

Laboratory Safety  
29 CFR 1910.1450



# Introduction

- Laboratory operations present special health hazards that may not exist in other types of workplaces due to the exposure to a variety of chemicals, and beside these hazards there other dangers including fires, explosions.
- OSHA requires labs to have a special written plan to keep employees safe, called “Chemical Hygiene Plan” .



# Chemical Hygiene Plan

- Where hazardous chemicals are used in the workplace, the employer shall develop and carry out the provisions of a written Chemical Hygiene Plan” which is:
- Capable of protecting employees from the health hazards associated with chemicals.
- Capable of keeping exposures below the permissible limits.



# The Chemical Hygiene Plan Shall include The Following:

- SOP's relevant to safety and health considerations to be followed laboratory work involves the use of hazardous chemicals.
- Control measures to reduce employee exposure to hazardous chemicals including engineering controls, the use of PPE, and hygiene practices.



# Continued

- Fume hoods and other protective equipment are functioning properly.
- Designation of personnel responsible for implementation of the CHP.
- Employee training.
- Medical consultations, and medical examinations.



# Continued

- Additional Protection:
- Designated area
- Use of containment devices such as fume hoods or glove boxes.
- Safe removal of contaminated waste.
- Decontamination procedures.



# Before Lab Work, Get to Know:

- Hazards of materials & agents and their prescribed safety procedures



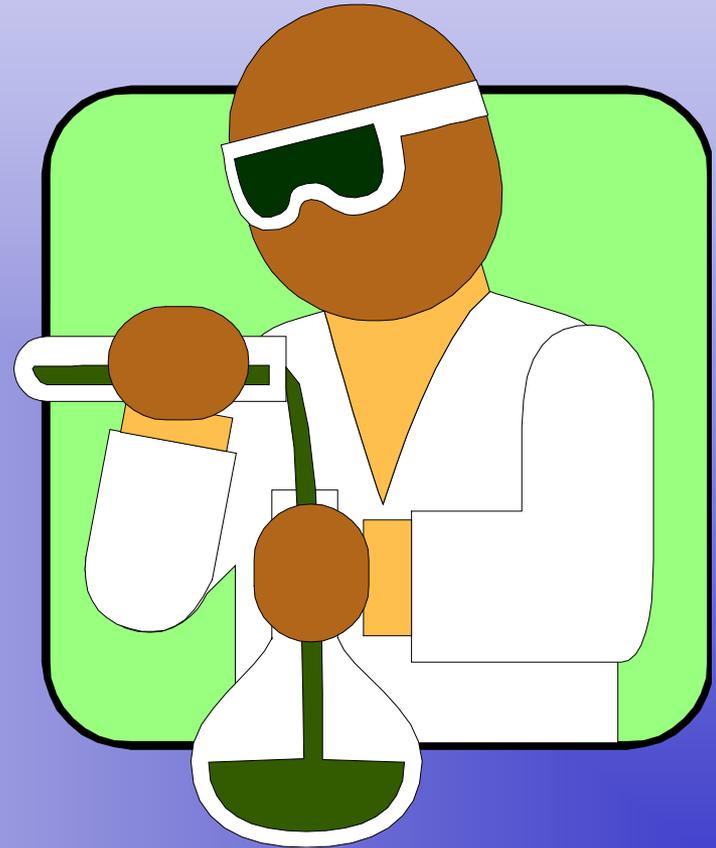
# Also Get to Know:

- ✓ Emergency spill procedures, use of adsorbents and disinfectants
- ✓ Designated escape route and alternate
- ✓ Location of fire ext., eye wash, shower, first aid, and spill kits



# While Working in the Lab:

- ✓ Shoes with full coverage and good grip soles
- ✓ Restrain long hair, loose clothing and jewelry
- ✓ Use appropriate eye, skin, and hand protection



# Eye protection

- Protects against risk of flying objects or dust particles, splashes of hazardous materials or harmful rays



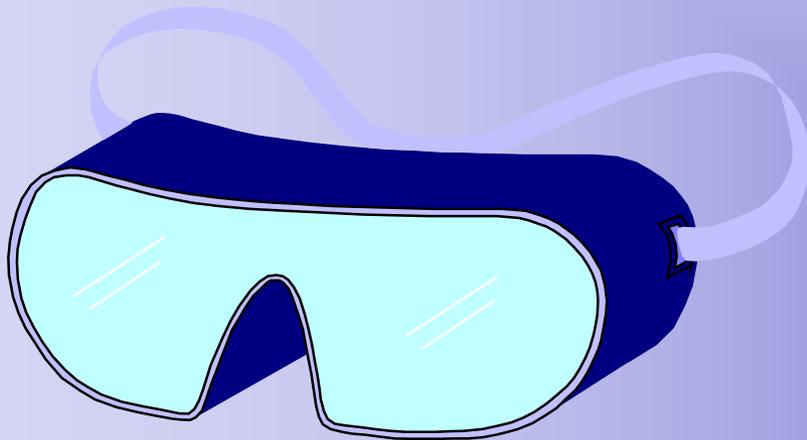
# Safety Glasses



- Unbreakable lenses of plastic or tempered glass
- For light-to-moderate work
- Can be prescription lenses
- Do not interfere with contact lenses



# Goggles



- Work with significant risk of splash of chemicals or projectiles
- Can be worn over prescription glasses



# Face Shield

- Work with significant risk of splash on face or possible explosion
- Face shield protects face adequately but not eyes



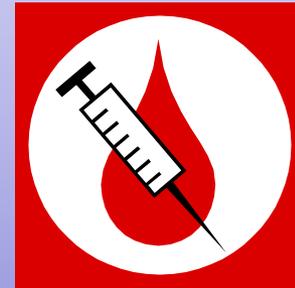
# Hand Protection

- ❑ Protects against risk of cuts, abrasions, burns, or exposure to hazardous materials.
- ❑ Requires selection of the **appropriate** chemical resistant gloves



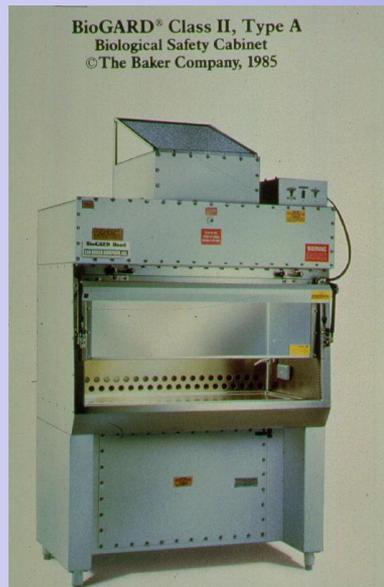
# While Working in the Lab:

- ✓ Follow universal precautions
- ✓ Handle unknowns as if they were hazardous



# While Working in the Lab:

- ✓ Handle volatiles in a chemical fume hood →



← Contain bioaerosols in a biological safety cabinet



# While Working in the Lab:

- ✓ Use mechanical transfer devices
- ✓ Never use mouth pipetting



# While Working in the Lab:

- ✓ Authorized persons only
- ✓ Identify **EVERYTHING!**
- ✓ No food, beverages, tobacco products, or application of cosmetics



# While Working in the Lab:

Report **all:**

✓ Accidents

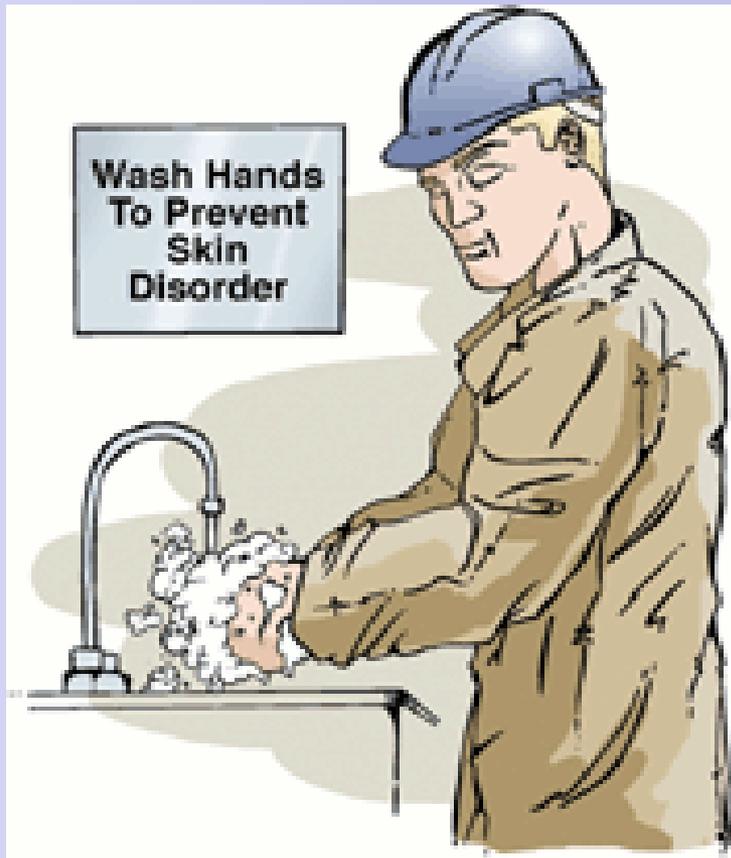
✓ Injuries

✓ Fires

✓ Spills



# Health & Hygiene



- Do not store food or beverages in lab refrigerators.
- Wash well before leaving lab.
- Remove lab coat prior to leaving lab for lunch or coffee breaks.



# Before Leaving the Lab:

Turn off:

- ✓ Gas
- ✓ Water
- ✓ Power supplies
- ✓ Vacuum lines
- ✓ Compression lines
- ✓ Heating apparatus



# Before Leaving the Lab:

- ✓ Identify and package waste, dispose properly
- ✓ Lock/out and tag/out defective equipment
- ✓ Decontaminate work surfaces and equipment



# Before Leaving the Lab:

- ✓ Return unused equipment, apparatus, etc.
- ✓ Leave lab coat in the lab
- ✓ Wash
- ✓ Close and lock door



# Evaluating Lab Hazards



- Regular review of the types of hazards:
- chemical
- physical
- biological
- ergonomic
- mechanical



# Safety Measures In Labs



# Lab Safety

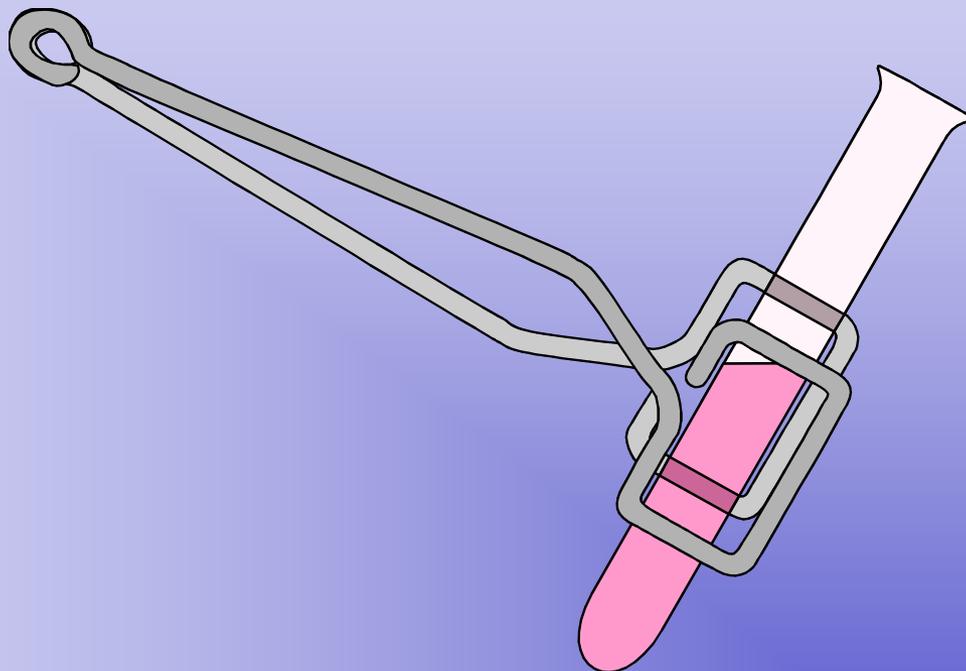
**DO NOT USE**



**Cracked or Grazed  
Glassware**



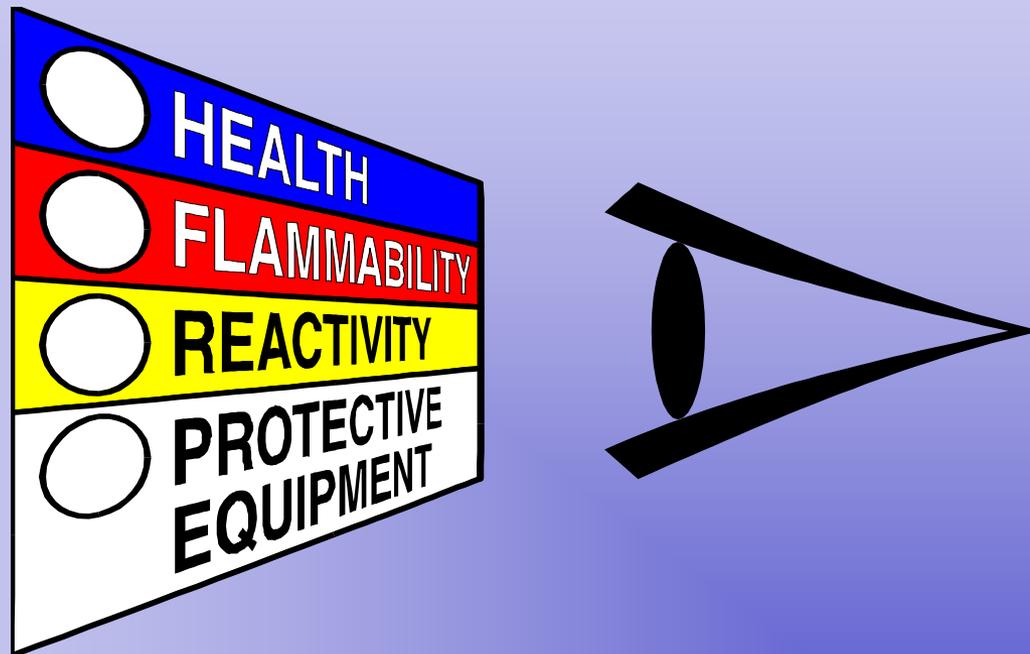
# Lab Safety



Use Clamps to Hold Hot Tubes



# Lab Safety



Always Read The Labels



# Lab Safety



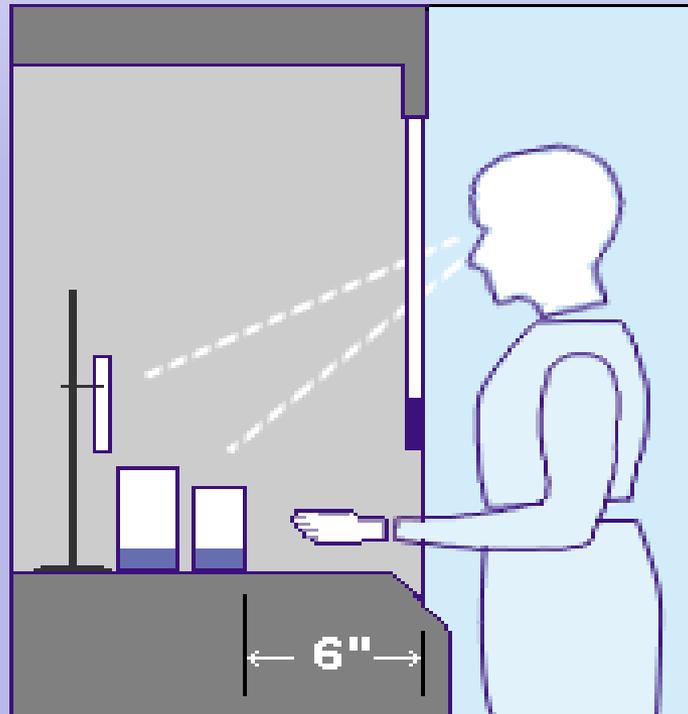
Compressed Gases Cylinders should be Fixed Properly



# Lab Safety



# Lab Safety



Fume Hood



# Lab Safety



# Lab Safety



# Lab Safety



# Lab Safety

Know the Hazards!

**MSDS is  
the KEY**



# Lab Safety



# Weekly Lab Checks

- Eye wash (purge)
- Fire extinguisher
- First Aid Kit
- Fume Hood
- Tubing, pressurized connections
- Chemical storage

