

# PROCEDURES FOR LABORATORY CHEMICAL WASTE DISPOSAL

## Purpose

In an effort to create an effective system for handling hazardous waste on campus, we recommend the following procedures.

## Labeling of Waste

All bottles containing chemical waste must have a label clearly identifying the contents. This is necessary to avoid inadvertent mixing of incompatible chemicals that may lead to a fire and/or explosion hazard. The label must contain the following words "Hazardous Waste".

## Waste Storage

Select an appropriate container (glass / polyethylene) for storage. The container should be compatible with the chemical being stored.

Use the original containers if possible.

Use appropriate sized containers (large enough).

Use a separate container for each type of waste.

Do not make containers too heavy to lift.

Containers must be tightly sealed and should not leak.

Stick a Waste log sheet with the waste information (applicable to liquid wastes of all kinds including organics). See the Appendix section for the Waste log sheet. It is important to maintain a list of all the materials in a waste container.

Write the chemical names in an expanded form, not as abbreviations or chemical formulas (i.e. "Ether" instead of "Et<sub>2</sub>O" and "Dimethylphosphinoethane" instead of "DMPE").

Do not store waste in a fume hood where other reactions are in progress.

Do not use metal cans for aqueous waste storage. Even at near neutral pH, solids and liquids can corrode through metal cans. Use only glass or polyethylene containers for waste storage.

Do not store containers with flammable waste on a bench or on the floor. Store flammable waste containers in flame-proof cabinets.

## Waste segregation

Proper segregation of laboratory waste is mandatory for a safe workplace. Ensure that chemicals or wastes that are stored together are compatible with each other.

### 1. Aqueous solutions consisting mainly of mineral acids/bases.

Although these wastes are not highly toxic, they must be neutralized and labeled properly. Acid waste includes acids such as sulfuric, hydrochloric, hydrobromic, hydroiodic and nitric acids. (Caution: Do not mix nitric acid with organic acids. Nitric acid and organic acids should not be stored in the same cabinet). Basic waste includes bases such as sodium and potassium hydroxide.

## 2. Acids and bases containing heavy metals.

These wastes may contain oxidizers and are usually toxic and explosive. These wastes should not be mixed together with other wastes. Store each type separately and label them appropriately. These wastes include perchloric, periodic, perbromic, arsenous, stannous, chromic, and similar acids. If you are not sure, seek professional advice (see contact details below). DO NOT pour waste down the sink.

## 3. Non-toxic salts.

These wastes may be diluted and washed down the drain. This includes materials such as sodium and potassium halides, magnesium and sodium sulfates, and calcium carbonate.

## 4. Toxic metal salts.

These wastes should not be poured down the sink and should be bottled separately. These wastes include salts of mercury, thallium, barium, and transition metals of any sort such as chromium.

## 5. Non-halogenated wastes.

All organic liquid materials that do not contain halogenated materials and/or water may be combined in a common waste container labeled "NON-HALOGENATED WASTE". This includes Tetrahydrofuran, alcohols, acetone, ether, hexanes, dimethylformamide, toluene, used pump oil, etc.

## 6. Halogenated wastes.

All halogen containing organic materials may be combined in a common waste container labeled "HALOGENATED WASTE". This includes dichloromethane, chloroform, chloroform- d, carbon tetrachloride, chlorobenzene, etc. Halogenated wastes should not be mixed with NON-HALOGENATED WASTE under any circumstance.

## 7. Corrosive/reactive waste.

Do not pour corrosive and/or reactive molecules into any waste container. Neutralize these wastes carefully to a less hazardous form. For example, acyl chloride waste can be neutralized cautiously with a small amount of methanol (result - an ester) and placed in the HALOGENATED WASTE bottle.

## 8. Solid wastes .

This includes materials such silica gel, alumina, celite, etc. Such solid waste adsorbents should be placed in a separate container with a tight lid. Silica gel waste can be recycled if it is stored separately. These wastes should not be mixed with liquid wastes.

## Procedure for Collection and Transport of Waste Container Procedure

Pack all the wastes in compatible containers.

All the containers must be properly classified and labelled as HAZARDOUS WASTE.

All the containers should contain a Hazardous waste log sheet. Fill the sheet completely.

When the containers are full, email the JNC Safety Officer (arunrk@jncasr.ac.in).

Arun R will contact the waste disposal contractor (Gomathi Resins and polymers Pvt Ltd).

## **Appendix**

Environment Health and Safety, Jawaharlal Nehru centre for Advanced Scientific  
Research, Jakkur P.O., Bangalore-50064. Telephone : 2208 2750

# **HAZARDOUS WASTE**

Dept/Lab: \_\_\_\_\_

Building: \_\_\_\_\_

PI Name: \_\_\_\_\_

Waste Accumulation start date: \_\_\_\_\_

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**COMPOSITION OF WASTE : ( Please list all chemicals)**

**DONOT USE ACRONYMS OR ABBREVIATIONS!**

**Waste Name:** \_\_\_\_\_

**Chemical Name:**

Log # \_\_\_\_\_

pH \_\_\_\_\_