


LAB SAFETY RESEARCH NOTES

Gas Cylinders

- Never move a gas cylinder unless the cap has been placed back on it.
- Never leave the area until the gas cylinder is chained to a stationary object (example: wall, bench, or fume hood)
- When transporting gas cylinders, use carts specially designed for that purpose and with the gas cylinder chained down.
- When changing out an empty tank, remove the section reading in service so that only empty is read.
- Chain the empty tank to the location by the elevator. If there is no more space there, chain the tank down in the instrument lab and tell Jessie.
- REMEMBER TO ALWAYS FILL OUT A YELLOW TAG TO ORDER A NEW GAS CYLINDER AND GIVE IT TO JESSIE.

MSDS AND NFPA SYMBOLS

- Know the dangers of your chemical before using the chemical
- Use the MSDS sheets and other health information before proceeding
- Blue- Health, Red- Flammability, Yellow- Instability, White- other information
- 4= extreme hazard, 3= serious hazard, 2= moderate hazard, 1= slight hazard, 0= minimal hazard
- Health
 - 4- Life threatening
 - 3- Major Injury Likely without immediate action
 - 2- Temporary or minor injury
 - 1- Irritation or minor reversible injury
 - 0- No significant Risk
- Flammability
 - 4- Very Flammable gases or very volatile
 - 3- Materials capable of ignition under normal temperature
 - 2- Materials ignite under moderate heat
 - 1- Materials ignite due to being preheated
 - 0- Normally stable
- Instability
 - 4- Readily capable of detonation or explosive decomposition at normal temp. & press.
 - 3- Materials capable of detonation or explosive reaction but require ignition
 - 2- Normally unstable and readily undergo violent chemical change (no detonation)
 - 1- Normally stable but become unstable at high temperatures and pressures
 - 0- Normally stable even under fire conditions
- White
 - Ox- Oxidizer

- W - Reacts with water in an unusual or dangerous way
- Non-Standard Symbols
 - COR: Corrosive, strong acid or base
 - BIO : Biological hazard
 - POI: Poisonous
 - : Radioactive
 - CYL or CRYO: Cryogenic

Labeling

- Labeling is very important in the lab due to the handling of hazardous chemicals so ALWAYS LABEL A CONTAINER after you have transferred a chemical into a new container.
- For large containers, Lab Standard requires:
 - Chemical Name
 - Manufacturer's Name
 - Health and Physical Hazards
 - Long & Short Term Health Effects
- For smaller or short term containers, provide
 - Chemical Name
 - Hazards associated with chemical (could use NFPA symbols)
- For Waste Containers use waste labels from the stockroom and write what kind of chemical is in the container (halogenated-organics, non-halogenated, aqueous metals, etc.)
 - Unknown wastes cost the department much more money to dispose
- All Chemical Reactions that will be left unattended will need a special form posted on the fume hood giving contact information, information on the hazardous chemicals involved, and emergency shutdown procedures if any are needed.

Waste

- Use Amber Bottles when disposing of organic liquid wastes.
- Use Clear Bottles when disposing of aqueous metal wastes.
- Solid chemicals, sharps, and glass wastes all have specific containers for their disposal.
 - If one of the containers is needed, please see me.
- Place chemical waste containers in a hood towards the back and out of the way.
 - Use a secondary tray underneath the containers in case of leakage.
- If chemicals have gone past their expiration date they should be disposed of due to their instability.

Chemical Storage

- Proper chemical storage is important to safety and could potentially save lives
- Flammable liquids should be stored in yellow cabinets with larger containers on the bottom.
- Solid chemicals can be stored on a shelf (preferably one with a lip) or drawers.

- Acids and Bases should be placed in the small blue cabinets.
- Very Volatile chemicals should be kept in a refrigerator that is specifically made for chemical use or under a fume hood.
- Leave very little flammable liquids (<10gallons per 100 sq. ft.) outside of the yellow cabinets.
- Chemicals need to be separated inside the cabinets based on what type of chemical.
 - Bases and Acids should be separated as much as possible within blue cabinets.
 - Organic Liquids should be separated within the yellow cabinets
 - using secondary plastic containers or trays
 - placing on different shelves
 - Chemical Groups can be categorized as:
 - A- Compatible Organic Bases- amine groups
 - B- Compatible Pyrophoric and Water Reactive
 - C- Inorganic Bases
 - D- Organic Acids
 - E- Oxidizers including Peroxides
 - F- Inorganic Acids
 - G- Not Intrinsically Reactive
 - J- Poison Compressed Gases
 - K- Explosive or highly unstable materials
 - L- Nonreactive flammable solvents
 - X- Incompatible with all other groups

Other Safety Items

- Make sure to keep your work space clean and uncluttered.
 - Good house-keeping will eliminate dangers and will make fellow researchers appreciative.
- Use protective equipment such as goggles, gloves, face masks, and lab coats when needed.
- Use CHEMICAL CARRIERS TO TRANSPORT liquid chemicals from the stockroom or lab to other location.
- This note is for your own safety:
 - Always order a new gas cylinder when you replace an empty one.
 - When you take things from the stockroom note it on the clipboard unless insignificant item (such as just one vial or a few disposable pipettes)
 - Clean up after yourself (especially glassware)
 - If you need to use an instrument, make sure to schedule a time on www.dsb236.com