

Prudent Practices and Special Concerns (9/18/2018)

1. **Minimizing Quantities of Hazardous Waste** - It is common practice to order chemicals in larger quantities than necessary to take advantage of reduced costs of substances. As a result, aging reagents or solvents are left for disposal. With the current high disposal costs, often disposal is more than the initial acquisition cost of the chemicals. It is estimated that as much as 40% of laboratory hazardous waste may be unused chemicals. Besides reducing the disposal cost, smaller inventories reduce exposure to personnel. Storage of unused chemicals for an extended period of time tends to increase the risk of an accident.

Another way to reduce quantities of waste is by use of distillation. This method is used for separating chemical mixtures based on differences in the condition required to change the phase of components of the mixture. As waste technology advances, the removal of non-hazardous materials and separation of chemicals from waste is becoming more desirable. This is often most easily accomplished at the point of generation.

2. **Substitution** - Substitution of non-hazardous or less hazardous chemicals for a hazardous chemical is a commonly used method of reducing hazards and wastes. Examples include using hot water and soap for cleaning instead of toxic, flammable organic solvents; "Nochromix" instead of toxic chromic/sulfuric acids; water-based paints instead of oil-based paints; spirit-filled thermometers instead of mercury-filled thermometers; and non-carcinogenic solvents instead of carcinogenic solvents. Substitution is not always possible but should be accomplished when practical.
3. **Surplus Chemical Exchange** - The concept of exchanging excess solvents and reagents with other labs or departments needing these materials reduces purchasing and disposal costs. It has been established that about 30% to 40% of excessive or unused materials can be used by other labs. Exchange of materials should be emphasized.
4. **Unknown** - Unknowns are a special problem in labs, especially when labs change occupants or processes. Labs should be cleaned up and old, unneeded chemicals disposed of by the occupant who is terminating the use of the lab.

Label all chemicals before they become unknowns. *All chemicals, mixtures and solutions should be clearly labeled at all times.* EHSRM cannot dispose of unknowns. Although analysis is often expensive and time consuming there is no alternate solution to proper identification of hazardous materials. Each generator of hazardous waste is responsible for the identification of hazardous materials prior to requesting disposal. Cost for analysis and identification of any unknowns, whenever necessary, is the responsibility of generators of hazardous waste, and will be accomplished prior to request for disposal.

5. **Special Laboratory Disposal Methods** - Small amounts of common inorganic acids (except hydrofluoric and chromic acids) can be diluted and neutralized to a pH between 5 and 10 and disposed of via the sanitary sewer.

Inert, non-toxic salts, sugars, and buffers can be diluted and disposed via the sanitary sewer. Contact EHSRM before any treatment or disposal of chemical waste is performed in the laboratory.

6. **Reactive Materials** - Reactive wastes include cyanides, sulfides, air and/or water reactives, oxidizers, explosives, and flammable solids. Special care must be exercised when handling these materials to prevent contact with incompatible materials, such as air, water, or organic materials. Reactives should be isolated from other wastes and should be stabilized whenever possible. For example, water reactives should be stored in a desiccator and picric acid should always be saturated with water.

7. **Disposal Costs** - A lab-pack is the most common and most expensive method of packaging non-bulkable solid chemical waste, such as toxics and reactives, for disposal. Waste materials in various sized containers are packed into metal drums for transportation and final disposal. An inert packing material (vermiculite) is used to surround and protect the containers. Lab-packs contain a maximum of 17 gallons of waste chemicals per 55-gallon drum, 8 gallons per 30-gallon drum, and 1 gallon per 5-gallon pail.

For the most current disposal cost of a 55-gallon lab-pack, please contact EHSRM at (210) 458-5250. The disposal cost includes preparation, packaging, labeling, transportation, and ultimate treatment or disposal.

8. **Non-hazardous Waste Disposal** - All chemical wastes that do not meet the definition of a RCRA-hazardous waste must still be disposed of properly to protect human health and the environment. In most cases, disposal via the sanitary sewer or the trash is not permitted; however, there are exceptions which will be made by EHSRM on a case by case basis.
9. For **radioactive waste disposal** procedures, see the [UTSA Radiation Safety Manual](#) or contact the UTSA Radiation Safety Officer (RSO) at (210) 458-5807.