

University of Scranton

Chemical Hygiene Plan for the University of Scranton, Rev. May 1, 2002

Waste Disposal Procedures

Proper disposal of substances they have used is the responsibility of all workers. While methods of disposal may vary depending on the particular substances used, the basic principle that substances must be disposed of in such ways that assure minimal harm to people, animals, and the environment should be the primary criterion in determining disposal procedures.

1. General Considerations

The plan for safe disposal of chemicals is as much a part of the experimental plan as is the acquisition of materials, the experimental procedures, and storage. If an experiment involves new types of disposal problems, the laboratory worker should discuss the disposal plan with the area supervisor and, if necessary, with the Chemical Hygiene Officer.

If practical, very hazardous substances should be converted into less hazardous substances in the laboratory rather than being placed directly in containers. For example, strong carcinogens can often be oxidized in the laboratory and converted into the less toxic counterparts. Highly reactive substances, such as metallic sodium, can be converted to less reactive substances relatively easily and quickly.

All persons using chemicals should be aware of the toxic properties of the specific substance being worked with, as well as the toxic properties of possible reactions products. If the toxic properties of the reaction products are not known, the products should be treated with respect and disposed of in such a manner that takes into account the uncertain hazards.

The disposal of chemicals from instructional laboratories is a special problem because students in such laboratories are inexperienced; the quantities may be large, while the facilities for handling them may be less than optimum. Safe disposal of chemicals should be made an integral part of student laboratory training.

2. Disposal to the Sewer System

The Scranton Sewer Authority has charge of the local regulations governing materials which may be disposed of down the drain. The area supervisor must know these regulations and communicate them to the workers. In general, the following rules regarding sewer disposal should be followed:

- a. Only water soluble, non-hazardous substances should be disposed of in the laboratory sink. Chloride salts, nitrate salt, and sulfates may be washed down the drain with copious amounts of water as long as they do not contain heavy metals.
- b. Strong acids and strong bases should be neutralized to the pH 6-8 region before they are poured in the sewer system. Even then, these solutions

should not be poured into the drain at a rate exceeding 50 milliliters (a half-cup) per minute.

- c. Highly toxic, malodorous, or lachrymatory chemicals should not be disposed of down the drain. Laboratory drains are generally interconnected; a substance that goes down one drain, may well come up as vapor in another. Sinks should be regarded as communal property, and there is a very real danger of two chemicals from two different sources contacting one another. Strong odors or explosions may be the result.
- d. Heavy metal compounds should not be disposed of in the sink. These materials pose a hazard for the sewer system as well as water supplies.

3. Disposal of Solid Chemical Wastes

Solid waste material that is not water soluble, or contains heavy metals may not be disposed of in the drain. This material is to be placed in a solids waste bottle. This bottle must be appropriately labeled with a red and white hazardous waste label.

The label should contain the following information:

- a. The full name of the person generating the waste.
- b. The start date the material was placed in the bottle.
- c. The names of all solids (Hazardous or Non-hazardous) placed in the bottles, along with the quantities of each material.
- d. The concentrations of any heavy metals present in the waste liquids.
- e. Hazardous characteristics (flammable, corrosive, reactive, toxic, etc.)
- f. The EPA hazardous waste number, if assigned.

Each laboratory should have waste bottles removed as soon as they are filled. Weekly surveys should be conducted by the area or research supervisor to gather filled waste bottles. The Hazardous Waste Coordinator, Richard Trygar, should be contacted to arrange for collection of the filled bottles. It should be remembered that waste disposal companies often charge by the size of the bottles being disposed of, and not the quantities present in the bottles; the smallest bottle possible should be used to store solid waste material.

4. Disposal of Liquid Chemical Wastes

All **toxic**, **corrosive**, and **flammable** liquids must not be poured down the drain. This material must be disposed of properly in liquid hazardous waste bottles for later treatment or burial. **Liquids should be segregated into four classes for disposal: halogenated wastes** (chloroform, carbon tetrachloride, etc.) **materials capable of forming peroxides** (ethers, certain alcohols), **general organic solvents** (hexane, benzene, acetone, etc.), and **waste-based solutions containing heavy metals**. Each of these classes should be placed in

separate bottles, as chemical incompatibility may result if the materials are mixed.

The label should contain the following information:

- a. The full name of the person generating the waste.
- b. The start date the material was placed in the bottle.
- c.