

SOP: Safe Operation of Laboratory Equipment and Instruments

This SOP details the **safe operation of laboratory equipment and instruments**, covering proper usage protocols, routine maintenance, calibration procedures, personal protective equipment requirements, hazard identification, emergency response steps for equipment malfunction, and training guidelines for laboratory personnel. The goal is to ensure accurate results, prevent accidents, and maintain a safe working environment in the laboratory setting.

1. Scope

This Standard Operating Procedure (SOP) applies to all laboratory personnel who use or maintain laboratory equipment and instruments within the facility.

2. Responsibilities

- Laboratory personnel must follow this SOP at all times.
- Supervisors ensure compliance and adequate training of staff.
- Designated personnel perform routine maintenance and calibration.

3. Personal Protective Equipment (PPE)

- Wear appropriate PPE at all times: lab coat, safety goggles, and gloves.
- Additional PPE may be required depending on specific equipment or materials handled (e.g., face shields, respirators).

4. Equipment Usage Protocols

- Read and understand equipment manuals prior to use.
- Inspect equipment for visible damage or malfunction before operation.
- Operate equipment only as intended and within specified limits.
- Do not bypass safety features or operate damaged equipment.
- Clean equipment after use as per manufacturer guidelines.

5. Routine Maintenance & Calibration

- Perform scheduled maintenance and calibration according to manufacturer and lab protocols.
- Document all maintenance and calibration activities in the equipment logbook.
- Tag equipment as "Out of Service" if maintenance identifies hazards or operational faults until repairs are completed.

6. Hazard Identification

- Be aware of electrical, mechanical, chemical, or biological hazards associated with each equipment.
- Follow relevant safety data sheets (SDS) and hazard signage.
- Report any observed hazards to the laboratory supervisor immediately.

7. Emergency Response: Equipment Malfunction

- Immediately stop using malfunctioning equipment and disconnect from power if safe to do so.
- Alert nearby personnel and supervisor of the malfunction.
- Follow emergency shut-off procedures if applicable.
- In case of injuries, provide first aid and call emergency services as needed.
- Document incident and cooperate with subsequent investigations.

8. Training Guidelines

- All new personnel must receive initial and refresher training on equipment operation and safety.
- Training must include hands-on demonstration and verification of competency.
- Maintain records of personnel training.

9. Documentation

- Keep updated logs for maintenance, calibration, and incidents.
- Review and update the SOP annually or when equipment/procedures change.

10. References

- Manufacturer's equipment manuals
- Laboratory Safety Manual
- Relevant regulatory guidelines