

LABORATORY HAZARDS AND SAFETY

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- Electricity and gas hazards
- Fire Hazards
- Radiation and Chemical Hazards
- Hazards in Biological Laboratory

Electricity Hazards

- Shock
- Sparking
- Short circuit (fire)
- Overload (fire)
- Batteries (toxicity, fumes)
- Capacitors, Inductors



Safety Measures

- Earthing
- Wiring
- Selection of proper fuse
- Selection of proper cable
- Adaptors, plugs, extension boards (choice and repair)

Gas Hazards

- Leakage due to high pressure
- Fire and explosion
- Oxygen displacement/asphyxiation
- Toxicity (burns, irritation on the skin)
- Low pressure gas (implosion)

Safety Measures

- Ventilation
- Respirators
- Elimination of ignition sources
- Proper storage [Vertical clamping of cylinders]
- Maintenance of gas pipelines and valves
- Detection and handling of gas production and leakage
- Use of safety goggles and face shields

Fire Hazards

■ FIRE TRIANGLE



Causes of Fire

- Combustible material
- Smoking
- Electrical installations
- Heat/ spark/ welding equipment/
soldering
- Gas/ oil/ smoldering garbage

Fuels for fire

- Waste and rubbish
- Packing and wrapping materials
- Inflammable liquids
- Electrical insulation materials

Fire Safety

- Nature of Fire

Class

Materials

- A. Carbon containing wood, cloth, paper, rubber
- B. Flammable liquids oil, alcohol
- C. Flammable gases, methane, hydrogen
- D. Flammable metals Na, K, Ca, Mg
- E. Electrical appliances

Fire Safety Devices

- Fire Alarm
- Fire Escape
- Fire Barriers (Fire doors, walls and floors)

Chemical Hazards

- Gases
- Explosives
- Flammable
- Corrosive
- Poisonous

Safety

- Personal safety protective gear – gloves, masks, coats, goggles, etc.

DO NOT SHARE YOUR GEAR

- Washing up
- LAB HYGIENE

Cleaning spillage



BIOLOGICAL HAZARDS

- Animals
- Sharp instruments
- Blood samples
- Microorganisms

Safety

- Handling (Protective gear)
- Washing up
- Sterilization of cultures
- Disposal of biological and chemical waste
 - Use of bags
 - Auto claving
 - Washing and disinfecting
 - Keeping wild animals out
- Storage and handling of sharp instruments

Overall Safety

- Codes for safety
- Accident drills
- First aid
- Safe disposal of waste materials

Personal safety

- Shifting loads
- Protective gear

Laws and Regulations

- Safety and health
- Construction standards
- Electricity
- Fire
- Hazardous substances
- Experiments on Animals
- Legal liability for institutions