MATERIAL SAFETY DATA SHEET (MSDS)

1.XYLENE
Chemical name: Xylene (Dimethylbenzene)
Formula: C_8H_{10}

- **GHS Symbols**
  - 🔥 **Flame** → Flammable liquid
  - ☠️ **Toxic.Health Hazard** → Harmful to health
  - ⚠️ **Exclamation Mark** → Irritant
- **Uses:** Used as a solvent to clean and prepare microscope samples (especially in histology).
- **Hazards**
  - Highly flammable
  - Harmful if inhaled or swallowed
  - Causes skin and eye irritation
- **First Aid**
  - **Inhalation:** Move to fresh air; get medical help if you feel dizzy.
  - **Skin:** Wash with soap and water.
  - **Eyes:** Rinse with plenty of water.
  - **Ingestion:** Don't induce vomiting; call a doctor.
- **Protection:** Gloves, goggles, lab coat, and work in a ventilated area or fume hood.

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2. HYDROCHLORIC ACID
Chemical name: Hydrochloric Acid (HCl)
Formula: HCl (aqueous solution)

- **GHS Symbols**
  - ☣️ **Corrosion** → Causes severe skin burns and eye damage
  - ⚠️ **Exclamation Mark** → Irritant (vapors)
- **Uses :** Used for cleaning, adjusting pH, and dissolving metals or minerals.
- **Hazards**
  - Corrosive to skin and eyes
  - Vapors irritate the respiratory system
- **First Aid**
  - **Inhalation:** Move to fresh air; seek medical help.
  - **Skin:** Rinse with water for 15 min; remove contaminated clothing.
  - **Eyes:** Rinse with water for 15 min; get medical help.
  - **Ingestion:** Drink water; do *not* vomit; get immediate medical help.
- **Protection :** Gloves resistant to acids, goggles or face shield, lab coat, and always use a fume hood.

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3. POTASSIUM CHLORIDE
Chemical name: Potassium Chloride
Formula: KCl

- **GHS Symbols**
  - ⚠️ **Exclamation Mark** → May cause mild irritation (dust)
- **Uses:** Used to prepare saline solutions and as a potassium source in lab experiments.
- **Hazards**
  - Low hazard
  - May irritate eyes or skin if handled as powder
- **First Aid**
  - **Inhalation:** Move to fresh air if you inhale dust.
  - **Skin:** Wash with water and soap.
  - **Eyes:** Rinse with water for several minutes.
  - **Ingestion:** Rinse mouth and drink water.
- **Protection:** Basic lab safety: gloves, lab coat, and goggles.

ACTIVITY: READ THE MSDS AND CHOOSE THE CORRECT OPTION.

1.A student accidentally spills **xylene** near a Bunsen burner. What is the *main* danger?

- A) It may react with water and produce heat.
- B) It may catch fire and spread quickly.
- C) It may release toxic chlorine gas.
- D) It may become corrosive to metal.

2. If you inhale **hydrochloric acid vapors**, what should you do first?

- A) Wash your hands immediately.
- B) Drink milk to neutralize the acid.
- C) Move to fresh air and call for medical help.
- D) Cover your mouth with a wet cloth and keep working.

3.Which protective item is **most essential** for **hydrochloric acid** but not as critical for **potassium chloride**?

- A) Safety goggles
- B) Acid-resistant gloves
- C) Lab coat
- D) Closed shoes

4. Why should **xylene** be used under a fume hood?

- A) It is heavy and may damage the bench.
- B) It produces flammable and toxic vapors.
- C) It reacts strongly with air.
- D) It evaporates slowly at room temperature.

5. Which GHS symbols represent **hydrochloric acid**?

- A) Flame + Skull
- B) Corrosion + Exclamation mark
- C) Oxidizer + Flame over circle
- D) Toxic. Health hazard + Environment

6. A student says: “Potassium chloride is safe, so I don’t need gloves.” Why is this wrong?

- A) Because KCl is explosive when heated.
- B) Because any chemical powder can irritate skin.
- C) Because KCl evaporates easily.
- D) Because it reacts with oxygen.

7. If **xylene** and **hydrochloric acid** are stored on the same shelf, what’s the risk?

- A) They may neutralize each other.
- B) Xylene makes the acid less corrosive.
- C) A flammable liquid should not be near a strong acid.
- D) There is no problem; both are liquids.

8. After inhaling **HCl fumes**, a student starts coughing and feels a burning throat. What does this mean?

- A) The student is allergic to chlorine.
- B) The student inhaled a corrosive vapor that irritates the airways.
- C) The acid exploded inside the lungs.
- D) The air was too humid.

9. Why do **xylene** and **toluene** have similar safety rules?

- A) Both are aromatic, flammable solvents.
- B) Both are strong acids.
- C) Both are oxidizing agents.
- D) Both are solid salts.

10. Which chemical requires **the least ventilation control**?

- A) Hydrochloric acid
- B) Xylene
- C) Potassium chloride