Unit 3- Lesson 4

Chemistry 0

March 2021, L. Tracey Gao

Last week’s homework

- Mike fills a graduated cylinder with 10 mL of water. He then drops a ring into the graduated cylinder and records that the water level is 13 mL. What did he measure?
  A. The ring’s mass
  B. The ring’s volume
  C. The water’s density
  D. The water’s weight

Last week’s homework

- What is a flat-bottomed, cylindrical piece of glassware that is used for mixing and heating compounds?

A. Beaker
B. Erlenmeyer flask
C. Florence flask
D. Buret

Last week’s homework

- What is the device called? It's attached to a gas line and lit to provide heat for your experiments.

A. Heater
B. Bunsen burner
C. Igniter
D. Sparker

Last week’s homework

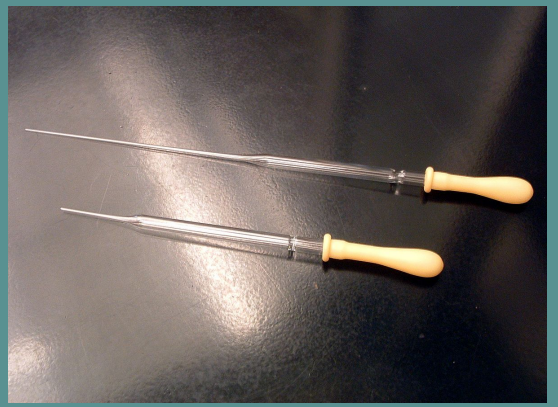
- What is this lab equipment? It's commonly used to measure the volume of a liquid.

A. Beaker
B. Pipette
C. Buret
D. Graduated cylinder

Last week’s homework

- Which of the following pieces of chemistry lab equipment is used to transfer liquids from one place to another?

A. Beaker
B. Pipette
C. Buret
D. Graduated cylinder



Laboratory and Chemical Safety

- **OBJECTIVES:**

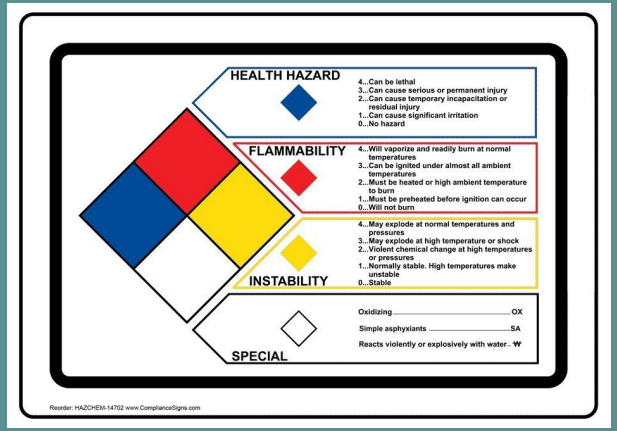
  - Explain the importance of chemical safety and where to find chemical safety information.
  - Identify common chemical safety and protective equipment symbols.
  - List and describe basic laboratory safety guidelines and tips.

Laboratory and Chemical Safety

- **WHERE TO FIND CHEMICAL SAFETY INFORMATION:**
  - Product container labels include important information about storage and handling, as well as warnings, first aid information, and other emergency details.
  - Health Flammability Reactivity Symbol gives a very quick overview of things to consider when storing or handling the chemicals.
  - Hazard Communication Standard Labels provides information to the workers on the specific hazardous chemical.
  - Safety Data Sheet (SDS) gives information about the proper way to handle or work with a certain substance.

Laboratory and Chemical Safety

- **Health Flammability Reactivity Symbol:**
  - The diamond is divided into four sections, each displaying a hazard rating from 0 to 4. A zero indicates no hazard. Higher numbers stand for increasing precautions that need to be taken to safely work with those chemicals.



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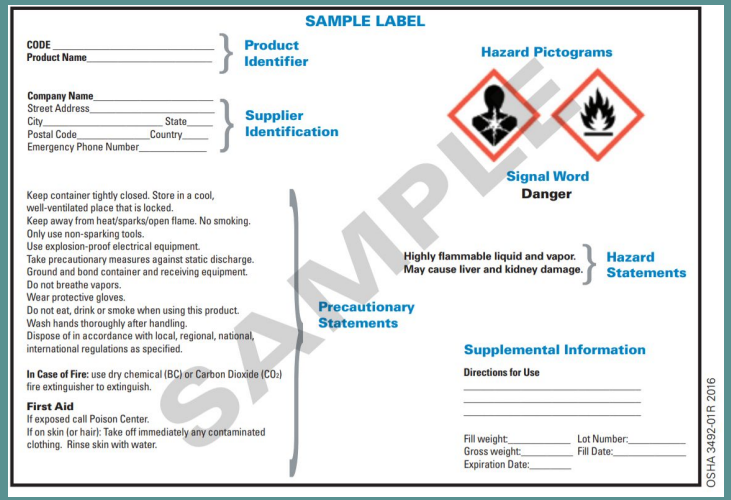
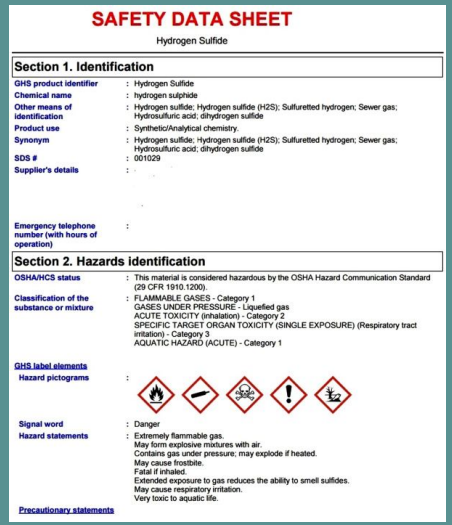
- **Hazard Communication Standard Labels:**
  - Labels contain more information about the chemical, such as the name, where it was manufactured, precautionary statements, and other information needed to safely handle that chemical.



https://www.osha.gov/sites/default/files/publications/OSHA3492QuickCardLabel.pdf

Laboratory and Chemical Safety

- **Safety Data Sheet (SDS):**
  - It is a standardized document that contains occupational safety and health data.
  - It provides more complete resource for details, such as chemical properties, health and environmental hazards, protective measures, as well as safety precautions for storing, handling, and transporting.



SAFETY DATA SHEET

Hydrogen Sulfide

Section 1. Identification

GHS product identifier	:	Hydrogen Sulfide
Chemical name	:	hydrogen sulphide
Other means of identification	:	Hydrogen sulfide; Hydrogen sulfide (H2S); Sulfuretted hydrogen; Sewer gas; Hydrosulfuric acid; dihydrogen sulfide
Product use	:	Synthetic/Analytical chemistry.
Synonym	:	Hydrogen sulfide; Hydrogen sulfide (H2S); Sulfuretted hydrogen; Sewer gas; Hydrosulfuric acid; dihydrogen sulfide
SDS #	:	001029
Supplier's details	:	
Emergency telephone number (with hours of operation)	:	

Section 2. Hazards identification

OSHA/HCS status	:	This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
Classification of the substance or mixture	:	FLAMMABLE GASES - Category 1 GASES UNDER PRESSURE - Liquefied gas ACUTE TOXICITY (inhalation) - Category 2 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3 AQUATIC HAZARD (ACUTE) - Category 1
GHS label elements		
Hazard pictograms	:	
Signal word	:	Danger
Hazard statements	:	Extremely flammable gas. May form explosive mixtures with air. Contains gas under pressure; may explode if heated. May cause frostbite. Fatal if inhaled. Extended exposure to gas reduces the ability to smell sulfides. May cause respiratory irritation. Very toxic to aquatic life.
Precautionary statements		

https://www.sciencedirect.com/topics/engineering/safety-data-sheet

Laboratory and Chemical Safety

- **WARNING SYMBOLS:**
  - Anyone working with chemicals should become familiar with these common warning symbols. These symbols are often found on chemical containers and around laboratories.
  - Their job is to keep people informed of any potential hazards.
  - They are designed to be noticed and they ultimately help make sure that people use chemicals in a safe and responsible manner.

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- **WARNING SYMBOLS:**

Gas Symbol

Environmental Hazard Symbol

Explosive Symbol

Flame Symbol

Corrosive Symbol

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- **WARNING SYMBOLS:**

Irritant and Sensitizer Symbol

Skull and Crossbones Symbol

Chronic Health Hazard Symbol

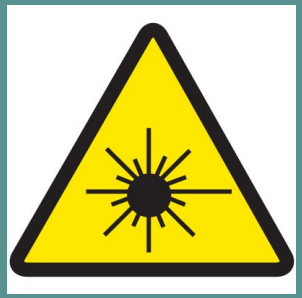
Radiation Symbol

New Radiation Symbol

Laboratory and Chemical Safety

- **WARNING SYMBOLS:**

Biohazard Symbol



Laser Symbol

Oxidizer Symbol

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- **PROTECTIVE EQUIPMENT SYMBOLS:**

Respiratory Protection Symbol

Hand Protection Symbol

Protective Footwear Symbol

Eye Protection Symbol

Face Protection Symbol

Laboratory and Chemical Safety

- **GENERAL SAFETY RULES:**
  - *When working in the laboratory*:
    - Always read through directions and SDSs completely before beginning an experiment.
    - Avoid touching your eyes, nose or mouth when working in the laboratory.
    - Keep your face away from the opening of a container that holds chemicals.
    - Wear the proper protective gear and clothing.
    - When mixing chemicals, follow the instructions carefully.
    - Work with other people, never work alone.
    - Wear safety goggles to protect your eyes.
    - Know where safety equipment is located.
    - Do not eat or drink in the laboratory.
    - Be careful when working with sharp objects.