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EH&S FACT SHEET

Environment, Health and Safety Information for the Berkeley Campus

Treatment of Laboratory Waste (Bench Top)

Overview

This fact sheet summarizes what laboratory personnel need to know before treating any laboratory hazardous waste at UC Berkeley. Laboratory personnel may treat hazardous waste to reduce the volume or hazard of the waste by following "Bench Top Treatment" regulations.

What is a hazardous waste?

There are four characteristics of hazardous waste: corrosive, ignitable, reactive and toxic. Corrosive wastes are acids with a pH less than 2 and bases with a pH greater than 12.5. Ignitable wastes have a flash¬point of less than 140 F°/60°C. Reactives are more subjective, but are "normally unstable and readily undergo change without detonation." Toxic wastes are laboratory wastes that are not flammable, corrosive or reactive; laboratory waste may only be considered non-toxic if data is available and the LD50 of the mixture is greater than 2,500 mg/kg. Hazardous waste is more thoroughly described in the EH&S fact sheet "Hazardous Waste Management."

Do I have to follow bench top treatment rules for non-hazardous waste?

Treating non-hazardous waste, such as liquids with a pH >2 or < 12.5 is NOT hazardous waste treatment. Charcoal filtering dilute, non-hazardous solutions of ethidium bromide is another example. Bench Top treatment rules only apply if you are treating hazardous waste, but always follow best practices while conducting any waste treatment.

Acceptable hazardous waste treatment methods

To treat hazardous wastes under Bench Top treatment, the treatment procedure must be published in a peer-reviewed scientific journal. Reference the source of your treatment procedure in your laboratory SOP and training handout. Examples include:

- Prudent Practices in the Laboratory: Handling and Disposal of Chemicals, Committee on Prudent Practices for Handling, Storage, and Disposal of Chemicals in Laboratories, National Research Council, Section 7.D, 1995.
- Analytical Biochemistry #162, Ethidium Bromide: Destruction and Decontamination of Solutions, Lunn and Sanstone, (453-458), 1987.

Hazardous waste treatment criteria

1. Waste must be generated in a single procedure, or set of procedures that are part of the same laboratory process.

2. Quantity to be treated must be the lessor of (per batch):

- 5 gallons (18.9 Liters) of liquids; OR
- 39.6 pounds (18 kilograms) for solids; OR
- the quantity limit set forth in the National Research Council or scientific journal procedure.

3. Waste must be treated at or near the point where it was generated.

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4. Waste must be labeled and managed as hazardous waste prior to treatment.

5. Waste must be treated within 10 days of generation, and treated in containers that are easily and safely manipulated by one person.

6. All waste residues remaining after treatment that exhibit flammable/ignitable, corrosive, reactive or toxic hazard characteristics must be managed as hazardous waste.

To be drain disposed, treated liquids must also meet the criteria established in UC Berkeley's Guidelines for Drain Disposal of Chemicals (https://ehs.berkeley.edu/sites/default/files/lines-of-services/hazardous-materials/50benchtop.pdf). For example, liquids must be between a pH of 5 and 10 to be drain disposed.

Waste containing radioactive materials must be treated in accordance with the Radiation Safety Manual.

Training

1. Complete the one-time, Hazardous Waste Management training in the Hazardous Waste Disposal Program.

2. Complete the annual, spill response training at the EH&S website.

3. Complete process-specific training (provided by your PI or lab safety contact) that includes:
   a. A description of the process that produces the waste, and the hazards of the waste;
   b. A description of the types of personal protective equipment to be used during treatment.
   c. Step-by-step procedures on how to conduct the treatment.

Record keeping

1. Maintain a chemical treatment log-book which documents:
   a. The process name generating the waste
   b. Person who generated the waste and generation date
   c. Person treating the waste and treatment date
   d. Amount of waste being treated
   e. Constituents of the waste that was treated
   f. Disposal method of the treatment residue (if any)

2. Keep of list of personnel who are allowed to generate and treat the waste.

3. Keep personnel training records and treatment log-books for 3 years.