



UMBC

Directions for Equipment SOP Development

The purpose of this document is to provide guidance for PIs, Instructors, Laboratory Managers & Supervisors, and anyone working in a laboratory on UMBC property assistance in developing their own laboratory specific equipment safety plan or SOPs. This document is not intended to be a complete resource and will not cover the specifics of individual pieces of equipment. This document may contain errors or omissions; therefore, it is prudent to consult the manufacturers recommendations when developing laboratory specific safety plans or SOPs.

Key Responsibilities

- It is the responsibility of the PIs, Instructors, Laboratory Managers & Supervisors to:
 - Train all individuals on the proper use, maintenance, and administrative functions prior to the utilization of equipment
 - Maintain a training log for all individuals working in the laboratory.
 - Ensure all laboratory specific SOPs, trainings, safety procedures, user manuals, use logs, and other administrative articles are in accordance with UMBC, local, state, and federal guidelines and policies.
 - Ensure copies of laboratory specific SOPs, safety procedures, user manuals, use logs, and other administrative articles are readily available to all individuals working in the laboratory.
 - Ensure adequate personal protective equipment is readily available to all individuals working with specific equipment.
 - Confirm all users fill out the equipment logs appropriately.
 - Ensure all regular and periodic preventative maintenance is completed by an appropriate party and recorded in the maintenance log.
 - Remove and/or cease use of any malfunctioning equipment or equipment requiring inspection.
 - Ensure equipment is calibrated and/or certified following manufacturer recommendations.

- Refer to manufacturer or user manual when unsure of the proper safe operation, maintenance, or repair procedures for a specific piece of equipment.
- It is the responsibility of the user of the equipment to:
 - Attend all trainings on the proper use, maintenance, and administrative functions prior to the utilization of equipment.
 - Maintain personal log of trainings.
 - Read and periodically review laboratory specific SOPs, trainings, safety procedures, user manuals, use logs, and other administrative articles related to the specific equipment utilized
 - Operate and maintain equipment as described in laboratory specific SOPs, safety procedures, user manuals, use logs, and other administrative articles.
 - Properly fill out the appropriate logs every time equipment is used.
 - Report any stoppages or malfunctions of equipment to PI, Instructor, or Laboratory Manager/Supervisor. Make note on appropriate log.
- It is the responsibility of Office of Environmental Safety and Health to:
 - As necessary, provide interpretation of manufacturer publications concerning specific pieces of equipment to assist laboratory personnel in the development of laboratory specific SOPs, trainings, safety procedures, user manuals, use logs, and other administrative articles.

1. Positively identify the equipment being used.

- Locate and record information such as the manufacturer, model, sub-model, serial number, date of manufacture, batch or group number, date of certification, and any other identifiable information.
 - Most specialized equipment will have an information plaque or label affixed at an inconspicuous location on the outside of the housing.
 - If information plaque or labels are absent, consult the manufacturer (if known) or the vendor from which the equipment was purchased.

2. Obtain proper manufacturer manuals/resources for equipment.

- Ensure resource is current and applicable to the specific make, model, group, etc as determined by the manufacturer.

3. Develop Standard Operating Procedures

- Using the resource(s) identified in step 2, outline all important information. Be sure to include the following:
 - All manufacturer information (make, model, etc) for the specific piece of equipment the SOP was developed for.
 - All safety warnings and notes.
 - All required PPE as determined by a risk assessment that accounts for manufacturer recommendations.
 - All major operating steps, safety procedures, and maintenance instructions.
 - Emergency shut off procedures, preparation for times of inactive use, emergency power supply set up.
 - Where to find additional information.
- Compile all important information in an easy to comprehend format.
 - Laboratory specific SOP format may include the following Elements:
 - Title that includes: SOP Name, Effective Date, Revision Number.
 - Pictures, diagrams, or figures
 - Clearly denoted sections such as:
 - Purpose
 - Responsibility
 - Materials and Equipment
 - Definitions
 - Procedure
 - Additional Resources

- Be sure to segregate out any extraneous information that is not necessary for the safe and proper use of the equipment.
- Laboratories may choose to design their own specific SOPs in whatever way they deem fit. Laboratories may adopt a format similar to the template found on <https://safety.umbc.edu> .

4. Develop training for specific equipment.

- Using the information compiled in step 3, the PI, Instructor, or Laboratory Manager/Supervisors should develop training that is suitable for all individuals utilizing the equipment. Training can include but is not limited to: PowerPoint presentations, online courses, publication reviewal, video presentations, and hands on exercises.
- Trainings should denote all hazards associated with the equipment and showcase techniques for their mitigation.
- It is helpful to highlight all major safety and operational points in trainings as well as provide reasoning behind their significance.
- Training is determined to be effective if, at the conclusion of training, the individual receiving the training can safely conduct operations, maintenance, etc for that specific piece of equipment.
 - Tests or practical exercises may be used to determine an individual's competency.
- Training should be recorded and conducted at least annually for each piece of equipment.

5. Develop logs for specific equipment

- The following logs should be created and maintained concerning each piece of equipment:
 - Run, cycle, or use log that includes equipment pedigree information (make, model, serial number, etc), date/time of use, description of use (process type, run time, etc), equipment certification or calibration date, and name of individual using equipment.

- Maintenance log that includes equipment pedigree information (make, model, serial number, etc), regular and periodic maintenance intervals, dates of completed maintenance, description of maintenance, equipment certification date, name of individual filling out log.
- Training log that includes trainer's name, trainees name, date of training, description of training, pedigree information (make, model, serial number, etc) of specific equipment trained on.
- Below is an example of an equipment use log. Note that different pieces of equipment will require different parameters be recorded (e.g. autoclaves require recording of cycle type, material type, and indicator used)

6. Review all SOPs, trainings, and logs.

- Review and inspect the following items at least annually.
 - Equipment

 - Training, maintenance, use, and any other log related to specific equipment.

 - All SOPs related to equipment. Ensure compliance with all UMBC, local, State, and Federal policies and regulations.