



UNIVERSITY OF MINNESOTA  
University Health and Safety

Laboratory Inspection Program

**Effective Date:** April 2021

## I. PURPOSE

This program is to help research personnel at the University of Minnesota (UMN) maintain compliance with federal, state, and university health and safety regulations. Toward this end, periodic inspections allow University Health and Safety to check that laboratory spaces are in a safe operating condition by identifying health and safety deficiencies at the time of inspection.

The goals of the inspection program are the following:

- Check that laboratory activities are conducted in a manner to prevent employee exposure to hazardous chemicals, hazardous biological materials, and unsafe research conditions.
- Check that laboratory personnel are following the UMN Chemical Hygiene Plan (CHP).
- Check that laboratory personnel are following required practices for working with potentially biohazardous agents and other biological materials.
- Check that laboratory facilities and equipment are in a safe, code-compliant operating condition.

## II. SCOPE

This program applies to all UMN-owned research spaces and facilities and to all workers (employed or volunteering) in UMN laboratory facilities and spaces.

## III. DEFINITIONS

**Department Safety Officer (DSO)** - A department-appointed safety representative who helps answer questions specific to their department/building and who coordinates with University Health and Safety (UHS) staff to perform inspections. DSOs are appointed by their parent department and often serve on department/college safety committees.

**Finding** - A safety violation that requires corrective action from laboratory personnel.

**Inspection Management System** - The software used to record, send, and track inspections. Currently the Sivco Inspection module is used.

**Informal Worksite Visits** - An unannounced visit by UHS staff to perform a quick check of a lab space or investigate a safety concern.

**Laboratory Inspection** - A scheduled inspection conducted by UHS staff and coordinated with the PI or a staff member. A visual inspection is performed to verify key risk control and safety management components in a laboratory. Results are entered into the Inspection Management

System and sent to the PI, lab safety manager, DSO, and UHS representatives.  
Department/college leadership can be copied if requested.

**Labsafe** - Email account maintained by the Laboratory and Research Safety group from which all inspection reports and related communication are sent.

**Safety Consultation** - An informal advisory visit or conversation to discuss safety requirements and concerns. These are informational and documented when necessary.

**Self-Inspection** - A general safety and risk inspection completed by representative lab personnel and is documented by completing an online form.

**UHS Safety Partner** - A UHS Lab and Research Safety or Workplace Safety Specialist who is assigned to a specific college/department/unit to cover their safety inspections and consultations.

#### **IV. RESPONSIBILITIES**

##### **Lab Personnel (employed or volunteer) Responsibilities**

- Participate in lab inspections as designated by your PI/Supervisor.
- If present during a lab inspection, answer questions to the best of your ability.
- Assist with any corrections and improvements when requested.

##### **Lab PI/Supervisor (or qualified staff delegate) Responsibilities**

- Maintain laboratory safety records and ensure that they are available at the time of an inspection.
- Maintain training records for required training of all laboratory personnel.
- Conduct and document self-inspection on an annual basis.
- Participate in in-person lab inspections and respond to requests for information and inspection scheduling from DSOs.
- Correct and respond to any inspection findings in the allotted time frame.
- Inform your DSO and/or UHS Safety Partner of any location or activity status changes.

##### **Department Safety Officer Responsibilities (see [DSO Roles and Responsibilities](#) for responsibilities outside of inspections)**

- Maintain a current list of all labs in their service area.
- Inform UHS safety partners when a lab closes, moves, or if a new lab is starting.
- Distribute communications from UHS Safety Partners to labs in their service area.
- Schedule, coordinate, and attend inspections between labs and UHS Safety Partners.
- Provide oversight and guidance during lab inspections to help check regulatory compliance and safety in the lab.
- Assist UHS staff in any follow-up items from the inspection.

### **College/Department/Center Responsibilities:**

- Assign a DSO to each department, unit, or service area.
- Inform the DSO and UHS Safety Partner when faculty start, move, or retire.
- Review inspection data and incorporate it into safety initiatives and training.
- Assist UHS in escalation procedures for labs who have egregious safety violations, do not resolve audit deficiencies, and who do not respond to inspection requests.
- Responsible for the costs of laboratory or facility cleanouts related to improper lab closeout and other violations.

### **University Health and Safety Responsibilities:**

- Maintain the Laboratory Inspection Program by reviewing and updating the program at least annually.
- Maintain a current list of laboratories, centers, clinics, diagnostic labs, teaching labs, and machine shops inspected at all UMN locations.
- Determine the inspection frequency based upon the Lab Hazard Ranking for all UMN system laboratories, centers, clinics, diagnostic labs, teaching labs, and machine shops.
- Assign a UHS Safety Partner to all required audit areas.
- Coordinate with DSOs to schedule and perform laboratory inspections.
- Provide annual summary of inspection data to the Office of the Vice President for Research, Council of Research Associate Deans (CRAD), and other appropriate leadership committees.
- Use inspection data to inform UMN-wide safety guidance and initiatives.

## **V. PROCEDURE**

### **Lab Hazard Ranking**

The Lab Hazard Ranking (LHR) system for inspections is in part based on American Chemical Society (ACS) guidance, which provides a framework to rank the risk and severity of hazards found within each lab. The LHR presents an objective approach to prioritize labs for inspections based on:

- Type and quantities of hazardous materials present
- Hazardous operations and equipment
- Engineering controls and procedures
- Specific lab inspection history and performance

UHS staff will use this ranking system to determine required inspection frequency of laboratories and research spaces based on self-inspection answers, chemical inventories, processes, etc. A department/college/unit may request more a more frequent inspection cycle and UHS staff will accommodate these requests as we are able.

There are four LHR classes ranging from the least hazardous (LHR 0) to the most hazardous (LHR 3). The frequency of audits is defined in the table below in **Table 1**.

**Table 1: Lab Hazard Ranking (LHR) and Inspection Frequency**

LHR	Hazards Present	Inspection Frequency
LHR 0	Non-hazardous, household products	As needed
	Computer “labs” (only computational)	
LHR 1	Minimal quantities of hazardous chemicals used for research. “Minimal quantities” defined as under the <a href="#">threshold levels for hazard signage</a> posting.	Annual Self-Inspection
	Teaching labs and core facilities that are not Biosafety Level 1 or 2.	In-person every 3 years (36 months)
LHR 2	Typical chemical work involves small volumes of flammable solvents, acids, and toxic chemicals. “Small volume” defined as at or just over the <a href="#">threshold levels for hazard signage</a> posting.	Annual Self-Inspection  In-person every 2 years (24 months)
	Biosafety Level 2 teaching labs and core facilities	
	Only non-reactive gases (e.g. nitrogen, helium, etc.) are used	
	Labs with activities requiring BSL1 and 2 procedures and containment, including tissue culture and PCR, etc.	
	Clinical and analytical/diagnostic labs working with large volumes of flammable solvents, formaldehyde, and tissue prep procedures with proper engineering controls	
	Other low hazard or well controlled research facilities or shops working with electronics/robotics, fabrication, machinery, agricultural hazards, etc.	
LHR 3	Synthesis labs that routinely perform chemical reactions using high or low temperatures or high or low pressures (e.g. cryogenic reactions, work with sealed pressure vessels, work under high-vacuum, etc.).	1 year (12 months) or more often decided upon by UHS  May require more regular check-ins for changes in process (Management of Change)
	Use of energetic chemicals such as shock sensitive, organic peroxides, pyrophoric chemicals, water-reactive chemicals, Class A peroxide-forming chemicals, etc.	
	Routine use of carcinogens, acutely toxic materials, sensitizers, and reproductive toxins.	
	Work with hazardous compressed gases (e.g. flammable, oxidizing, corrosive, toxic, etc.)	
	BSL 3 Facilities	

	Non-traditional use of hazardous materials, lab equipment, or research-fabricated equipment including work with electronics/robotics, fabrication, machinery, agricultural hazards, etc.	
	LHR 1 and 2 labs with incidents warranting investigation, occupational disease, or poor previous audit performance where more UHS oversight is required (e.g. deficiencies that are immediately hazardous to life safety that have not been corrected).	

### Annual Self-Inspection

Every PI, Lab Manager, or other qualified delegate is required to conduct an annual self-inspection of their lab space. These inspections help labs verify that proper safe working protocols are in place and up-to-date, and verify that protocols are in place to reduce the severity of injuries or damage in the event of an unforeseen accident. Annual self-inspections serve as an important reminder of the health and safety responsibilities required of the faculty supervisor.

The self-inspection must be conducted by knowledgeable and trained lab personnel and provides updated information to UHS Safety Partners.

1. UHS staff send the electronic Self-Inspection Form to the DSO for distribution.
2. The form is completed by designated lab personnel within 30 days.
3. UHS staff check the results and contact the lab if they have any questions or concerns.
4. The completed “result” is entered into our Inspection Management System by UHS staff.

### Laboratory Inspection

UHS coordinates with DSOs to schedule Laboratory Inspections at a frequency appropriate to their LHR. Inspections will be performed in person with laboratory personnel present (unless a virtual option is required). Self-Inspection forms must be complete before in-person visits as they provide important training dates, documentation, and room/personnel updates critical to in-person visits.

1. Annual Self-Inspection forms are sent to the lab contacts from the DSO.
2. UHS schedules the lab inspections with DSO once Self-Inspection form is complete.
3. DSO identifies lab personnel to be present at the inspection.
4. Inspection team (e.g. UHS staff, DSO, lab personnel etc.) does a review of documentation and an in-person walk through of the lab.
5. UHS documents hazards.
6. UHS reviews the findings with laboratory personnel before leaving.
7. UHS enters findings in Inspection Management System.

8. UHS distributes inspection findings through the Inspection Management System and copies all UHS inspectors, the laboratory contact, PI, DSO, and other department/unit leadership as requested.
9. UHS tracks responses to ensure laboratories respond within the 30 days of the distribution of the inspection results. See “Failure to Respond to Deficiencies” below for labs who do not respond within 30 days.

The inspection is considered “open” if there are deficiencies and no response has been received from the lab in the inspection management system. The inspection is considered “closed” if there are no deficiencies or if any deficiencies have been corrected and a response has been recorded from the lab in the inspection management system.

### **Informal Worksite Visits**

Informal worksite visits (“compliance checks”) may be performed announced or unannounced. These visits help give UHS and the Departments/Units a measure of safety culture and compliance thought-out the year.

- UHS staff may perform periodic documented compliance observations in labs.
- UHS staff uses a Google Form to note observations during lab entry.
- Results are reviewed and communicated to the laboratories and safety committees as needed.
- If an egregious safety violation is observed, UHS staff coordinate an in-person visit with the lab to discuss any concerns.

### **Failure to Respond to Deficiencies**

If a lab fails to respond to inspection findings within the 30-day window, there are several levels of escalation available:

1. A “REMINDER” email will be sent by UHS to the PI, lab safety officer and DSO, with a reminder that they are past due for lab inspection audit response and corrective action.
2. A “SECOND NOTICE” email will be sent by UHS to the PI and lab safety officer, copying the DSO, Safety Committee Chair, Department Head/Center Director, and Associate Dean for Research, to remind the lab of their requirement and to note that failure will result in action by department leadership.
3. A “THIRD AND FINAL NOTICE” email will be sent to the PI, lab safety officer, copying department/center leadership (e.g. the Department Head, Center Director, Safety Committee Chair, Research Dean, etc.) that the issue needs to be fixed immediately and an in-person follow up may result.
  - a. Note: College/Department/Center leadership must determine final consequences.

## VI. REFERENCES

ANSI Z10-2012 Occupational Health and Safety Management Systems  
[Approach to Establishing Chemical Hazard Levels - American Chemical Society](#)

## VIII. APPENDIX

[UMN Chemical Hygiene Plan](#)  
[UMN Chemical Hygiene Plan 2.6 - Inspections](#)

### **Inspection Checklist**

- Chemical Storage
- Chemical Labeling
- Chemical Waste
- Fume Hoods
- Appropriate PPE
- Eye Wash / Emergency Showers
- Training
- Signage
- Emergency Preparedness Plan
- Biosafety Cabinets
- IBC Approval
- Centrifuge
- Biohazardous Waste
- Sharps
- Decontamination Method
- Autoclaves
- Machine Guarding/Electrical
- Other Findings