

**DE LA SALLE UNIVERSITY**  
**PHYSICS DEPARTMENT**  
**Chemical Waste Disposal Procedures**

The DLSU Physics Department manages the disposal of chemical waste through the Campus Sustainability Office.

The following waste handling procedures are mandatory when preparing chemicals for disposal.

**RESTRICTIONS**

1. Chemical wastes sent for disposal should not be mixed with biohazardous or radioactive wastes.
2. Hazardous liquids must not be flushed down drains as a method for disposal. This practice is illegal and may lead to dangerous reactions and damage to the draining system as well as create a potential hazard to trades personnel working on the system. Solid or liquid waste chemicals must not be mixed with general garbage.
3. In order to avoid explosions, fires or spills, incompatible combinations of chemicals must not be mixed in a single container.
4. The DLSU Physics Department bears the primary responsibility for proper packaging and labelling.
5. If the University Pollution Control Officer of the DLSU Campus Sustainability Office overseeing the collection has any doubts about proper labelling or packaging techniques, waste will not be removed until it is properly prepared.
6. Materials requiring special handling include organic peroxides, PCBs [polychlorinated biphenyls] and explosives. Before disposing these materials, consult the Physics Laboratory University Pollution Control Officer of the DLSU Campus Sustainability Office.

**CONTAINERS**

1. All containers used for storing chemical waste must be sealed and undamaged. Any container not properly sealed will not be removed (corks or rubber stoppers are not recommended).
2. Liquid waste containers should only be filled to 70-80% capacity to allow for vapor expansion and to minimize the potential for spills occurring from overfilled containers.

3. Container material must be compatible with the stored chemical waste [eg. hydrofluoric acid cannot be stored in glass containers].

## LABELS

1. To prevent the mixing of waste which could create an incompatible reaction, all wastes must be clearly identified by means of a proper Chemical Waste label.
2. The following information must be indicated on the label:
  - Specific generic **names** of the components of the wastes in the container along with approximate percentages of each component present must be listed. No abbreviations or trade mark names are to be used. Vague categories [eg. solvent waste] are not acceptable
  - **Waste number** of the generated wastes as is identified in the Classification of Prescribed Hazardous Wastes in the Procedural Manual on Hazardous Waste Management of the Department of Environment and Natural Resources
  - **Name** and **contact number** of the researcher who generated the chemical waste
  - The **general hazards** (eg., toxic, corrosive, etc) must also be indicated
3. If the waste is not identified, the containers will not be collected.

## STORAGE

1. Waste chemicals are to be collected and stored in a central waste-holding facility managed by the Campus Sustainability Office.
2. Properly packaged wastes may be temporarily stored in a research laboratory, but must not be allowed to accumulate for everyone's safety. Disposal must be arranged with the Campus Sustainability Office as soon as possible.
3. All safety precautions required for handling and storage of chemicals will also be observed with generated wastes.
4. It is recommended that waste be segregated according to compatibility groups.

## SCHEDULING

1. The student/faculty/researcher who generated the waste is responsible for the proper disposal of the generated wastes.
2. To requests for transfer of wastes from the laboratories to the hazardous waste facility a **Hazardous Waste Disposal Form** from the Campus Sustainability Office must be completed by the student/faculty/researcher. This form will be evaluated by the University Pollution Control Officer who sets the specific date and time for the waste disposal.

3. The Campus Sustainability Office has assigned the 4<sup>th</sup> Monday of each month for the Hazardous Waste disposal schedule of the Physics Department.
4. Waste or empty gas cylinders generally can be returned directly to the supplier. If this is not possible, contact the DLSU University Pollution Control Officer.

## **SEGREGATION OF INCOMPATIBLE CHEMICAL WASTE**

Waste chemicals should be stored according to the following groupings based on chemical reactivities.

Materials requiring special handling include organic peroxides, PCBs [polychlorinated biphenyls] and explosives. Before disposing these materials, consult the Physics Laboratory Coordinator or the DLSU Physical Facilities Office.

### **Group A - Inorganic Acids and Acid Salts**

- All inorganic acids (eg. sulfuric, hydrochloric)
- All compounds which do not liberate a gas when acidified (eg. ferric chloride, sodium sulfate).
- Inorganic solids which are inert (eg. silica).

Note: Perchloric acid, although an inorganic acid, is a powerful oxidizing agent and should be included in Group E.

### **Group B - Nitrogenated Bases, Caustics and Acid-Reactive Compounds**

- Organic and inorganic bases (eg. pyridine, amines, sodium hydroxide).
- Elements and inorganic salts that may react with acids to liberate gaseous products (eg. potassium cyanide, ferric sulfide).

### **Group C - Neutral Organic Solids**

- All solid organic compounds which are neutral - no acids or bases (eg. Carbon black, styrene).

### **Group D - Flammable Liquids, Halogenated Solvents and Organic Acids**

- All organic liquids excluding organic bases (eg. toluene, chloroform).
- Organic acids (eg. formic acid, acetic acid).

### **Group E - Oxidizers**

- Any inorganic compound that assists fire (eg. hydrogen peroxide, lead nitrate).

### **Group F - Pesticides**

- Any compounds used to destroy or inhibit plant or animal pest such as pesticides,
- fungicides, insecticides etc.

### **Group Specials - Water and Air Reactive Materials**

- All chemicals which react to air and/or water, including fuming substances (eg. sodium - a water reactive, phosphorus - an air reactive, lithium aluminum hydride - both air and water reactive, thionyl chloride and phosphorus tribromide-fuming substances).

## **CHEMICAL INCOMPATIBILITIES**

When preparing chemical waste for disposal, it is the generator's responsibility to ensure that incompatible chemicals are not stored in the same container. A few general examples are:

- Oxidizers [Group E] should never be mixed with reducing agents [eg., water- reactive chemicals such as sodium] or organic materials [Groups B, C and D].

**GROUP E MUST BE KEPT AWAY FROM GROUPS B, C, & D**

- Acid-reactive compounds [Group B] which liberate gaseous products when acidifies should not be mixed with any acid [Group A and E].

**GROUP B MUST BE KEPT AWAY FROM GROUP A & E**

- Organic acids [Group D] should be segregated from inorganic acids [Group A]. Generally inorganic acids are oxidizing agents while some organic acids may be either reducing agents or combustible.

**GROUP D MUST BE KEPT AWAY FROM GROUP A & E**

Once the waste has been classified according to the chemical groups, it must be segregated to minimize the risk of mixing incompatible groups.