

TITLE: Lab Safety – Design Review Procedure	Version: 1
	Version Date: 2024-05-17
Signing Authority: Delaine Russo, Director, Environmental Health and Safety Office	

1 Purpose

To outline the process for an environmental, health, and safety review of designs for new or renovated laboratory spaces at the University of Manitoba.

2 Scope

This procedure applies to any University faculty or staff who are designing or renovating a laboratory on University of Manitoba property.

3 Definitions

EHSO	Environmental Health and Safety Office
EHS	Environmental, Health, and Safety
Lab	Any facility where chemicals, biological agents, and radioisotopes are used. This includes teaching laboratories, research laboratories, and instrument laboratories.

4 Responsibilities

It is the responsibility of the **Project Requester** to:

- Submit complete and accurate information to the AES Project Team and EHSO which includes the *Lab Safety – EHS Review* form.
- Submit existing risk assessments or safe work procedures to EHSO, as requested, or participate in new risk assessments.

It is the responsibility of the **AES Project Manager** to:

- Include EHSO in the project design process for all laboratory facilities at the University of Manitoba.
- Provide the *Lab Safety – EHS Review* form to the requestor for completion and provide the completed copy to EHSO.
- Ensure the designer incorporates all environmental, health and safety requirements into the project design as identified by the *Lab Safety – EHS Design Checklist* and described in the *Lab Safety – EHS Design Requirements* document.
- Complete EHSO verification steps at end of design and end of project construction.

It is the responsibility of **EHSO** to:

- Provide support to AES for any EHS requirements for laboratory design.
- Provide a completed *Lab Safety – EHS Design Checklist* to AES.
- Verify completion of EHS lab design requirements at the completion of lab design process and lab construction process.

5 Procedure

5.1 Project Request

1. The requestor (i.e. the researcher, lab owner, department head, or other designated person) submits a project request as well as the *Lab Safety – EHS Review* form to AES (Appendix A).
2. When AES Project Manager identifies the project as involving laboratory facilities, they require the requestor to complete the *Lab Safety – EHS Review* form (Appendix A). EHSO can be contacted at any time for questions or support required.
3. Nothing is required to be sent to EHSO until the project is approved to proceed.

5.2 EHSO Requirements Initiated

When a project is approved to proceed to design:

1. AES Project Manager submits the completed *Lab Safety – EHS Review* form and submit to EHSO with any other relevant documentation, such as the *Project Request Form*.
2. EHSO reviews information, requesting any additional walkthroughs and information from relevant stakeholders.
3. EHSO provides *Lab Safety – EHS Design Checklist* to AES Project Manager indicating all requirements from the *Lab Safety – Guide to EHS Requirements* that must be included within the laboratory design.

The *Lab Safety – EHS Review* form also identifies the following prompts for additional EHSO processes:

Containment Level 3 or Animal Care: If either of these two boxes are checked off, EHSO will be required to review the plans in detail with stakeholders and define any extra safety requirements for the lab. These will be provided in writing to the AES Project Manager.

X-ray Equipment or Laser(s): If either of these two boxes are checked off, EHSO will be required to review the plans in detail with stakeholders and define any extra safety requirements for the lab. These will be provided in writing to the AES Project Manager.

Fuel Tank or Incinerator: If either of these boxes are checked off, EHSO will be required to work with stakeholders to obtain appropriate licensing. Any additional requirements for the design of the lab will be provided in writing to the AES Project Manager.

Decommissioning: If it is identified that the project includes the decommissioning of existing spaces or equipment, EHSO will be required to work with stakeholders to meet all program requirements for proper decommissioning.

Safe Work Procedures: If it is identified that the proposed project will create processes or include equipment that requires the creation of additional Safe Work Procedures, EHSO will work with the Instructor, Principal Investigator, or Department to ensure these are written.

5.3 Laboratory Design

Laboratory space is designed according to all applicable legislation and UM requirements, including all environment, health and safety requirements. EHS requirements for lab design are located in the document *Lab Safety – EHS Design Requirements*. Requirements that are applicable to a specific project will be identified by using the *Lab Safety – EHS Design Checklist (Appendix A of the Lab Safety – EHS Design Requirements)*.

Note: AES should contact EHSO if there are issues or questions, or where any indicated requirements cannot be met. EHSO may be able to identify alternative solutions for the design to remain in compliance.

5.4 Design Check Points

1. AES will provide EHSO with a review of the completed lab design. All EHS requirements should be either incorporated and met at this time or any EHS requirements that could not be met have been identified to EHSO for alternative resolution or to be escalated as required.
2. AES will provide EHSO with a review of the completed construction. At this time EHSO and AES should review that all identified EHS design requirements have been successfully included in lab construction. Any gaps noted will be addressed with contractor conducting the work.

5.5 Commissioning and Deficiencies

1. EHSO provides equipment-specific commissioning under the specific EHSO program to which they belong.
 - a. Radiation Safety Program provides commissioning services for lasers, x-ray equipment and any radiation devices (instruments containing sources).
2. Vendors provide commissioning services for lab equipment as well.
 - a. Biosafety Cabinets (BSCs) are commissioned by external vendors such as Con-Test. This service is acquired by the equipment owner.
3. AES includes EHSO in final project and deficiencies assessment. EHSO provides AES with sign-off when satisfied that all indicated EHS requirements have been met.

6 Document History

Version Number	Version Date	Description of Change	Author
1	2024-05-17	Initial Release	Nicki Harris

7 Appendix A – Lab Safety - EHS Review form

This form provides initial information for an environmental health and safety assessment of your request for a new or renovated lab. Upon receipt, EHSO will conduct the assessment and submit a list of requirements to the Project Manager for their design. Please keep in mind any plans for the future of the space and answer based on the highest risk or need (e.g., additional or upgraded electrical, highest containment level).

NOTE: Laboratories include teaching laboratories, research laboratories and instrument laboratories where chemicals, biological agents, and radioisotopes are used. This document expressly excludes the design of animal use facilities and Containment Level 3 facilities. If this need arises, please contact EHSO directly for further support.

Project Req #: _____
 Campus: _____ Unit/Dept: _____
 Building: _____ Room No./Loc: _____
 Instructor/PI: _____ Dept. Head: _____

Project Description:

Research Lab Teaching Lab

Check all hazards that apply:

Chemical Hazards	
Health Hazards <input type="checkbox"/> Acute toxicity <input type="checkbox"/> Skin corrosion <input type="checkbox"/> Skin irritation <input type="checkbox"/> Eye effects <input type="checkbox"/> Sensitization (Skin or Eye) <input type="checkbox"/> Germ cell mutagenicity <input type="checkbox"/> Carcinogenicity <input type="checkbox"/> Reproductive toxicity <input type="checkbox"/> Target organ systemic toxicity: single and repeated exposure <input type="checkbox"/> Aspiration toxicity	Physical Hazards <input type="checkbox"/> Explosives <input type="checkbox"/> Flammable gases <input type="checkbox"/> Flammable aerosols <input type="checkbox"/> Oxidizing gases <input type="checkbox"/> Compressed gases <input type="checkbox"/> Flammable liquids <input type="checkbox"/> Flammable solids <input type="checkbox"/> Self-Reactive substances <input type="checkbox"/> Pyrophoric solids or liquids <input type="checkbox"/> Self-heating substances <input type="checkbox"/> Substances which in contact with water emit flammable gases <input type="checkbox"/> Oxidizing liquids or solids <input type="checkbox"/> Organic peroxides <input type="checkbox"/> Substances corrosive to metal
Environmental Hazards <input type="checkbox"/> Acute Aquatic Toxicity <input type="checkbox"/> Chronic Aquatic Toxicity	
Biological Hazards <input type="checkbox"/> Containment Level 1 <input type="checkbox"/> Containment Level 2 <input type="checkbox"/> Containment Level 3 <input type="checkbox"/> Animal Care	Radiation Hazards <input type="checkbox"/> Radioisotopes <input type="checkbox"/> X-ray equipment <input type="checkbox"/> Lasers

Specifications:

Space / Floor Plan Requirements		
<input type="checkbox"/> Office(s) <input type="checkbox"/> Dedicated computer/paper workstation(s) <input type="checkbox"/> Lunch or break room		
Equipment (indicate both new and existing)		
Ventilation <input type="checkbox"/> Fume hood <input type="checkbox"/> Perchloric acid fume hood <input type="checkbox"/> Walk-in fume hood <input type="checkbox"/> Other local exhaust: _____	Plumbing <input type="checkbox"/> Vacuum systems <input type="checkbox"/> Natural gas lines <input type="checkbox"/> Compressed air lines	Electrical <input type="checkbox"/> Increased amperage
Emergency Response <input type="checkbox"/> Emergency shower <input type="checkbox"/> Eye wash station <input type="checkbox"/> First aid kit <input type="checkbox"/> Universal spill kit <input type="checkbox"/> Chemical spill kit <input type="checkbox"/> Oil spill kit <input type="checkbox"/> Mercury spill kit	Specialty Equipment <input type="checkbox"/> Autoclave <input type="checkbox"/> Biological safety cabinet <input type="checkbox"/> Sealed centrifuge <input type="checkbox"/> Glove box <input type="checkbox"/> Incinerator <input type="checkbox"/> Laser(s) <input type="checkbox"/> Other: _____	Hazardous Material Storage <input type="checkbox"/> Storage Shelves or cabinets <input type="checkbox"/> Flammable Cabinet <input type="checkbox"/> Fridge(s) <input type="checkbox"/> Freezer(s) <input type="checkbox"/> Climate Controlled Room (e.g. walk-in cooler) <input type="checkbox"/> Fuel Tank

Notes:
<input type="checkbox"/> Yes <input type="checkbox"/> No This project includes the decommissioning of existing equipment.
<input type="checkbox"/> Yes <input type="checkbox"/> No Safe work procedures have been established for all equipment / processes? Contact EHSO if the answer is "No".

Authorization

Project Contact: _____ Date: _____

AES Project Manager: _____ Date: _____