

# Lab Safety

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# Lesson 06a General safety behavior

This presentation does not cover all safety requirements. It is an overview. These are several general safety behaviors in the lab.

#1 **The best safety is prevention.**

#2 No horse-play ever.

#3 If you are uncertain, ask.

Post poison control number: 1-810-222-1222

Post fire service number: (varies)

Post administrative emergency number

- Know where the exits and fire extinguishers are
- Remove trip hazards
- Inspect your glassware
- Know the procedures before you start
- Know where the wash station is
- Wear PPE
- Always clean up

# Lesson 06b personal protection equipment

This is called PPE. Some experiments and tests require specialized protection not listed here. These are the basics for most lab work.

**Properly remove and dispose of gloves**



Consider keeping a spare scrubs on location if clothing gets soiled or contaminated. Maintain clean towels ready to use in case of an accident – for eye wash, shower, clean up or other purposes

Lab coat, scrubs or apron

Long pants (& long sleeves)

Fully enclosed shoes

Face shields or masks

Safety glasses

Nitrile, latex or vinyl gloves

# Lesson 06c Trip hazards

Spills and breaks are among the common lab accidents. Rushing or tripping, not following procedures, and negligence are causes.



Eliminate or rearrange potential trip hazards like extra chairs, tables, items beneath eye level, and low contrast objects. Especially look for proper covering over power chords and other trip hazards laying on the floor.

# Lesson 06d Ventilation

Some vapors are toxic (poison).  
Other reactions might spew out of their container. Others are less dangerous but still deserve caution



Some high school labs do not have a vacuum hood. In some instances, with proper care, instructor demonstrations can be performed outside. Students should stand back from the instructor's demonstration and still wear proper PPE.

# Lesson 06e Heat and burns

Burns are common injuries in labs and can be caused by heat, chemicals, or electricity.

Acids, strong bases, and cryogenic liquid can cause extensive damage to tissue. Provide for a person's modesty if a shower is needed.

Depending on the type and source of a burn, the response will vary. Generally, medical help is recommended or required. **Do not** ice or apply ointments. **Do use** eye wash station, flush with tepid water and shower.

# Lesson 06f Eye wash station and shower



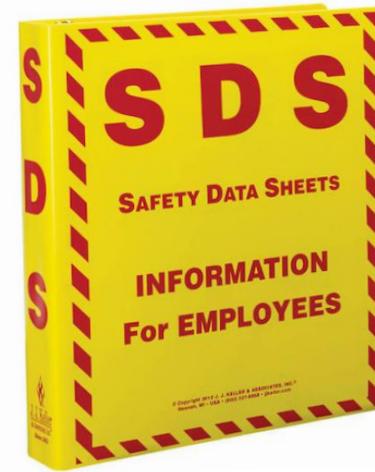
Potential eye or skin contact injury is no time for personal modesty or embarrassment. If eye protection is on, splash water to rinse this before removal. Then rinse eyes. Someone may need to assist holding eyelids open.

Immediately remove clothing with chemical spills. Avoid touching spilled with hands. Rinse hands immediately.



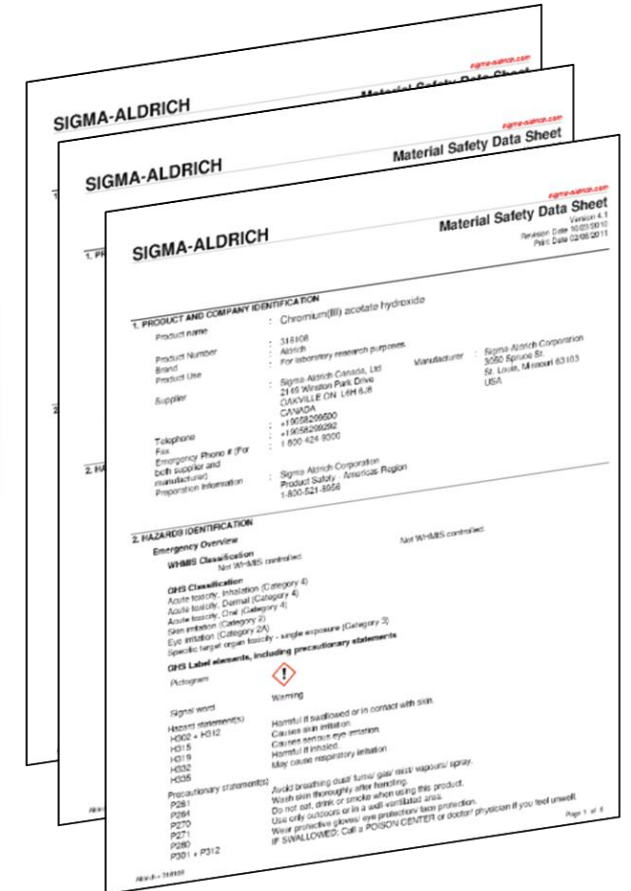
# Lesson 06g Safety Data Sheets (SDS)

The Hazard Communication Standard requires the chemical manufacturer, distributor, or importer to provide Safety Data Sheets (SDSs) for each chemical to communicate information on possible hazards.



Find, and read for SDS for all chemicals to be used.

**Note emergency procedures, in particular.**




# Lesson 06h Acid

Always add acid to water.

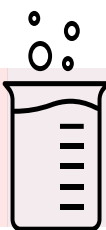
Never add water to acid.

When you mix water with acid, it gets very **hot** and can **splash**. But when you slowly add acid to water, it just makes a little heat.

always add acid to water



★ Yes      No ✗



Acid. Low pH

# Lesson 06i Strong base

Always add a strong base to water.

Never add water to a strong base.

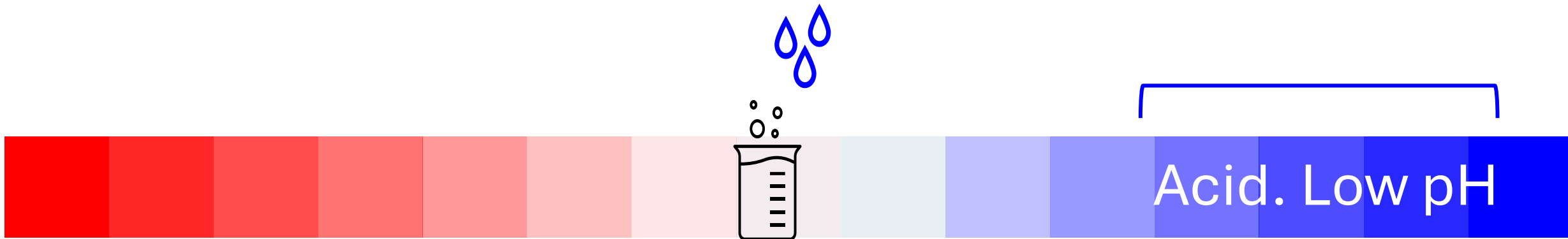
Adding water to concentrated bases may cause **violent boiling** of the solution and splashing.

always add base to water



★ Yes

No ✗



# Lesson 06j Sharps

**Dispose of sharps directly in an approved sharps container without bending, breaking, or recapping.**

Maintain containers within a biosafety cabinet.



**Never temporarily place exposed sharps on a countertop.**

# Lesson 06k Stockroom

Full guidelines for the stockroom and use of chemicals is beyond the scope of this introduction. Even so – no joking around, no horseplay, move with caution, wear PPE, re-check labels before use. Use proper methods for removing chemicals from their containers.



Use labels. Neatly face containers facing out. Follow lab stockroom rules for shelving.

**If you are uncertain, ask.**

# Lesson 06| Refrigerators

Laboratory refrigerators differ from household refrigerators. Do not use them for food storage or preparation.

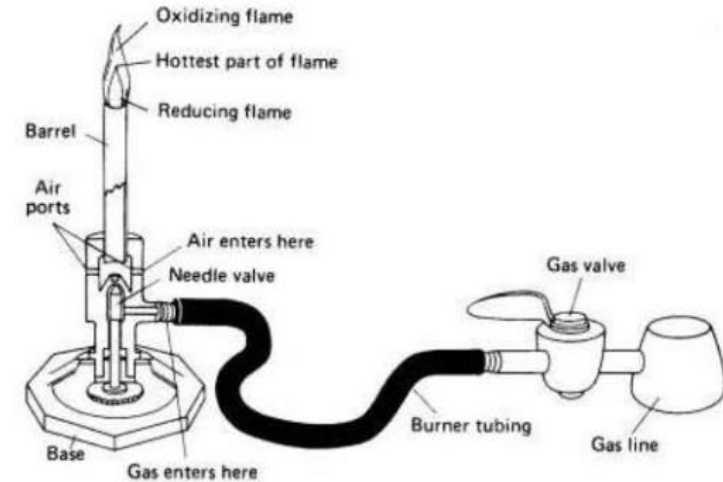
These refrigerators hold temperature-sensitive products such as biological samples, chemicals, drugs, vaccines, and other similar substances.

Laboratory refrigerators are built with special features to reduce the risk of fire and explosion, such as corrosion-resistant interiors and heavy-duty cords.



# Lesson 06m Bunsen Burner

Proper use of a Bunsen burner requires hands-on training. This provides a few safety guidelines only.



- Know the location of the laboratory's main gas shut off valve and fire extinguisher.
- Remove all papers, notebooks, combustible materials, and excess chemicals from the area.
- Tie-back any long hair, dangling jewelry, or loose clothing.
- Use a sparker/lighter with extended nozzle to ignite burner. Never use matches.
- A hot plate or heating mantle must be used when flammable liquids are to be heated.
- Never leave a lighted burner unattended.