GENERAL LABORATORY SAFETY TRAINING

Lec: 1 Dhiaa z. Mashkour Organic Ch. Lab.

STAYING SAFE MEANS THAT YOU...

- Read labels on containers of chemicals
- Read Material Safety Data Sheets (MSDS)
- Handle chemicals with care
- Use correct protective clothing and equipment
- Remember emergency procedures

CHEMICAL LABELS

- Every container of chemicals is labeled by the manufacturer.
- The label will tell you
 - Name of chemical
 - Name, address and emergency phone number of manufacturer
 - Physical and health hazards
 - Precautionary measures
 - First-aid instructions
 - Proper handling/storage instructions



HEALTH HAZARDS ON A CHEMICAL LABEL

- Carcinogen
- Highly toxic agent
- Toxic agent
- Reproductive hazard
- Irritant

- Corrosive
- Sensitizer
- Hepatotoxin
- Nephrotoxin
- Neurotoxin

TYPICAL PRECAUTIONARY MEASURES ON A LABEL

- Do not breathe vapors
- Use in well-ventilated areas
- Keep container closed when not in use
- Avoid contact with skin
- Wash thoroughly with soap and water after handling
- o Keep away from sparks, heat, and flame
- Do not store near combustible materials
- Store in tightly closed container
- Remove and wash contaminated clothing promptly
- Keep from contact with clothing and other combustible materials

COMMON SIGNAL WORDS ON LABELS

- Danger Can cause immediate serious injury or death
- Warning Can cause potentially serious injury or death
- Caution Can cause potentially moderate injury

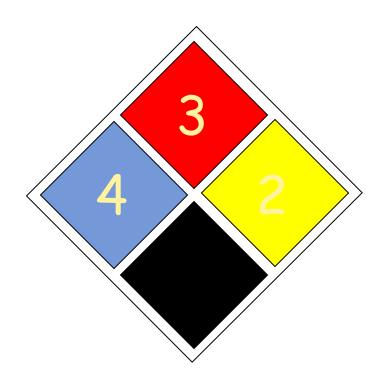
SPECIAL SYMBOLS USED ON LABELS

Helps you recognize kind of hazard a chemical could present if you are not careful

- Toxicity
- Corrosivity (acids and bases)
- Ignitability (flammable solvents and certain solids)
- Reactivity (sodium and various water-reactive reagents)

COLOR AND NUMBER CODED LABEL SYSTEMS

NFPA-type label



Colors represent kind of hazard

- Red = fire
- Yellow = instability
- Blue = health
- black = specific hazard
 & personal protection

Numbers show degree of hazard

- 0 = Minimal
- 1 = Slight
- 2 = Moderate
- 3 = **Serious**
- 4 = Severe

COLOR AND NUMBER CODED LABEL SYSTEMS

NFPA-type labels



Black = specific hazard

- OX = Oxidizer
- ACID = Acid
- ALK = Alkali
- COR = Corrosive
- ₩= Use no water
- Other symbols:







Material Safety Data Sheets (MSDS)

Provides more **detailed information** about a chemical, including

- Composition, information on ingredients
- Hazards identification
- First aid measures
- Accidental Release measures
- Handling and Storage
- Exposure controls, personal protection
- Stability and reactivity
- Toxicological information

CHEMICAL STORAGE

- Labs have established separate storage areas for
 - ✓ Flammable and combustible organic liquids and solvents
 - ✓ Acids
 - ✓ Dry poisons, salts, and oxidizers
 - ✓ Bases

• Chemicals are stored in

- ✓ Chemical storage cabinets
- ✓ Flammable storage refrigerators (No food)
- ✓ Chemical storage refrigerators/freezers (No food)
- ✓ On shelves with retaining barriers

STORAGE FUNDAMENTALS

- Identify incompatible chemicals check the Material Safety Data Sheet
- Isolate and separate incompatible materials
 - Isolate by storing in another area or room
 - Degree of isolation depends on quantities, chemical properties and packaging
 - Separate by storing in same area or room, but apart from each other

USE CORRECT PROTECTIVE CLOTHING AND EQUIPMENT

• Eye Protection

- ✓ Safety glasses flying particles, chemical splashes, dust
- ✓ Splash goggles corrosive liquids, solvents, powders
- ✓ Face Shields high pressure systems
- Respiratory Protection normally not needed at LUC
- Skin and Body Protection
 - ✓ Gloves see the MSDS
 - ✓ Aprons and lab coats strong acids and bases
 - ✓ Shoes always worn in lab, closed toe and closed heel
- Hearing Protection normally not needed at LUC



Do not

- Use damaged glassware
- Store chemicals near heat, sunlight, or other substances with which they might react
- Store materials on floors or other places where people could trip over them
- Leave equipment unattended when its operating (unless it is designed to do so or you have an SOP)
- Put custodians and fellow workers in danger

