UMBC Environmental Safety and Health

Lab Safety Plan Reference Guide and Frequently Asked Questions (FAQ)

1. **What is the Lab Safety Plan?**

   The Lab Safety Plan (LSP) or 'lab safety manual' is a lab-specific document that contains:

   - Procedural (SOP) requirements for lab activities as outlined in research protocols.
   - Outline response procedures in the event of a fire, spill, or medical emergency.
   - Outline training requirements for lab users.

   The LSP will also maintain a current record or inventory of:

   - Hazardous chemicals/substances in the lab and their safety data sheets.
   - Persons (students, staff, faculty) authorized to access the lab.
   - Laboratory equipment and machinery.

2. **What is the purpose of the LSP?**

The LSP seeks to facilitate the completion of research in a safe and compliant manner and prevent incidents in lab spaces, by helping to achieve the following goals:

- Informing lab users of the hazards specific to their lab and associated research activity.
- Ensuring lab users have the resources and procedures necessary to consistently and safely carry out laboratory activities.
- Ensuring all laboratory equipment is accounted for and kept in good operating condition.
- Ensuring only authorized; trained users are accessing the lab.
- Ensuring lab users receive the necessary orientation and safety training prior to beginning lab activities.
- Ensure all required documentation is current and available in the event of a regulatory or accreditation inspection.

3. **Who is responsible for preparing the LSP?**

   The Principal Investigator (PI) is the primary individual responsible for preparing the LSP for their lab. This should not be a solo effort. The PI should work with their Teaching Assistants (TA's), research technicians, student researchers, and others associated with the lab to ensure that the LSP is accurate and comprehensive.

   Once the LSP is prepared, the Department Manager or Chair must review and sign off approving the plan (see Section 1 – Introduction).

4. **How often do LSP's need to be reviewed?**

   At least annually, or when dictated by changes in research activities, or the introduction of new or modified research methods, processes, or equipment. The review will take place with the PI and all lab users and approved by the Department Manager or Chair.

5. **What are Laboratory SOPs?**

SOP's, or Standard Operating Procedures, are written instructions that detail the steps to be performed during a given experimental procedure and include information about potential hazards and how these hazards will be mitigated. SOPs should be written by laboratory personnel who are most knowledgeable and involved with the experimental process.

An SOP template is available on the ESH web page under Popular Forms and Handouts - and can be accessed via this link.

6. **When is a SOP required?**

Specific SOPs are required when laboratory work, including operation of equipment, or the performance of an experiment or process, involves activity that presents a high risk of injury or illness relating to "particularly hazardous substances" or the operation of equipment that presents a physical hazard to the user.

Particularly hazardous substances can include:

- Select carcinogens
- Reproductive toxins
- Acutely toxic chemicals
- Cryogenic materials
- Experiments involving radioactive materials
- High-powered laser equipment

The general requirements and expectations for safe work under normal lab operations should be covered in your respective lab's Lab Safety Plan (these are laid out in the ESH-provided Lab Safety Plan Template), unless an SOP is otherwise required by other UMBC protocols (i.e., IBC).

Equipment that can pose physical hazards includes equipment or machinery that has the potential to cause the following to the user/operator or others nearby: amputation, cut or laceration, pinching, crushing, burns from heat, flame, or steam, entanglement, flying objects or debris, and shock.

7. **Conducting Risk Assessments to Determine SOP Necessity**

An effective way to determine the hazard and risk level of an experiment or process in the lab is to conduct a 5x5 style risk assessment. In this style of risk assessment, the hazards associated with the process are identified and assigned a risk score based on likelihood and severity of impact of the hazard occurring. Higher risk-scored procedures, processes or experiments should always have an SOP developed.

A template is available from ESH for researchers to use to conduct a 5x5 Risk Assessment. For more information and to access this template, visit this page.

If you are unsure if a particular task is hazardous enough to require a SOP, contact the ESH team.

8. **The Lab already maintains a Chemical Inventory that is submitted to ESH. Do I need to create a separate inventory for the LSP?**

Not necessarily. You can create a referral to the inventory in the LSP with a link or QR code (i.e., Refer to "X inventory"), or you can transfer the existing inventory/cut and paste into the LSP. If you do the transfer/cut and paste option, then the inventory in the LSP will be the one to be maintained, updated, and submitted to ESH.

9. **We have an existing hard copy or electronic inventory of Safety Data Sheets. Do we need to duplicate all of them into the LSP?**

No. As with the Chemical Inventory, you can list out the chemicals and have a link or QR code to the electronic SDS, or if the lab maintains a hard copy inventory, you will just need to put the location in the lab where they can be accessed. The goal is to ensure that SDS's are readily accessible, and lab users know where to find them.

10. **Are all elements of the LSP required to be completed?**

Generally, yes. If there is a field or element that does not apply to your lab, then you can mark N/A or otherwise indicate that it doesn't apply to your lab and describe why (for example, if it is a teaching lab and no hazardous materials or chemicals are handled). If you are unsure, reach out to your department chair or contact ESH.

11. **We already have a Lab Safety Plan. Do we need to recreate one using the ESH-provided template?**

No. If you already have an LSP in place, a new one does not need to be recreated in the format of the ESH-provided template. However, they must contain all the pertinent information that is outlined in the sections of the ESH-provided template. If not, they must be included into the existing LSP.

12. **In the Inventory of Lab Equipment, there are fields that indicate Inspection/Service. Not all equipment gets service or inspections. How do I answer this?**

If a piece of equipment gets a scheduled inspection or service, for example an annual inspection, then you'll enter the date that it was last inspected and when the next inspection is due.

This would pertain to equipment that is required to be inspected per manufacturers or other applicable guidelines. This does not apply to equipment that is not required to get regular/scheduled inspection or servicing. If that is the case, you can mark these fields N/A for that equipment.

13. Our Lab serves as a makerspace or has shop-related equipment such as saws, lathes, presses, or CNCs. Do I need to add the entire Shop Safety Plan template into the Lab Safety Plan or create an entirely separate document for this?

For labs that serve as makerspaces or operate with shop-related equipment, you do not need to create an entirely separate Shop Safety Plan along with your Lab Safety Plan.

The Lab Safety Plan is the primary document, however certain elements from the Shop Safety Plan will need to be implemented into the LSP. These can be included in a separate Appendix (you can call it Shop Safety Plan Appendix or something similar) or you can include these elements in Appendix F (Additional Resources) – just make sure the added elements are notated in the Table of Contents for easy reference.

The following Shop Safety Plan elements/sections will need to be included (refer to Shop Safety Plan template):

- Section 4 – General Shop Safety Rules
- Section 5 – Machine Guarding Reference Guide
- Section 6 – Inventory of Shop Equipment – this does not need to be included separately; this can be included into the LSP's "Inventory of Lab Equipment" section.
- Section 7 – List of Shop Authorized Users – this also does not need to be included separately; this can be included as part the LSP's "Current Authorized Lab Personnel" section.
- Lab Inspection Form (Shop Safety Plan appendix A)