All accidents, regardless of severity, should be reported and investigated.

Key elements of an emergency procedure plan are summarized by the acronym NEAR; Notify, Evacuate, Assemble, Report.

**Biological Spills**

Biological spills outside biological safety cabinets will generate aerosols that can be dispersed in the air throughout the laboratory. These spills can be very serious if they involve microorganisms that require Biosafety Level 3 containment, since most of these agents have the potential for transmitting disease by infectious aerosols. To reduce the risk of inhalation exposure in such an accident, occupants should leave the laboratory immediately. The laboratory should not be reentered to decontaminate or clean up the spill for at least 30 minutes. During this time the aerosol may be removed from the laboratory via the exhaust ventilation systems, such as biological safety cabinets or chemical fume hoods, if present.

1. **Spills on the Body**
   - Remove contaminated clothing.
   - Vigorously wash exposed area with soap and water for one minute.
   - Obtain medical attention (if necessary).
   - Report the incident to the laboratory supervisor.

2. **Biosafety Level 1 Organism Spill**
   - Wear disposable gloves.
   - Soak paper towels in disinfectant and place over sill.
   - Place towels in a plastic bag for disposal.
   - Clean up spill area with fresh towels soaked in disinfectant.

3. **Biosafety Level 2 Organism Spill**
   - Alert people in immediate area of spill.
   - Put on protective equipment. This may include a laboratory coat with long sleeves, back-fastening gown or jumpsuit, disposable gloves, disposable shoe covers, safety goggles, mask or full-face shield.
   - Cover spill with paper towels or other absorbent materials.
   - Carefully pour a freshly prepared 1 to 10 dilution of household bleach around the edges of the spill and then into the spill. Avoid splashing.
   - Allow a 20-minute contact period.
   - After the spill has been absorbed, clean up the spill area with fresh towels soaked in disinfectant.
   - Place towels in a plastic bag and decontaminate in an autoclave.

4. **Biosafety Level 3 Organism Spill**
   - Attend to injured or contaminated persons and remove them from exposure.
   - Alert people in the laboratory to evacuate.
   - Close doors to affected area.
   - Call 6611 for campus emergency response.
   - Have a person knowledgeable of the incident and laboratory assist emergency personnel when they arrive.
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Blood Spills

1. General Information
   - Universal precautions must be observed. Refer to the Campus Blood Borne Pathogens Plan or Departmental Exposure Control Plan for more information. Cleaning of blood spills should be limited to those persons who are trained for the task.
   - If an untrained person encounters a spill, he/she should limit access to the area and immediately call the person(s) assigned to this duty.
   - Only disposable towels should be used to avoid the difficulties involved in laundering.
   - If a spill involves broken glassware, the glass should never be picked up directly with the hands. It must be cleaned up using mechanical means, such as a brush and dustpan, tongs, or forceps.

2. Personal Protective Equipment
   - Persons who clean blood spills should wear disposable gloves of sufficient strength so they will not tear during cleaning activities. If the gloves develop holes, tears, or splits, remove them, wash hands immediately, and put on fresh gloves. Disposable gloves must never be washed or reused. Remove gloves one at a time by grasping the wrist opening and pulling toward the fingers so that the gloves come off as inside out. Double-bag gloves with other contaminated biomedical waste (such as towels).
   - If enough blood has been spilled to expect splashing during cleaning, call EHS at 6611. Additional protective equipment may be required. EHS can provide a face-shield and other protective clothing that your staff can use if splashing is expected.

3. Disinfectants
   - Read and follow all manufacturer's handling instructions. All spills of blood and blood-contaminated fluids should be properly cleaned using any of these three disinfectants:
     - EPA-registered "hospital disinfectant" chemical germicides that have a label claim for tuberculocidal activity. These are chemical germicides that are approved for use as hospital disinfectants and are tuberculocidal when used at recommended dilutions.
     - Products registered by the Environmental Protection Agency as being effective against human immunodeficiency virus (HIV).
     - A solution of 5.25 percent sodium hypochlorite (household bleach) diluted between 1:10 and 1:100 with water (a 1:100 dilution of common household bleach yields 500 parts per million free available chlorine - approximately cup of bleach per gallon of tap water).

4. Cleaning Blood Spills on Hard Surfaces
   - To assure the effectiveness of any sterilization or disinfection process, surfaces must first be thoroughly cleaned of all visible blood or soil before a germicidal chemical is applied for disinfection.
   - Isolate the area, if possible.
   - Wear gloves and other protective apparel as needed.
   - Remove visible blood with disposable towels in a manner that will ensure against direct contact with the blood. For example, put towels over the spill to absorb the liquid.
   - Place contaminated towels in a plastic waste disposal bag.
   - The area should then be decontaminated with an appropriate germicide applied according to manufacturer's directions.
   - All contaminated towels and gloves should be double-bagged for disposal and labeled with the biohazard symbol.
5. Cleaning Blood Spills on Carpeting

Use only a registered germicide. Read and follow manufacturer's instructions. Do not use chlorine bleach solution on carpet.

- Isolate the area—if possible.
- Wear gloves and other appropriate apparel.
- Procedures for small spills on carpets (smaller than a quarter) are as follows.
  1. Soak the spill with enough disinfectant to cover the spot.
  2. Let dry at least overnight to ensure that the spot is disinfected.
  3. Shampoo carpet, if needed, or use 3% hydrogen peroxide to remove discoloration.
- Procedures for larger spills are as follows.
  1. Pour disinfectant on the spot and let stand at least 30 minutes to allow some disinfection to take place. Blot up excess liquid with disposable towels.
  2. Soak the area with additional disinfectant. Allow to dry overnight. Shampoo carpet, if needed, or use 3% hydrogen peroxide to remove discoloration.
- All contaminated towels and gloves should be double-bagged and labeled with the biohazard symbol.
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**Cytotoxic/Antineoplastic Spills**

1. General Procedures
   - Spills and breakages of cytotoxic/antineoplastic drugs (CDs) should be cleaned up immediately by a properly trained person using the appropriate procedures.
   - Broken glass should be carefully removed.
   - A spill should be identified with a warning sign so that other persons in the area will not be contaminated.

2. Personnel Contamination
   - Overt contamination of gloves or gowns, or direct skin or eye contact should be treated as follows.
     - Immediately remove the gloves or gown.
     - Wash the affected skin area immediately with soap (not germicidal cleanser) and water. For eye exposure, immediately flood the affected eye with water or isotonic eyewash designated for the purpose for at least five minutes.
     - Obtain medical attention immediately.

3. Clean-up of Small Spills
   - Spills of less than 5 ml or 5 gm outside a hood should be cleaned immediately by personnel wearing gowns, double surgical latex gloves, and eye protection.
     - Liquids should be wiped with absorbent gauze pads, solids should be wiped with wet absorbent gauze. The spill areas then should be cleaned (three times) using a detergent solution followed by clean water.
     - Any broken glass fragments should be placed in a small cardboard or plastic container and then into a CD disposal bag, along with the used absorbent pads and any non-cleanable contaminated items.
     - Reusable glassware or other contaminated items should be placed in a plastic bag and washed in a sink with detergent by a trained employee wearing double surgical latex gloves.

4. Clean-up of Large Spills
   - For spills of amounts larger than 5 ml or 5 gm, the spread should be limited by gently covering with absorbent sheets of spill-control pads or pillows or, if a powder is involved, with damp cloths or towels. Be sure not to generate aerosols. Access to the spill areas should be restricted.
     - Protective apparel should be used with the addition of a respirator when there is any danger of airborne powder or an aerosol being generated. The dispersal of CD particles into surrounding air and the possibility of inhalation is a serious matter and should be treated as such.
     - Chemical inactivators, with the exception of sodium thiosulfate, which can be used safely to inactivate nitrogen mustard, may produce hazardous by-products and should not be applied to the spilled drug.
     - All contaminated surfaces should be thoroughly cleaned with detergent solution and then wiped with clean water. All contaminated absorbents and other materials should be disposed of in the CD disposal bag.

5. Spills in Hoods
   - If the spill occurred in either a glove box, clean bench or biological safety cabinet, the HEPA filter (contained in the cabinet) is more than likely contaminated. Label the unit “Do Not Use--
Contaminated With (name of substance)." The HEPA filter and filter cabinet must be decontaminated and the filter changed and properly disposed of. This procedure may require the services of an outside contractor trained in the use of specialized personal protective equipment.

6. Spill Kits

Spill kits, clearly labeled, should be kept in or near preparation and administrative areas. It is suggested that kits include a respirator, chemical splash goggles, two pairs of gloves, two sheets (12x12) of absorbent material, 250 ml and one liter spill control pillows and a small scoop to collect glass fragments. Absorbents should be suitable for incineration. Finally, the kit should contain two large CD waste-disposal bags.

7. Waste Disposal

Disposal of all CD contaminated materials must be arranged through EHS.