LABORATORY SAFETY
Up-dated October 2011

Everyone working in the laboratory should be cognizant of the potential hazards they face while working there. Fires with organic solvents, acid and base burns and toxic fumes and vapors are common hazards in almost any nutrition laboratory. Generally, lab safety is a matter of common sense, but there are a few rules that should be followed.

The following material is provided as a brief summary and guide to lab safety. It gives a quick overview of some important points.

Laboratory Neatness

Clean and neat work areas avoid risk of damage to clothing, books, samples and injury from spilled chemicals. Neatness also reduces fire hazard.

Laboratory Conduct

Fooling around in the laboratory can be hazardous. Keep the lab in its proper place and fun and games in their place.

Working with Glassware

Be careful when removing frozen glass stoppers (ask for assistance from lab personnel). Broken glassware should be discarded properly in a "glass only" labeled container. Chipped glassware should be fire polished. Properly support glassware with ring stands and clamps when heating and use cork rings with round-bottom flasks.

Working with Glass Tubing

Don't touch heated glass until it has time to cool. Hot glass looks just like cool glass. To remove stoppers from glass tubing or thermometers, grasp tubing close to stopper and push gently with twisting. Use water or glycerin for lubrication.

Laboratory Dress

Pull hair back and wear eye protection when required (especially when handling liquids). Sleeves that are too tight often prevent freedom of movement, while sleeves that are too loose may cause you to overturn apparatus or glassware. Aprons protect clothing from corrosive or staining chemicals. Gloves protect hands from corrosive chemicals. Handle hot objects with insulated gloves. Do not wear open toe shoes, which can allow spilled chemicals or broken glass to come in contact with your feet.

Working with Test Tubes

Gently heat solids or liquids in a test tube near the liquid or solid surface. Be prepared to remove the tube from heat quickly to prevent eruption. Never point a test tube or reaction vessel at another person. For safety and neatness, place test tubes in a rack.

Chemicals in the Eye

Rapid treatment is vital. Run large volumes of water over eyeball until medical help is available. Wash with large volumes of water for at least 15 minutes. Alkaline materials in the eye are extremely hazardous. **Know the location of the emergency eyewash station.**

Safety Shower

Use this for chemical spills or a fire victim. Operate by pulling down on ring and keep the area near

the shower clear at all times. Remove clothing from area affected by spills.

Fire on Clothing

Do not run or fan flames. Smother fire by wrapping victim in fire blanket or lab coat and use the shower or a carbon dioxide fire extinguisher. **"Stop, drop, and roll."**

Extinguishing a Fire

Using a fire extinguisher:

1. Know its location
2. Remove from mounting
3. Pull pin
4. Squeeze lever
5. Discharge at base of flame
6. Report use and recharge

Use dry sand to extinguish burning metals.

Types of Fire Extinguishers

Rating:

A. _ For ordinary combustibles; wood, paper and cloth.
B. _ For flammable liquids; oil, grease and gasoline.
C. _ For use on live electrical equipment.

Number on extinguisher (e.g., 10A_5B) denotes square footage the unit is capable of handling.

Unauthorized Experiments

Always work under instructor's or lab technician's supervision in the laboratory.

Eye Protection

Normal eyeglasses are usually not adequate. Don't wear contact lenses in the lab. Eye protection is especially important when working with corrosive materials and vacuum and high-pressure apparatus. UNL liability insurance requires wearing of eye protection when handling any liquids…**including water.**

Acid/Alkali Spills

For acid spills, use solid sodium bicarbonate followed by water. For alkali spills, wash with water followed by dilute acetic acid.

Handling Flammable Liquids

Flammable liquids should always be stored in Room C118b. Extinguish all flames in the area where flammable solvents are used, as vapors may travel to ignition source and flash back.

Handling Mercury

Mercury spills are very hazardous. Droplets should be picked up by suction and a mercury spill kit should be used to complete cleanup. **Notify Lab Supervisor immediately when mercury spills occur.**

Protection from Toxic Gases

Emergency air masks should be used. **However, since our lab is not equipped with such masks, clear the area where gases are and notify the Lab Supervisor.**

Waste Disposal

Hot glassware or reactive chemicals should be discarded in a non-metallic container separate from paper and other flammable waste. Test tube quantities of hazardous liquids can be flushed down the sink with plenty of water. Contact lab technician for disposal of large quantities of hazardous materials or anytime you are not sure of how something should be disposed of.

Labeling Chemicals

All chemicals should be clearly labeled. Do not use materials from unlabeled containers. Avoid contamination. Never return reagents to their container. Clearly label chemicals as you work. **Labels must include the chemical name, the concentration of that chemical, the date, and your name or initials.**

Carrying Chemicals and Equipment

Carry long apparatus such as tubing or burettes, in an upright position close to the body. Grasp bottles firmly with both hands and hold them close to the body. Do not carry bottles by the neck. Use a bottle carrier when transporting chemicals any distance.

Transferring Liquids

Remember, **Acid to Water and Not the Reverse.** Do not pipette by mouth, use a bulb. Use gloves when pouring corrosive liquids. Use a funnel when filling a bottle or flask and prevent an air block by raising the funnel. Pour hazardous liquids over a sink.

Fume Hood

Use a fume hood equipped with a safety glass when working with toxic or flammable materials.

Gas Cylinders

Protect cylinder valve with cap. Fasten cylinders securely. Transport cylinders on a hand truck, don't roll. Do not drop cylinders. Mark cylinders when empty.

Handling Sodium and Potassium

Fire or explosion may result when metallic Na or K are exposed to water. Store them under light oil. Metal can be cut safely with a spatula on a paper towel. Destroy residues with alcohol. Cool if necessary.

Hand Protection

Gloves should be worn anytime you are using a potentially hazardous chemical.

THINK SAFETY AT ALL TIMES

No smoking
No food or beverages
No running
Know location of exists
Keep aisles clear and put books and coats in designated areas
Do not leave an experiment unattended
Extinguish burners when you leave the work area

ALWAYS BE PREPARED TO HELP FELLOW STUDENTS IN AN EMERGENCY