

## **HAZARDOUS MATERIALS PLAN: MANAGEMENT, HANDLING, DISPOSAL, and REPORTING**

Any chemicals (this includes veterinary drugs, anti-bacterial agents, etc.) ordered for use at PPRL, the Diagnostics Lab, or field studies must have an MSDS (Material Safety Data Sheet) or a statement from the company that says these compounds are not hazardous under OSHA regs. If you have chemicals on hand that do not have an MSDS, let Terrie (the Chemical Hygiene Officer for PPRL) know. After the chemicals have arrived and Pat has checked them in, let Terrie know the details of the chemical (product name, manufacturer, amount, where stored, and who ordered it). She will enter these details into the computer chemical inventory. A hard copy of the inventory is printed twice each year; the chemicals are physically inventoried at least once each year. The majority of the chemicals will be stored in the Chemical Storage area (Small Animal Building, Room 2). The solvents and flammable solids are stored in Building 45 (ex-Goat Shed), which is also locked.

Before using a chemical for the first time, read the MSDS and talk with your supervisor. He or she should know the hazards presented by the chemical (and the process it's used in) and will inform you of the precautions to take and the personal protective equipment (PPE) you should use. You can also talk with Dale or Terrie for further information on the subject; we also have the latest edition of the Merck Index, *At the Bench: A Laboratory Navigator*, and other information sources on chemical handling and hazards. All MSDS are kept in binders in the Headhouse (on the bookshelves by Terrie's desk). In addition, they are also available via computer. We have access to the USU database of MSDS from a number of chemical companies (Sigma, Baker, Acros, Mallinckrodt, etc.) plus a number of sites on the World-Wide Web. These will be accessed through the safety computer; directions for using the MSDS and chemical inventory databases are found in a pamphlet next to the safety computer.

Certain classes of chemicals are more heavily regulated. You must keep track of amounts used, when, under what conditions, and who used it. Currently, the only substances we have requiring this type of recordkeeping are the controlled substances and radioactive material. Kip and Bryan are the only ones authorized to purchase such chemicals. The records for controlled substances and radioactive material records are in Room 1A of the Meats & Physiology Lab.

We have an agreement with Utah State University Environmental Health & Safety Office for all of our hazardous waste disposal. Under their EPA license, we are considered a satellite accumulator. Let Terrie know whenever you have any hazardous waste for disposal. She will arrange with USU EH&S for pickup. We have a 55 gallon drum for collection of non-halogenated solvent waste; a 5 gallon carboy for halogenated solvent waste; and a 10 gallon carboy for collection of formaldehyde and other aldehydes. Each time you add waste to one of these, write down the compound (or mixture with percentages of each solvent), the amount, date, and initial. Terrie checks these weekly and will dispose of them as the carboys get filled up or once a quarter. If you will be generating other classes of hazardous wastes, let Terrie know *before* you do so; she will arrange for appropriate waste collection containers and subsequent disposal. We are able to reclaim a good deal

of the solvents used in our large scale extraction and chromatography procedures. Talk with Dale for more information on this and for the protocol to use. All records of hazardous waste disposals are kept in the Safety Files. An important part of waste reduction is to order only the quantity needed for the experiment or procedure. Any initial savings from buying in bulk are lost when the substance must be disposed of. Check the chemical inventory before buying to see what is present.

The PPRL also participates in the USU recycling program. Collection barrels for mixed paper waste and cardboard are located in the Headhouse. In addition, aluminum cans are also collected and taken to a recycler downtown.

Spills and chemical releases will inevitably happen. Always keep in mind how you will respond to such incidents. Usually, spills are minor (a few drops or maybe a couple of ounces) and are easily dealt with. Keep in mind, though, any hazards presented by the spilled chemical. When planning an experiment, an important part of the protocol is how you will respond to spills or releases. Make sure this is covered before you start the experiment! The MSDS is an important source of information on spill response. When working with large quantities (such as the large-scale plant extractions using dichloromethane), wear proper PPE at all times and have on hand spill control/clean-up equipment to handle the worst-case scenario. If you don't feel you can handle the spill, or if it is large (quantity should be determined before the procedure is even started), we can call the USU Emergency Response Team. Again, the proper response is highly dependent on the hazard/s present.

A number of chemicals have TPQ (threshold planning quantity) and RQ (reportable quantity) values established. For example, chemical A has a TPQ of 10,000 lbs and an RQ of 100 lbs. If you have over 10,000 pounds, this must be listed on annual community right-to-know report. If you have a spill that releases 101 lbs, this must be reported to the EPA or appropriate state organization. Accurate chemical inventories are important in aiding the Chemical Hygiene Officer (CHO; Terrie Wierenga) in determining what reports need to be submitted. Information on hazards, limit values, etc. is found in 29 CFR 1910, Subpart Z, as well as other source documents located in the Safety Files. The CHO is responsible for reviewing the chemical inventories and determining if community right-to-know reports need to be filed with the appropriate emergency personnel. Currently, PPRL inventories have been low enough that no reports have ever needed to be filed. An Emergency Response notebook has been developed with the assistance of the USU Environmental Health & Safety Office that has been distributed to the USU and City of Logan Police Departments, the Logan Fire Department, the USU EH&S Office, and the Cache County Emergency Planning Committee. This notebook contains diagrams of all buildings and rooms at PPRL with an inventory listing the category and approximate amounts of hazards (explosive, flammable, corrosive, electrical, etc.) that are present. The information is reviewed or updated at least annually. PPRL's copy of the notebook is located in the Headhouse.

The following pages outline spill response procedures. Before beginning any procedure, especially those using large quantities of chemicals or particularly hazardous ones, decide how you will respond to spills. In addition, selected pages of USU's Hazardous Materials and Waste Handling Plan are included. They provide good standard practices for storage, use, and disposal of many classes of chemicals.

# SPILL RESPONSE

## PRE-INCIDENT

1. Inventory all chemicals in laboratory or work area.
2. Obtain MSDS (Material Safety Data Sheets) for all chemicals in the lab.
3. Become familiar with chemical hazards.
4. Determine classes or categories of chemicals based on spill response needs, i.e., acids, caustics, flammables, mercury.
5. Purchase or determine where readily available appropriate clean-up equipment can be obtained.
  - a. spill media
  - b. PPE (Personal Protective Equipment)
  - c. brooms, aspirators, etc.
  - d. containers
  - e. waste labels
6. Understand the use and limitations of equipment.
7. Know how to contact additional help for high hazard releases or injury.
  - a. Emergency - 911
  - b. USU Safety Office - 797-2892

## **POST-INCIDENT**

### **PROTECT HUMAN HEALTH AND SAFETY FIRST, THEN ENVIRONMENT**

1. Immediate actions to be taken by all involved employees.
  - a. Clear the affected area.
  - b. Check for individual involvement.
  - c. Isolate the spill (if safe to do so).
  - d. Contact Emergency (911) if any personal contamination or injury.
  
2. Determine the level of risk.
  - a. What chemical is involved?
  - b. How much is involved?
  - c. Where is the location of the spill?

**For LOW RISK situations, follow step 3.**

**For HIGH RISK situations, follow step 4.**

3. Low risk spills
  - a. Do not work alone; use a minimum of two workers.
  - b. Inform supervisor, principal investigator, and/or emergency personnel including the Safety Team or Safety Office of the spill and the status of the response.
  - c. Use proper protective equipment:
    - Air-purifying respirator
    - Proper gloves
    - Body protection, i.e., tyvek
    - Chemical-resistant footwear
    - Proper spill control media
    - Appropriate clean-up equipment

4. High risk spills
  - a. Activate Campus Emergency Response Team by contacting the Safety Office at 797-2892 and/or Campus Emergency at 797-3333.
  - b. If other local professional emergency response is necessary, call 911 and request support from:
    - Fire Department
    - Police
    - Ambulance
  - c. Remain available to provide information to response team.
5. Ensure personal safety of response personnel.
6. Clean-up, containerize, and decontaminate the area.
  - a. Control source of leak.
  - b. Contain free liquids by diking and absorbing, if appropriate.
  - c. Place all spill residues in an appropriate container. Maintain fire protection as necessary.
  - d. Label waste for pick-up and disposal.
  - e. Decontaminate and salvage equipment, as needed.
7. Analyze the affected area for proper decontamination and safety.
  - a. Use monitoring and detection equipment, if needed.
  - b. Check area equipment for unresolved problems.
  - c. Check area floors, walkways for hazards.
8. Secure all response equipment.
  - a. Restock spill supplies.
  - b. Restock PPE and other equipment, as needed.
9. Release area for resumption of activities.