

## **TP 1 : General information on practical work in Chemistry**

### **I- Introduction**

The main objective of practical chemistry work is to understand the reactions and techniques involved in a planned experiment and to develop the idea of an experimental protocol based on a suitable procedure for achieving the desired results.

### **II- Purpose**

Students who are working in a chemistry laboratory for the first time must learn the most important safety rules, become familiar with commonly used glassware, and know how to write a report.

### **III- Safety rules**

Practical chemistry work carried out in a laboratory must be handled with care, given the delicate nature of the equipment and the danger that most reagents can cause. Therefore, the importance of laboratory safety should not be underestimated. Here are some rules of conduct to follow in the laboratory to protect yourself.

#### **➤ Wear the correct personal protective equipment :**

- A cotton lab coat must be worn (because synthetic lab coats stick to the skin when they come into contact with chemicals).
- Wearing contact lenses is not recommended in the laboratory. Many volatile products (hydracids, halogenated derivatives) can cause significant irritation.
- For any potentially hazardous procedure (as indicated by the teacher), students must wear gloves and safety goggles.
- Tie back long hair and anything else that could get caught in the equipment. Remove watches, rings and other jewellery.

#### **➤ Keep food and drink out of the laboratory:**

- Drinking, smoking and eating in the laboratory should be avoided. The risk of poisoning is extremely high.

#### **➤ Dispose of laboratory waste properly:**

- Workbenches must be kept clean and tidy and should only contain materials necessary for carrying out practical work.
- Any handling of hazardous chemicals must be carried out under a ventilated hood with protective glass (follow the instructions given by the teacher).
- Pay close attention to instructions on the use of specific materials (glassware, assemblies, etc.) and the performance of certain operations (heating, washing, draining, stirring, etc.).

#### **➤ Exercise extreme caution when handling :**

- Do not point test tubes or containers in which a chemical reaction is taking place towards yourself or others.
- Avoid touching your face or any other part of your body during handling.

-It is forbidden to pipette chemicals by mouth; this operation must be carried out using a pipette.

-Reactions must not be left unattended.

-It is forbidden to use electric hotplates or hot plates while wearing gloves.

➤ **In the event of an accident :**

-Despite all precautions, accidents can sometimes occur. If this happens, it is important to remain calm. Do not run. You must know where all safety equipment is located so that you can immediately rinse your eyes or skin if you have been splashed. Report any accident immediately when it occurs.

-A fire blanket is available to everyone in case of need in the practical work room in an easily accessible location.

➤ **End of handling :**

-Workbenches must be cleaned during the session and left thoroughly clean and dry at the end of the session.

-Hands must be washed before leaving the laboratory and all glassware must be left clean and dry.

**Safety pictograms**

Code	Hazard pictogram	Symbol
GHS01		Exploding bomb 
GHS02		Flame 
GHS03		Flame over circle 
GHS04		Gas cylinder 
GHS05		Corrosion 
GHS06		Skull and crossbones 
GHS07		Exclamation mark 
GHS08		Health hazard 
GHS09		Environment 

## COSHH KNOW YOUR SAFETY SYMBOLS / HAZARD PICTOGRAMS

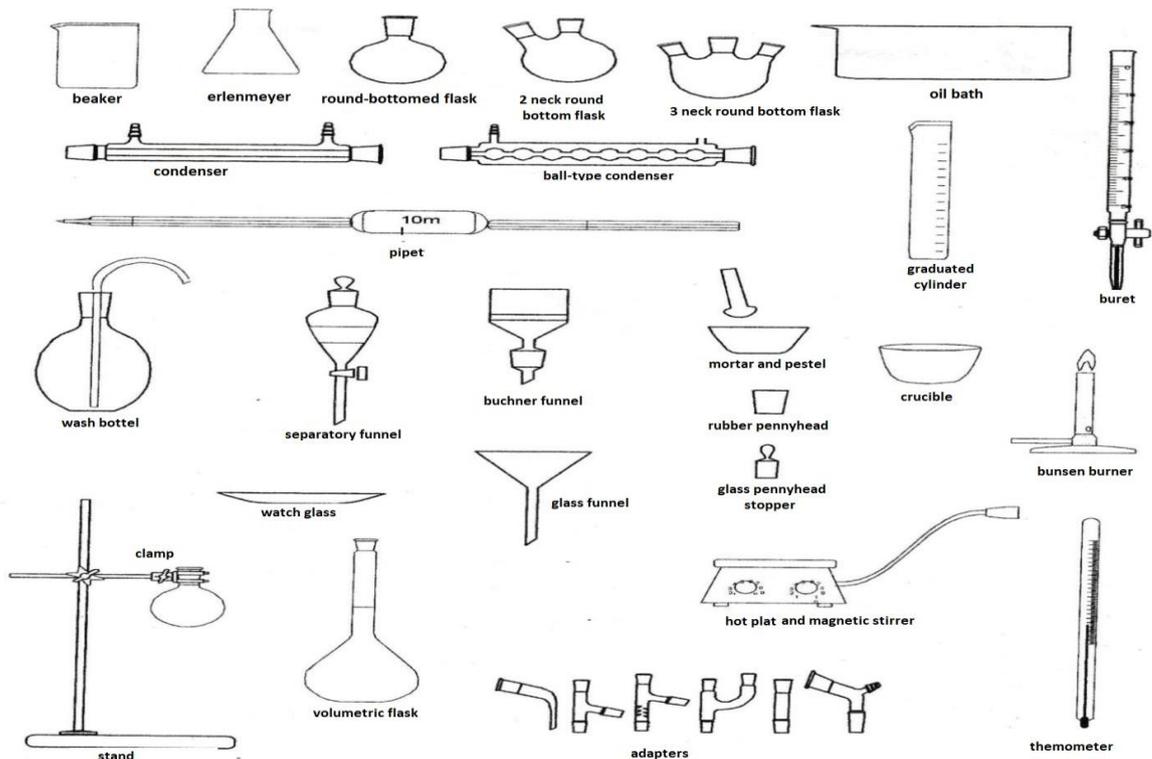
 <p><b>Dangerous to the Environment</b> - Hazardous to the environment &amp; causes aquatic toxicity.</p>  <p><b>Highly Flammable</b> - Gases, aerosols, liquids and solids, such as: Self-heating substances &amp; mixtures; Pyrophoric liquids and solids that may catch fire when in contact with air; Substances which in contact with water emit flammable gases; Self-reactive substances that may cause fire when heated.</p>  <p><b>Explosive</b> - Self-reactive substances &amp; organic peroxides that may cause explosion when heated.</p>  <p><b>Oxidising</b> - Gases, solids &amp; liquids, which can cause or intensify fire and explosion.</p>  <p><b>Toxic / Very Toxic</b> - Handling a chemical that is acutely toxic in contact with skin, if inhaled or ingested, may be fatal.</p>  <p><b>Corrosive</b> - Corrosive and can cause severe skin burns and eye damage. It is also corrosive to metals.</p>	 <p><b>Harmful / Irritant</b> - Means: Acutely toxic; Causes skin sensitisation, skin &amp; eye irritation; Respiratory irritant; Narcotic (causes drowsiness or dizziness); or Hazardous to the ozone layer.</p>  <p><b>Gas Under Pressure</b> - Means: Gas under pressure, may explode when heated; Refrigerated gas, may cause cryogenic burns or injuries; or, Dissolved gases.</p>  <p><b>Longer Term Health Hazards</b> - With one or more of the following: Carcinogenic; Affects fertility and unborn child; Causes mutations; Respiratory sensitiser, which may cause allergy, asthma or breathing difficulties when inhaled; Toxic to specific organs; or May be fatal or harmful if swallowed or if it enters airways.</p>
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**General Safety Precautions when using Hazardous Substances**

1. Always read the label and follow safety instructions.
2. Use the specified Personal Protective Equipment (PPE).
3. Do not breathe vapours, spray or dust.
4. Avoid skin contact, wash immediately with water.
5. If contact with eyes or mouth occurs, rinse with plenty of cold water and seek medical advice **IMMEDIATELY**.
6. Wash hands thoroughly before you eat, drink or smoke.

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### Laboratory equipment



**V-How to write a report ?**

Writing reports is the stage that highlights practical sessions. A report may include the following points :

- The title, the number of the experiment and the name(s) of the student(s).
- An introduction that includes definitions or knowledge relating to the practical session.
- The objective of the experiment.
- The diagram of the experimental protocol explained during the practical session.
- Observations and comments.
- The results in the form of numerical values or graphs.
- Analysis and interpretation of the results.
- A conclusion.