

LABORATORY & CHEMICAL SAFETY GUIDELINES

Presented by

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“SAFETY IS FIRST AND MUST FOR ALL”

LABORATORY & CHEMICAL SAFETY

- ✘ The purpose of these guidelines
- ✘ To promote safety awareness and encourage safe working practices in the laboratory.
- ✘ These brief guidelines should serve as a reminder of things you can do to work more safely and are applicable to all users of the laboratory.
- ✘ All research workers are expected to adhere to safety guidelines and maintain safety standard strictly.

HAZARDS IN THE LABORATORY FALL INTO THREE GENERAL CATEGORIES:

- ✘ **Equipment:** A wide variety of equipments such as Rotavap, heating mantle, vacuum pumps etc.. are used for different activities. Before you use any equipment you must learn about its operation and its safety implications. Misuse of equipment can lead to injury delay in project work and substantial cost in repair bill.
- ✘ **Gases:** A variety of compressed gases are used, some of which may be toxic, corrosive, flammable, or explosive. You must learn about the safe handling of gases before embarking on their use. An accident with any of these could be catastrophic.
 - ✘ • All compressed gas cylinders should be securely chained or clamped to a rack.
- ✘ **Chemicals:** Acids, bases, etching solutions and solvents are commonly used in chemistry lab. These chemicals can cause severe burns, tissue damage, organ damage, asphyxiation, and genetic damage if used improperly.
- ✘ You must take chemical safety instructions before using any chemical from MSDS SHEET.
- ✘ In addition, improper use of solvents can result in a major fire. These chemicals even they look ordinary, are definitely not hazard free.

LABORATORY SAFETY

- ✘ Laboratory Hygiene
- ✘ Sharps Safety
- ✘ Safety Equipment
- ✘ Fire Safety
- ✘ Chemical Safety
- ✘ Personal Safety

LABORATORY HYGIENE

- ✘ Scrub hands thoroughly when finished
- ✘ Avoid cross contamination
 - Do not touch self, faucets, doorknobs, notebooks, pens etc. with gloves on.
 - Keep a pen or two in your drawer for lab use only
- ✘ Clean and disinfect your workspace

SHARPS SAFETY

✘ Sharps include

- Razor and scalpel blades
- Needles and pins
- Microscope cover slips
- Broken glass

✘ Place sharps in sharps boxes

✘ Broken Glass into glass box (ask for help)

✘ NO SHARPS OR GLASS IN THE TRASH

EQUIPMENT SAFETY

Fire
Extinguisher



Fire Blanket



Eye wash and Shower



Fume Hood



FIRE SAFETY

- ✘ Never leave flames unattended
- ✘ Do not use flammables near ignition sources
- ✘ Fire Extinguishers
 - Pull ring, aim at fire's base, squeeze handle, sweep back and forth (evacuate if $>1\text{m}^3$)
- ✘ Fire Blanket
- ✘ Fire alarm pulls

CHEMICAL SAFETY

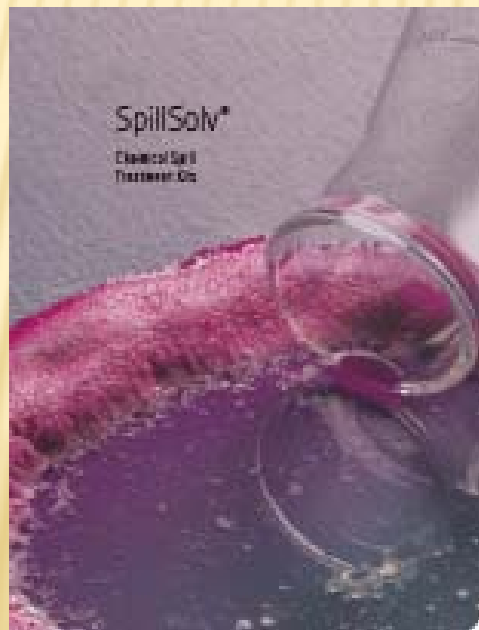
- ✘ Wear gloves and glasses where appropriate
- ✘ Follow instructor's directions
- ✘ Dispose of waste properly-Do Not pour down the drain

PERSONAL SAFETY

- ✘ Lab coat to be worn all the time
- ✘ Safety goggles must be worn all the time while working in the lab.
- ✘ Wear sensible clothing and
- ✘ Wear shoes.
- ✘ Appropriate gloves while handling chemicals
- ✘ Working of alone student is not allowed

SAFETY RULES

- ✘ Keep tabletops clean. Return all equipment to its original location before leaving the lab. Clean all spills immediately.



SAFETY RULES

- ✘ Report all accidents, no matter how minor, to the instructor. If you break something made of glass, be sure to use dustpan and hand broom to sweep it up and dispose of it in the glass waste receptacle.



SAFETY RULES

- ✘ Check labels on containers twice to make sure you use the right chemical and of the correct concentration.
- ✘ Dispose of chemicals in proper receptacle.



SAFETY RULES

- ✘ In case of an emergency where we have to evacuate, proceed out the nearest exit.
- ✘ Both the door should remain open all the time while working in the lab.



SAFETY RULES



- ✘ Never put anything in your mouth while in the lab (including chemicals, solutions, food and drink).
- ✘ All food and drinks should be restricted to sitting area only.



LABORATORY ETIQUETTE

- ✓ **Clean your personal workspace after use**

Wipe down benches with disinfectant before and after use.

- ✓ **Ensure that no trash is left behind**

- ✓ **No trash in the sinks**

- ✓ **Push in chairs**

- ✓ **Place lab items back on carts and trays**

CHEMICAL INFORMATIONS

- ✘ Prepare the complete list of chemicals and paste it to respective places such as chemicals cupboard and refrigerators
- ✘ Segregate the chemicals according to their **compatibility groups for storage**
- ✘ It is important to know as much about a chemical as possible.
- ✘ The most dangerous substance is the one that has no label.

WASTE DISPOSALS PRACTICE

- ✘ All the waste should be isolate in the following categories
- ✘ Halogenated solvents
- ✘ Non-Halogenated solvents
- ✘ Heavy metals waste
- ✘ Silica waste

SAFETY PRECAUTION ANNOUNCEMENTS

- ✘ In absence of any students no house keeping person should be allowed to enter the lab.
- ✘ Keep check on First Aid Box utilities
- ✘ No vendors
- ✘ No visitors
- ✘ Always keep atleast 1 litre of dil NaHCO_3 solution in stock.
- ✘ Contact details of all the person related to discipline of chemistry

AND FINALLY

- ✘ We will hold an examination on laboratory safety compulsory to all