The core principle of laboratory safety is to minimize risk through preparation, awareness, proper technique, and the use of protective equipment. A safe lab environment is a collective responsibility, requiring a professional and serious approach from everyone present.[1]

🛡️ Personal Protective Equipment (PPE) & Attire

This is your first line of defense and is mandatory upon entering any working lab area.

- **Eye Protection**: **Safety glasses** or **goggles** must be worn at all times.[2] Use a **face shield** when there's a significant risk of chemical splashes.
- **Lab Coat**: A flame-resistant lab coat, fully buttoned, is required to protect your skin and clothing.[3]
- **Gloves**: Wear appropriate chemical-resistant gloves for the materials being handled. Inspect them for holes before use and remove them before leaving the lab.[4]
- **Clothing and Footwear**: Always wear **long pants** and **closed-toe shoes**. Do not wear shorts, skirts, or sandals.
- **Personal Items**: Tie back long hair.[5] Remove dangling jewelry and loose clothing that could get caught in equipment.[6]

🔬 General Lab Conduct

Your behavior in the lab is critical to ensuring a safe environment for everyone.

- **No Food or Drink**: Never eat, drink, chew gum, smoke, or apply cosmetics in the lab.[7] Do not store food in lab refrigerators.
- **Housekeeping**: Keep your work area clean, organized, and free of clutter.[8] Ensure aisles and emergency exits are never blocked.
- **Follow Procedures**: Never perform unauthorized experiments.[9] Follow all written and verbal instructions carefully.
- **Work Attitude**: Be alert and aware of your surroundings. Do not engage in horseplay or practical jokes.
- **Working Alone**: Avoid working alone in the lab.[10] If you must, ensure you have prior approval and a system for someone to check on you.

🔥 Handling Chemicals & Equipment

Proper handling of materials and equipment prevents accidents.

- **Know Your Chemicals**: Before using any chemical, read its **Safety Data Sheet (SDS)** to understand its hazards, handling procedures, and emergency protocols.[11]
- **Labeling**: Ensure all containers are clearly and accurately labeled with their contents and associated hazards.[12] Never use chemicals from an unlabeled container.
- **Fume Hood**: Use a fume hood when working with volatile, toxic, or flammable substances to prevent inhalation of hazardous vapors.[13]
- **Transport**: Use a secondary container, like a bottle carrier, when moving chemicals through the lab.[14]
- **Waste Disposal**: Dispose of all waste in designated, labeled containers.[15] Never pour chemicals down the sink unless specifically instructed to do so. Segregate waste into categories like chemical, broken glass, sharps, and biohazard.

🧼 Emergency Procedures & Cleanup

Know what to do before an accident happens.

- **Know Emergency Locations**: Be aware of the location of fire extinguishers, safety showers, eyewash stations, and first-aid kits.
- **In Case of Exposure**: If a chemical splashes on your skin or in your eyes, use the safety shower or eyewash station immediately and flush for at least 15 minutes.[16]
- **Report All Incidents**: Report any spill, injury, or accident to your supervisor immediately, no matter how minor it seems.[17]
- **End-of-Day Cleanup**: Clean and decontaminate your work area, return all materials to their proper storage locations, and ensure all equipment is turned off.[18]
- **Wash Hands**: Always wash your hands thoroughly with soap and water before leaving the lab.