

FE271 FOOD CHEMISTRY LABORATORY

Laboratory Safety and Working Rules

“Safe laboratory work starts
before the experiment begins.”



WHAT WILL WE LEARN TODAY?

By the end of this session, you will be able to:

- Identify the main hazards in a laboratory
- Use personal protective equipment (PPE) correctly
- Handle chemicals safely
- Use glassware and laboratory equipment safely
- Respond appropriately to laboratory accidents
- Separate laboratory waste correctly
- Apply safe laboratory working practices

WHY CAN A LABORATORY BE HAZARDOUS?

Chemical + Heat + Electricity + Glass + Pressure + Human Error

Remember:

Being unaware of a hazard can be as dangerous as the hazard itself.

THREE BASIC PRINCIPLES

1. Do not do what you do not understand.
2. If you are unsure, ask.
3. If something goes wrong, report it.

REMEMBER:

An accident is controlled by early intervention, not by hiding it.

BEFORE ENTERING THE LABORATORY

- Read the experimental procedure.
- Know the chemicals and equipment you will use.
- Identify the potential hazards.
- Prepare the required PPE.
- Tie back long hair.
- Wear closed-toe shoes.
- Remove loose jewelry and accessories.
- Keep bags and unnecessary personal items away from the working area.

IMPORTANT

Do not start an experiment if you do not understand the procedure.



PERSONAL PROTECTIVE EQUIPMENT



Wearing PPE does not mean that you are risk-free.

WHAT SHOULD YOU NEVER DO IN THE LABORATORY?

- × Eat or drink
- × Run
- × Play or joke around
- × Use your phone unnecessarily
- × Smell chemicals directly
- × Touch chemicals with bare hands
- × Pipette by mouth



WORKING WITH CHEMICALS

- Read the label before use.
- Use only the amount required.
- Never return unused chemicals to the stock bottle.
- Keep containers closed when not in use.
- Never use an unlabeled container.
- **Do not smell chemicals directly.**
- Use appropriate equipment for transferring and pipetting chemicals.



REMEMBER

“I already know this chemical” is not a safety procedure.

GLASSWARE SAFETY

Glassware can:

- Break
- Become extremely hot
- Create sharp edges
- Break under mechanical or thermal stress

SAFETY RULES

- Do not use cracked glassware.
- Do not touch hot glass with bare hands.
- Do not force glass tubing into stoppers.
- Never pick up broken glass with your bare hands.

KEEP YOUR WORKSPACE ORGANIZED

A SAFE WORKSPACE IS:

- **CLEAN**
- **ORGANIZED**
- **FREE OF UNNECESSARY ITEMS**

Keep only the equipment and materials required for the experiment on the working surface.

“I’LL JUST POUR IT DOWN THE SINK.”

CAN EVERY LIQUID BE POURED DOWN THE SINK?

Examples that require special consideration:

- Highly acidic or alkaline solutions
- Organic solvents
- Heavy-metal-containing solutions
- Unknown solutions

QUESTION

What would you do if you were unsure how to dispose of a solution?

Stop and ask the laboratory supervisor.



A CHEMICAL GOT ON MY SKIN

WHAT SHOULD I DO?

- Stop working.
- Flush the affected area with plenty of water according to the laboratory procedure.
- Inform the laboratory supervisor immediately.
- Identify and report the chemical involved.
- Seek medical evaluation if required.

DO NOT

- ✗ Say “It is probably fine” and continue working.
- ✗ Attempt to neutralize the chemical with another substance unless specifically instructed by the appropriate procedure.



CUTS AND BROKEN GLASS

BROKEN GLASS

- ✗ DO NOT PICK IT UP WITH YOUR HANDS.
- ✓ Use appropriate tools.
- ✓ Dispose of it in the designated glass waste container.

IF YOU ARE CUT

- Stop working.
- Apply appropriate first aid.
- Inform the laboratory supervisor.
- Assess the possibility of chemical or biological contamination.

REMEMBER

Broken glass is both a physical and a contamination hazard.



SCENARIO 1

You find an unlabeled beaker.

- A) Smell it
- B) Use it
- C) Pour it down the sink
- D) Do not use it and report it



SCENARIO 2

You touched your phone while wearing laboratory gloves.

- A) Nothing happens
- B) Wipe the phone and continue
- C) Remove/change the gloves appropriately and clean your hands
- D) Put another pair of gloves over them

SCENARIO 3

A chemical spills during an experiment.

- A) Immediately wipe it with a paper towel
- B) Clean it without telling anyone
- C) Stop working and inform the laboratory supervisor
- D) Pour water over it



THE 10 GOLDEN RULES OF THE LABORATORY

1. Do not start an experiment before reading the procedure.
2. Never use a chemical without reading its label.
3. If you are unsure, ask.
4. Use PPE correctly.
5. Never mouth-pipette.
6. Never smell chemicals directly.
7. Never pick up broken glass with your hands.
8. Never dispose of waste carelessly.
9. Never hide an accident or spill.
10. Leave your workspace clean when you finish.