaching work clothes, street clothes, undergarments, skin, eyes, mouth, or other mucous membranes. Examples of appropriate personal protective equipment include, but are not limited to, gloves, lab coat, chin-length face shield, goggles, and mask.
   4. If possible, move the centrifuge or at least the rotors / buckets to a BSC.
5. Using a squeeze bottle, apply disinfectant to all contaminated surfaces within the chamber, taking care to minimize splashing. Allow at least a ten minute contact time.

6. Open the rotor / bucket and using a squeeze bottle, apply disinfectant to inside rotor / bucket. Allow at least a ten minute contact time.

7. Carefully remove any broken glass from inside rotor / bucket using forceps and place in a sharps disposal container.

8. Drain the disinfectant from the rotor / bucket. Thoroughly wipe down the inside of the rotor / bucket including the lid with paper towels soaked in disinfectant. Rinse with water or ethanol and dry rotor / bucket and lid.

9. Rinse the disinfectant from the centrifuge chamber with water or ethanol. Absorb the liquid with paper towels and wipe down thoroughly.

10. Avoid using bleach on rotor / buckets. Use a previously approved alternate disinfectant.

VI. REFERENCES

CDC / NIH 5th Edition Biosafety in Microbiological and Biomedical Laboratories

MSDS of Infectious Agents from Health Canada
http://www.phac-aspc.gc.ca/msds-ftss/

NIH Guidelines for Research Involving Recombinant or Synthetic Nucleic Acid Molecules

UR Biosafety Level 1 Requirements
http://www.safety.rochester.edu/restricted/ibc/bsl1require.html

UR Biosafety Level 2 Requirements
http://www.safety.rochester.edu/restricted/ibc/bsl2require.html

UR Biosafety Level 3 Program Manual

UR Exposure Control Plan for Bloodborne Pathogens
http://www.safety.rochester.edu/ih/bbpindex.html
VII. APPENDICES/FORMS
University of Rochester Employee Incident Report Form
www.safety.rochester.edu/SMH115.html

VIII. REVISION HISTORY

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<tr>
<th>Date</th>
<th>Revision No.</th>
<th>Description</th>
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<tr>
<td>2/1/12</td>
<td>1</td>
<td>Included UHS for exposure reporting</td>
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<td>6/12/13</td>
<td>2</td>
<td>Revisions following NIH OBA site visit</td>
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