

 <p>Environmental Health & Safety Office</p>	<h2 style="text-align: center;">Laboratory Safety Assessment Overview</h2> <p style="text-align: center;">Version 1.1</p>
---	---

Environmental Health and Safety conducts laboratory safety assessments of academic and research laboratories on an annual basis. It is a tool used to help BSU and its laboratories maintain compliance – both with regulatory requirements and BSU policies and programs. It covers common laboratory requirements focusing on areas such as:

- Chemical safety
- Hazardous waste
- Training documentation
- Personal protective equipment
- Emergency and safety information
- Emergency equipment
- Fire and life safety
- Engineering controls

It is based upon regulations, codes, standards, and guidance from the:

- [Idaho Division of Building Safety](#)
- [Occupational Safety & Health Administration](#)
- [National Fire Protection Association](#)
- [American National Standards Institute](#)
- BSU written programs
 - [Chemical Hygiene Plan](#)
 - [Fire Prevention Program](#)
 - [Laboratory Safety Information Guidance](#)
 - [Hazardous Waste Management Manual](#)

Below each item from the assessment is briefly discussed to provide some clarification.

INFORMATION AND TRAINING

A1. Applicable written programs are available and accessible to Laboratory Workers.

Electronic access is adequate, except for emergency response programs, if all Laboratory Workers have computer and internet access. Required hard copies should be kept in a binder or binders for easy access. Electronic and hard copies must be accessible to all Laboratory Workers during work hours. Please consult [Laboratory Safety Information Guidance](#) to help determine applicable written programs.

A2a. Appropriate, current laboratory safety signage is posted near main laboratory entrance.

Each laboratory must have laboratory safety signage posted, which includes:

- Laboratory safety signage to communicate hazards and entry requirements
- Building address (space available on above signage)

Information about this signage is available on the [EHS website](#).



A2b. Appropriate, current emergency information is posted near main laboratory entrance and near phones.

Each laboratory must have laboratory emergency contact information posted, which includes:

- Emergency response contacts (911, fire, police, security, EHS, Risk Management)
- Laboratory contacts
- Building address

The [Emergency Contact List](#) template is available for your use.

A3. All Laboratory Workers have completed applicable safety training.

Each laboratory is responsible for ensuring each Laboratory Worker has completed applicable safety training in regard to their duties and hazards within the lab. Training must consist of attending the EHS laboratory safety training, online training modules determined by the laboratory, and any laboratory specific training deemed necessary by the laboratory. More information is available in the [Chemical Hygiene Plan](#) and on the [EHS website](#).

A4. Laboratory has laboratory specific procedures and applicable workers are trained on them.

Each laboratory must have specific procedures for hazardous tasks/processes. The need for a procedure is situation/risk dependent. Each procedure must identify potential hazards and required personal protective equipment (PPE). Laboratory Workers who perform tasks/processes with a specific procedure must be trained upon it. At minimum, this requires the Laboratory Worker to read and understand the procedure and its requirements.

A5. Training records are maintained.

Each laboratory must maintain training records for EHS classroom safety training, online safety training and all laboratory specific trainings, which includes reviewing procedures and hands on training. EHS has begun to issue certificates of completion and maintains records of the classroom Laboratory Safety training if the laboratory needs to verify completion. Documentation templates are available on the [EHS website](#).

A6. Incident/Accident/Illness Report and Supervisor's Accident Report forms available.

Each laboratory must make available hard copies of the Incident/Accident/Illness Report and Supervisor's Accident Report forms to Laboratory Workers. It is suggested copies be kept in with other safety information as outlined in [Laboratory Safety Information Guidance](#).

A7. Chemical inventory is available, current, and near the main laboratory exit or outside of the laboratory.

Each laboratory must have a current copy available to Laboratory Workers and it must be located near the main laboratory exit or outside of the laboratory in a non-laboratory area for emergency response purposes. Laboratory Workers must be aware of its location.

A8. Material safety data sheets (MSDS) are available and near the main laboratory exit or outside of the laboratory.

Each laboratory must have MSDS of all chemicals in their area available to Laboratory Workers. They must be located near the main laboratory exit or outside of the laboratory in a non-laboratory area for emergency response purposes. Laboratory Workers must be aware of their location and they must be accessible during their entire shift.

GENERAL

B1. Sharps properly stored and disposed.

Laboratories must use safe work practices to prevent sharps-related injuries. Broken glass, which has not contacted infectious materials, must be stored in a closeable puncture resistant container (e.g. plastic bag lined cardboard box with lid).

Potentially infectious sharps must be disposed in a sharps container. When sharps waste containers are $\frac{3}{4}$ full, the lid must be closed and the container properly disposed. Items must not protrude from the sharps container. Minimize non-sharp items in the Sharps container.

B2. Equipment over 4 feet high is seismically braced.

Laboratories must secure equipment over 4 feet high which could easily tip over and block egress. The Division of Building Safety's main focus is bookcases, but could include other equipment if it meets the description above.

B3. Sinks are posted with "Non-potable Water" signage.

Signage is required for all laboratory sinks including cup sinks and must state "Non-potable Water".

B4. NO evidence of food or drink for human consumption found in the lab.

Food and drink must not be consumed or stored within any laboratory where hazardous materials, biological materials or radioactive materials are used or stored.

B5. Work surfaces are clean and uncluttered.

Laboratories must maintain reasonably clean and uncluttered work surfaces to minimize spills, incidents and exposures.

B6. Equipment guards in place for protection against hazards.

Laboratories must equip and maintain guards on pieces of equipment to guard Laboratory Workers against contact with hazards such as mechanical (pinch points, gears, blades, other rotating components) physical and radiation (laser, x-ray).

SAFETY EQUIPMENT

C1. Eyewash and/or safety shower are available and unobstructed.

An eyewash is required where injurious corrosives are used or if the MSDS requires flushing the eyes with water for 15 minutes. A safety shower may be required based upon the chemicals, quantities, and activities performed in the lab.

Each must be easily accessible and within 55 feet or 10 seconds from hazardous material work. Materials or doors cannot be blocking or hindering access to them.

C2a. Eyewash, drench hose, and/or safety shower are tested monthly.

Each eyewash, drench hose, and safety shower is checked monthly by FO&M. This ensures proper flow rates and spray patterns.

C2b. Eyewash and/or drench hose is activated weekly by the laboratory.

Laboratories are responsible for conducting and documenting the weekly eyewash activation. Activation flushes the water lines and shows the equipment is operational. An activation log must be kept. An [Eyewash Activation Log template](#) is available on the EHS website.

C3. First aid kit available, properly stocked, and unobstructed.

Typically a first aid kit is not required, but certain activities or chemicals may necessitate one or special supplies (e.g. Hydrofluoric acid requires calcium gluconate gel). If a first aid kit is available (required or not), it must be properly stocked as outlined by [Idaho General Safety & Health Standards 031](#) and it must be easily accessible.

C4. Fire extinguisher is maintained and unobstructed.

FO&M checks fire extinguishers monthly. Laboratories must maintain unobstructed access to fire extinguishers at all times. Obstruction includes materials (e.g. box) stored underneath the extinguisher.

C5. Spill kit is available, properly stocked and easily accessible.

Laboratories must make available properly stocked spill kits based upon the chemicals and quantities used and stored in the lab. A [common supply list](#) is available on the EHS website. The kits must be easily accessible.

C6. Signage is posted indicating locations of fire extinguishers, eyewash, fire blanket, and spill kit.

The laboratory must conspicuously post signage indicating the location of each eyewash, drench hose, and safety shower. Fire extinguishers and fire blankets require signage if their location is not readily apparent (e.g. rows of equipment blocking line of sight). The laboratory is strongly recommended to post the locations of fire extinguishers, fire blankets, spill kits, and any other safety equipment.

LOCAL EXHAUST VENTILATION (LEV)**D1. Fume hood certified annually.**

EHS certifies chemical fume hoods on an annual basis. A sticker is used to indicate the sash height, date of certification, and average face velocity.

D2. LEV is properly used.

LEV must be properly used to ensure Laboratory Worker exposure is minimized. Proper practices for a chemical fume hood are discussed in 6.2.1.4 of the [Chemical Hygiene Plan](#).

D3. Fume hood sash is operational and used at proper height.

Fume hood sashes must be in working order and used at a proper height to minimize worker exposure. Please refer to 6.2.1.4 of the [Chemical Hygiene Plan](#).

D4. Storage of materials is minimized and baffles/exhaust points have adequate clearance.

Laboratories must ensure air flow to baffles and exhaust points is not restricted by minimizing storage near them. It may be possible to elevate bulky items needing to reside in a fume hood to ensure adequate flow.

D5. LEV alarms are functioning properly.

Alarms associated with LEV (e.g. fume hoods) must be functioning properly to communicate to Laboratory Workers the equipment is functioning properly or improperly. Issues must be reported to EHS and FO&M.

HAZARDOUS MATERIALS**E1. Less than 10 gallons of flammable liquids stored outside flammable cabinet(s).**

A flammable liquid is a liquid with a flash point below 100°F. Laboratories may have up to 10 gallons outside of a flammable cabinet. It is strongly recommended as much as possible be stored in a suitable flammable cabinet.

E2. Compressed gas cylinders are properly secured, stored, and used.

Laboratories must secure all cylinders to prevent tipping. They must be stored with compatible materials, in appropriate areas/cabinets as necessary, and quantities must be within regulatory limits. When not in use, they must be capped. Additional information is available in [SIOP – Toxic Gases](#) and [SIOP – Flammable Gases](#).

E3. Mercury containing devices are NOT used or stored.

EHS strongly encourages the use of non-mercury containing devices to reduce exposure and spill cleanup issues.

E4. Dangerously unstable chemicals (e.g. peroxide formers) are properly dated, stored, and tested or disposed prior to expiration date.

Laboratories must take care regarding dangerously unstable chemicals such as peroxide formers which can develop explosive, shock sensitive crystals if improperly stored or kept beyond expiration. Guidance for peroxide formers is available in [SIOP – Peroxide Formers](#).

E5. Containers are securely capped/closed.

Laboratories must ensure chemical containers, including waste containers, are only open when in use (i.e. adding or removing chemical). Hazardous liquids must have adequately secured caps (i.e. if tipped over, they do not leak).

E6. Flammable liquid containers > 1 gallon are original containers or safety cans.

A flammable liquid is a liquid with a flash point below 100°F. Single containers in excess of 1 gallon must be in suitable safety cans or the original container used by the manufacturer. Examples of flammable liquids include ethanol, methanol, ethyl ether, and acetone.

**E7. Chemical waste accumulated for < 6 months.**

Chemical waste (i.e. hazardous waste) may reside in an area no longer than 6 months to reduce quantities in the lab. Suitable container sizes should be used for disposal.

E8. Chemical storage areas/cabinets are clearly labeled.

Laboratories must ensure storage areas and cabinets are properly labeled to identify and communicate these areas. Areas include Satellite Accumulation Areas (SAA), and flammable and corrosive cabinets.

E9. Hazardous liquids are stored in secondary containment.

Secondary containment contains spills and minimizes the chance of a chemicals contact with an incompatible material.

E10. Safety lips installed on chemical storage shelves.

Lips must be present to help prevent bottles falling off shelving due to an earthquake.

E11. Chemicals are stored properly including storage with compatible chemicals and materials.

Chemicals must be properly stored to prevent ignition, contact with workers, and mixing with incompatible materials. Some guidance is available in the [SIOP – Chemical Storage Groups](#).

E12. Only bleach and compatible cleaning agents are stored near sinks.

Other chemicals must not be stored under or near sinks to reduce hazardous materials entering the sewer via a spill.

E13. Hazardous materials are stored below eye level.

Laboratories must store hazardous materials below eye level to prevent spills to the eyes and face.

E14. Flammable materials are not stored in standard refrigerators or freezers.

Standard refrigerators or freezers are not designed to store flammable materials. Depending on its use and location, an intrinsically safe or explosion proof unit must be used. Contact EHS for assistance.

E15. Carcinogen hazard signage posted on lab door and containers.

Signage and labels are necessary to communicate to Laboratory Workers and those in the vicinity of areas where carcinogens are handled. A carcinogen is defined as an:

1. OSHA defined carcinogen or
2. International Agency for Research on Cancer Group 1 or 2A

E16. Each container is properly labeled.

Containers must be properly labeled to communicate their contents to Laboratory Workers and others who may enter the area. This includes hazardous and nonhazardous materials – e.g. water. Manufacturer labeled containers do not require any additional information. Materials transferred to laboratory containers must be labeled with the full product or chemical name (no acronyms, abbreviations) and associated hazards.

PERSONAL PROTECTIVE EQUIPMENT**F1. Appropriate gloves are available and in good condition.**

Gloves must be provided by the laboratory to adequately protect workers from hazards which may be from chemical, biological, radiological, thermal, and mechanical sources. Material, thickness and cuff length must be considered when selecting for an application. Gloves must be maintained in good condition and replaced as necessary. Selection guidance is available in [SIOP – Lab PPE](#).

F2. All latex gloves are powder free.

Latex is a sensitizer and the allergen is easily dispersed with the powder used with latex gloves. If a powdered glove is preferred, powdered nitrile gloves are available.

F3. Appropriate eye and face protection is available and in good, sanitary condition.

Eye and face protection must be provided by the laboratory to adequately protect workers from hazards which may be from chemical, biological, radiological, thermal, and mechanical sources. The selection must be based upon the process (e.g. potential splash hazard). Equipment must be maintained in good condition and replaced as necessary. Cleaning or alcohol wipes must be available to clean community eye protection. Selection guidance is available in [SIOP – Lab PPE](#).

F4. Appropriate PPE is available for liquid nitrogen handling/use.

At minimum, personal protective equipment for handling liquid nitrogen must consist of safety glasses or goggles, faceshield, cryogenic gloves, leg coverings (e.g. pants), and closed toed shoes. Dispensing may require additional PPE such as a cryogenic apron.

F5. Appropriate lab coats, aprons, or other protective clothing is available and in good condition.

Protective clothing must be provided by the laboratory to adequately protect workers from hazards which may be from chemical, biological, radiological, thermal, and mechanical sources. The selection must be based upon the process (e.g. potential splash hazard). Equipment must be maintained in good condition and replaced as necessary. Selection guidance is available in [SIOP – Lab PPE](#).

F6, F7, F8. Respirator use.

Respirator use requires certain regulatory requirements to be met. Respirators are NIOSH approved and are typically found in two styles - filtering face pieces (dust masks) and elastomeric face pieces with cartridges. If an employee is required to wear a respirator for certain work activities, they must be properly trained, medically cleared to wear it, and fit tested. If they are not required to wear a respirator but choose to do so, their use is considered voluntary. Voluntary use requires proper training and medical clearance. If it is not known whether or not a respirator is required, please contact Environmental Health & Safety.

F9. Appropriate PPE is used and used properly.

Employees are wearing appropriate personal protective equipment for the work they are conducting and they are properly using it.

F10. Closed toed shoes are worn.

Closed toed shoes are necessary to help minimize exposure (e.g. chemicals, broken glass) to the feet.

FIRE AND LIFE SAFETY**G1. No storage within 24 inches (unsprinklered) or 18 inches (sprinklered) of ceiling.**

This applies to combustible and noncombustible storage. It does not apply to furniture such as cabinetry, but does apply to its contents.

G2. Aisles and exits are kept clear with no tripping hazards.

Proper aisle widths must be maintained and exits kept clear for egress purposes. Aisle width depends upon location and occupancy.

G3. Fires doors are not propped or blocked open.

Fire doors are designed and located to restrict the spread of fire and smoke and must not be blocked or propped open. Fire doors are typically identified by a metallic tag on one side. They may be held open with magnetic holders tied to the fire alarm system, which release them when the system is activated.

G4. All ceiling tiles are in place.

Ceiling tiles serve as a fire barrier. Missing ceiling tiles allow easy access for fire to the plenum potentially increase the rate the fire would spread.

G5. Fire blanket is available and unobstructed.

Fire blankets are required where flammable gases, flammable liquids, oxidizers, or pyrophoric materials are used or stored.

G6. Equipment and cords appear to be in good condition.

Equipment and cords must be maintained in good condition to minimize the chance of mechanical failure or electric shock/electrocution.

G7. Electrical outlets and power strips are in good working condition and properly used.

Deficiencies include: overloaded outlets, multiple power strips connected together (daisy chain), and missing outlet covers. An extension cord may be used with a power strip IF the power strip is plugged into the outlet and the extension cord run from the power strip.

G8. NO space heaters are used in lab.**G9. Electrical extension cords are used for only temporary purpose, properly used, and in good condition.**

Temporary use is defined as a single day. They may be used over multiple days if the cord is unplugged when not in use. Multiple extension cords must not be plugged into each other (no daisy chains) and ground prongs must be in place.

G10. Electrical panels are unobstructed and closed.

Clearance must be maintained to a 78" height, 36" depth, 30 inch width from the center of the panel.