

Safety and Incident Management Plan
Sustainability and Textile Innovation (STI) Laboratory
Department of Textile Engineering (DTE)
Ahsanullah University of Science and Technology (AUST)

Introduction

The Sustainability and Textile Innovation Laboratory, which operates under the Department of Textile Engineering at Ahsanullah University of Science and Technology, identifies the safety and well-being of all students, faculty, staff, researchers, and lab personnel as its top priority. The STI Laboratory supports undergraduate education, research, and innovation in sustainable textile processing, environmental monitoring, wastewater analysis, and resource-efficient manufacturing practices.

The laboratory houses textile wet processing equipment, environmental testing instruments, chemical analysis systems, and wastewater monitoring facilities. Laboratory activities involve handling dyes, chemicals, solvents, heated equipment, steam systems, and analytical instruments. Therefore, maintaining a safe laboratory environment is essential to minimize risks associated with chemical exposure, thermal hazards, electrical equipment, pressurized systems, and environmental testing operations.

This Safety and Incident Management Plan establishes procedures for preventing accidents, responding to emergencies, ensuring regulatory compliance, and maintaining a safe learning and research environment in accordance with AUST laboratory policies and BAETE accreditation requirements.

Objective

To ensure a safe, healthy, and well-managed laboratory environment by implementing comprehensive safety measures and incident management procedures for all activities conducted in the Sustainability and Textile Innovation Laboratory.

1. Laboratory Safety Rules

1.1 General Safety Rules

- Students, researchers, and staff must wear appropriate Personal Protective Equipment (PPE) including laboratory coats, safety goggles, chemical-resistant gloves, and closed-toe footwear.
- Entry to the laboratory is restricted to authorized personnel and enrolled students during scheduled laboratory sessions.
- Eating, drinking, smoking, and storage of food items are strictly prohibited inside the laboratory.
- Running around in the experimental zone, unnecessary misplacing equipment and distracting behavior are not permitted.

- All personnel must familiarize themselves with the location of emergency exits, fire extinguishers, first aid kits, eyewash facilities, and emergency contact information.

1.2 Chemical Safety Rules

- All chemicals, dyes, solvents, and reagents must be handled according to their Safety Data Sheets (SDS).
- Hazardous chemicals and volatile solvents shall be used only inside the laboratory fume hood.
- Chemical containers must be properly labelled and stored in designated areas.
- Chemical waste shall not be discharged into sinks unless specifically authorized by laboratory personnel.
- Spills must be reported immediately and managed according to laboratory spill response procedures.

1.3 Equipment-Specific Safety Rules

KG Dyer and Pad-Steam Range

- Verify machine settings before operation.
- Avoid contact with hot surfaces, steam lines, and heated vessels.
- Never open pressurized equipment during operation.

Rotary Evaporator

- Inspect glassware for cracks before use.
- Ensure proper vacuum and temperature settings.
- Operate only under faculty supervision.

COD Reactor and Laboratory Oven

- Use heat-resistant gloves when handling hot vessels.
- Allow equipment to cool before maintenance or cleaning.

Environmental Monitoring Equipment

- Use instruments according to manufacturer instructions.
- Protect sensitive sensors from contamination and physical damage.

2. Safety Procedures and Practices

2.1 Before Laboratory Sessions

- The Laboratory In-Charge shall ensure periodic inspection of all equipment and laboratory facilities.
- Laboratory personnel shall verify the availability and condition of PPE, first aid kits, fire extinguishers, and emergency equipment.
- Students shall receive safety orientation and equipment-specific training before conducting experiments.

- Chemical inventories shall be reviewed and hazardous materials stored appropriately.
- Proper book-keeping of consumables is necessary.

2.2 During Laboratory Sessions

- Faculty members and laboratory personnel shall supervise all laboratory activities.
- Only trained and authorized users may operate laboratory equipment.
- Appropriate PPE must be worn throughout laboratory operations.
- Laboratory users shall immediately report equipment malfunctions, chemical spills, or unsafe conditions.
- Chemical handling and solvent recovery activities must be conducted using designated safety controls and ventilation systems.

2.3 After Laboratory Sessions

- Equipment shall be shut down according to standard operating procedures.
- Work areas shall be cleaned and restored to their original condition.
- Chemical wastes shall be collected and disposed of according to approved waste management procedures.
- Any incidents, near misses, or equipment faults shall be documented.

3. Provisions in Case of Accidents and Health Hazards

3.1 Emergency Equipment

The following emergency resources shall be maintained and readily accessible:

- First Aid Kit
- Fire Extinguishers
- Fire Alarm System
- Emergency Exit Routes
- Emergency Power Shut-Off Facilities
- Emergency Contact Information

Regular inspections shall be conducted to ensure operational readiness.

3.2 Emergency Response Procedures

Minor Incidents

Examples:

- Minor cuts
- Small chemical splashes

- Minor burns

Actions:

- Provide immediate first aid.
- Inform the supervising faculty member or laboratory personnel.
- Record the incident in the Laboratory Incident Report Register.

Major Incidents

Examples:

- Significant chemical exposure
- Fire outbreak
- Electrical shock
- Severe burns
- Equipment explosion or steam-related injury

Actions:

- Stop all laboratory activities immediately.
- Activate emergency response procedures.
- Notify the Laboratory In-Charge and Department Administration.
- Contact AUST Emergency and Medical Services.
- Evacuate personnel if necessary.

3.3 Chemical Spill Response

- Alert nearby personnel.
- Isolate the affected area.
- Wear appropriate PPE.
- Use spill containment materials if trained to do so.
- Report the incident immediately to the Laboratory In-Charge.

3.4 Fire and Evacuation Procedures

- Activate the nearest fire alarm.
- Shut down equipment if safe to do so.
- Evacuate through designated emergency exits.
- Assemble at the designated emergency assembly point.
- Laboratory personnel shall verify complete evacuation.

- Re-entry is prohibited until authorized by emergency responders.

4. Roles and Responsibilities

4.1 Laboratory In-Charge

- Ensure overall implementation of laboratory safety policies.
- Conduct periodic safety inspections and risk assessments.
- Organize laboratory safety training and awareness programs.
- Maintain safety documentation and incident records.
- Coordinate emergency response activities.

4.2 Faculty Members

- Supervise laboratory sessions and research activities.
- Ensure student compliance with laboratory safety requirements.
- Provide equipment-specific operational guidance.
- Report safety concerns and incidents.

4.3 Laboratory Assistant/ Attendant

- Maintain laboratory equipment and safety systems.
- Conduct routine safety checks.
- Assist during emergencies and first aid response.
- Monitor chemical storage and waste management practices.

4.4 Students and Researchers

- Follow all laboratory safety rules and instructions.
- Wear required PPE.
- Operate equipment only after receiving proper training.
- Report unsafe conditions, incidents, or equipment malfunctions immediately.

5. Documentation for Accreditation and Continuous Improvement

5.1 Safety Documentation

The laboratory shall maintain:

- Laboratory Safety Manual
- Standard Operating Procedures (SOPs)
- Chemical Inventory Register
- Safety Data Sheet (SDS) Repository

- Emergency Contact List

5.2 Incident Records

A Laboratory Incident Report Register shall be maintained containing:

- Date and time of incident
- Persons involved
- Description of incident
- Root cause analysis
- Corrective and preventive actions

5.3 Inspection and Maintenance Records

Documentation shall be maintained for:

- Equipment inspections
- Calibration records
- Safety equipment inspections
- Chemical storage audits (internal)
- Safety training sessions

5.4 Safety Review and Continuous Improvement

The Safety and Incident Management Plan shall be reviewed annually by the Department of Textile Engineering to identify opportunities for improvement and ensure compliance with institutional and accreditation requirements.

Conclusion

The Sustainability and Textile Innovation Laboratory play a critical role in supporting sustainable textile education, research, and innovation. By implementing this Safety and Incident Management Plan, the Department of Textile Engineering ensures a safe learning and research environment, minimizes risks associated with laboratory operations, and fulfills the safety and documentation requirements of BAETE accreditation. Continuous monitoring, training, and periodic review of safety practices will contribute to maintaining a culture of safety and excellence within the laboratory.