Purpose:
To provide instruction on the proper response to a spill of a hazardous biological agent.

Application:
This procedure should be followed in the event of a spill of a potentially biohazardous material. Students, staff and faculty working with these agents should be familiar with the general procedures outlined below.

Procedure:

GENERAL INFORMATION

- **Keep adequate spill cleaning materials in the lab** – paper towels, readily available disinfectant, bucket and readily accessible instructions for spill clean-up.
- **If you are a project or undergraduate student**, call a senior person in the lab to help you clean up; if you happen to be working alone, call your advisor (or senior person) to come to the lab.
- **If it is a major spill** - evacuate the lab and call x2000 from a safe location.
- **If a biohazardous material spills on you** – move to a safe area, remove any contaminated clothing, and thoroughly wash any exposed body parts.
- If it gets in your eye, flush at the eyewash for at least 15 minutes. If it gets on shoes, soak the shoes in a tray with disinfectant.
- **If you are going to clean a spill** - you must be wearing a lab coat, gloves and eye protection. You must have a chemical disinfectant, paper towels, and a biohazard waste bag. You may also need forceps, a dustpan and broom, and/or a sharps container.
- **When choosing a chemical disinfectant** – a 1:10 dilution of standard bleach is typically suitable, however:
  - Be aware that some agents are resistant to bleach. If you are unsure of chemical susceptibility, review the MSDS: [http://www.phac-aspc.gc.ca/msds-flss/index.html](http://www.phac-aspc.gc.ca/msds-flss/index.html)
    - Some bacteria (e.g., *Bacillus anthracis*, *Bacillus cereus*, *Clostridium difficile*) are resistant to chemical disinfection, as are some protozoa (e.g., *Cryptosporidium parvum*, *Giardia lambia*). Prolonged contact times, higher concentrations and alternate disinfectants may be required.
  - Bleach solutions can be corrosive to metals, including stainless steel. For cleaning of biosafety cabinets, centrifuges, or other metal devices, consider using an alternate chemical disinfectant from Table 1.
  - Also note the efficacy of bleach is reduced if there are significant amounts of organic materials. You may need to use additional quantities or select an alternative disinfectant from Table 1.
- **If you need to transport a biohazardous material through public areas** – use a durable, well-sealed primary container, and a leak proof, durable secondary container labeled with a biohazard symbol. If a spill occurs in a public space, evacuate the immediate area and call EHS at x53282 for assistance.

SPILL ON FLOOR OR BENCH
- If there is potential for aerosolization, evacuate the lab and allow 30 minutes for aerosols to settle.
- Ensure you are wearing the required protective equipment and have all the materials you will need to clean up.
- Cover the spill with paper towels.
- Carefully pour a freshly prepared 1:10 bleach solution (or alternative chemical disinfectant – see Table 1) over the area, working from the outside in and soaking the paper towels.
- Cordon off the area and leave undisturbed for 20 minutes. This allows adequate contact time for the disinfectant to work.
- Remove any broken glass or sharps using forceps or tweezers and place in a sharps disposal container.
- Pick up the soaked paper towels and other absorbent materials and place in a biohazard waste bag.
- Clean the area again with the bleach solution (or the alternative chemical disinfectant) and paper towel. Wipe up any residues from the spilled material. Place all waste in the biohazard waste bag. Ensure all reusable items used in the cleanup (forceps, dustpans, etc.) are bagged and sent for autoclaving.
- Notify your supervisor, and report the spill and successful clean-up using EHS Incident Report Form.

**SPILL IN BIOSAFETY CABINET**

- Keep cabinet on (or turn cabinet on) to control any aerosols that may be created.
- Cover the spill with paper towels or another absorbent material.
- Carefully pour a freshly prepared 1:10 bleach solution (or alternative chemical disinfectant – see table 1) over the area, working from the outside in and soaking the area.
- Close the cabinet and leave the spill undisturbed for 20 minutes. This is to allow adequate contact time for the disinfectant to work.
- Remove any broken glass or sharps using forceps or tweezers and place in a sharps disposal container.
- Pick up the soaked paper towels and other absorbent materials and place in a biohazard waste bag.
- Wipe down the area of the spill and the walls and other surfaces in the area with a paper towel soaked in disinfectant.
- Carefully (ask another person to help) lift the steel tray (i.e., the work surface of the hood) and check for spills. Clean up any spills as described above. If not cleaned, the cabinet will remain in a contaminated state.
- Place all waste in a biohazard waste bag. Ensure all reusable items used in the cleanup (forceps, dustpans, etc.) are bagged and sent for autoclaving.
- Leave cabinet running for an additional 10 minutes.
- Notify your supervisor, and report the spill and successful clean-up using EHS Incident Report Form.

**SPILL IN CENTRIFUGE**

- When you become aware of a spill in a centrifuge, ensure the lid is closed and do not disturb the centrifuge for 30 minutes to allow aerosols to settle.
- Carefully remove rotors and buckets, seal in a plastic bag, and move them to a nearby biosafety cabinet for further cleaning.
- Remove any sharp debris with forceps or tweezers and place in a sharps container.
- Use paper towel and a suitable chemical disinfectant to clean the inside of the centrifuge. A bleach solution is not recommended as it may corrode sensitive parts of the equipment, so please use Table 1 to select an alternative chemical disinfectant.
- Working in the biosafety cabinet, soak all the removable parts in the disinfectant for 30 min, rinse thoroughly, dry and return them to the centrifuge.
- Place the liquid waste in a container suitable for autoclaving.
- Place all other waste (e.g. wet paper towels) in a biohazard waste bag. Ensure all reusable items used in the cleanup (forceps, dustpans, etc.) are bagged and sent for autoclaving.
- Notify your supervisor, and report the spill and successful clean-up using EHS Incident Report Form.
Table 1 – Chemical Disinfectants *(adapted from Stanford University)*

<table>
<thead>
<tr>
<th>Category</th>
<th>Example</th>
<th>Usage Requirements</th>
<th>Active Against (positive effect +, no effect -)</th>
<th>Variable effect *)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Dilution</td>
<td>Contact Time (mins)</td>
<td>Vegetative Bacteria</td>
<td>Bacterial Spores</td>
</tr>
<tr>
<td>Quaternary Ammonium Compounds</td>
<td>0.1-1.3%</td>
<td>10-30</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td></td>
<td>Lysol I.C.</td>
<td>1:256</td>
<td>10</td>
<td>+</td>
</tr>
<tr>
<td>Phenolics</td>
<td>1-5%</td>
<td>10-30</td>
<td>-</td>
<td>+</td>
</tr>
<tr>
<td>Chlorine</td>
<td>5-10%</td>
<td>10-30</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Iodophors</td>
<td>Wescodyne</td>
<td>0.5-10%</td>
<td>10-30</td>
<td>+</td>
</tr>
<tr>
<td>Ethyl Alcohol</td>
<td>70-85%</td>
<td>10-30</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>Isopropyl Alcohol</td>
<td>70-85%</td>
<td>10-30</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>Formaldehyde</td>
<td>Sterac</td>
<td>3.2-8%</td>
<td>10-30</td>
<td>+</td>
</tr>
<tr>
<td>Glutaraldehyde</td>
<td>Cidex</td>
<td>2%</td>
<td>10-30</td>
<td>+</td>
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</tbody>
</table>