**UNIVERSITY OF MINNESOTA**
**Health, Safety, and Risk Management**

# Laboratory Inspection Program

**Effective Date:** April 2021, Updated Nov 2024

## 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 Health, Safety, and Risk Management 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. AUTHORITY

This program is part of the University's Occupational Health and Safety administrative policy, which charges Health, Safety, and Risk Management (HSRM) with providing leadership, resources, and services to ensure that the University provides a healthy and safe workplace, and that applicable regulations, policies, and procedures are being implemented and compliance is met. As stated in the policy, all health and safety programs must be followed by all University staff if applicable to the type of work being performed.

## IV. DEFINITIONS

**Department Safety Officer (DSO) -** A department-appointed safety representative who helps answer questions specific to their department/building and who coordinates with Health, Safety, and Risk Management (HSRM) 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 SafetyStratus Inspection module is used.

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

**Laboratory Inspection** - A scheduled inspection conducted by HSRM 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 HSRM representatives. Department/college leadership can be copied if requested.

**Labsafe** - Email account maintained by the Laboratory and Research Safety group from which general communications 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.

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

## V. 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-inspections on an annual basis.
- Assist with 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 HSRM 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 HSRM safety partners when a lab closes, moves, or if a new lab is starting.
- Distribute communications from HSRM Safety Partners to labs in their service area.
- Schedule, coordinate, and attend inspections between labs and HSRM Safety Partners.
- Provide oversight and guidance during lab inspections to help check regulatory compliance and safety in the lab.
- Assist HSRM 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 HSRM Safety Partner when faculty start, move, or retire.
- Review inspection data and incorporate it into safety initiatives and training.
- Assist HSRM 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.

**Health, Safety, and Risk Management 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 an HSRM 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.

## VI. 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

HSRM staff will use this ranking system to determine the required inspection frequency of laboratories and research spaces based on self-inspection answers, chemical inventories, processes, etc. A department/college/unit may request a more frequent inspection cycle and HSRM 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 threshold levels for hazard signage 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 threshold levels for hazard signage posting. | Annual Self-Inspection<br><br>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 | 1 year (12 months) or more |

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|---|---|---|
| | reactions, work with sealed pressure vessels, work under high vacuum, etc.). | often decided upon by UHS<br><br>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 high voltage, fabrication, machinery, agricultural hazards, etc. | |
| | LHR 1 and 2 labs with incidents warranting investigation, occupational disease, or poor previous audit performance where more HSRM 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 HSRM Safety Partners.

1. HSRM will send a link for the electronic Self-Inspection Form, along with instructions, to the DSO for distribution.
2. The form is completed by designated lab personnel within the current calendar year.
3. HSRM staff check the results and contact the lab if they have any questions or concerns.

**Laboratory Inspection**

HSRM 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). Lab staff should make sure all lab specific training forms,

SOPs, and room/personnel information is up to date and available for review prior to the inspection.

1. HSRM schedules the lab inspections with DSO.
2. DSO identifies lab personnel to be present at the inspection.
3. The inspection team (e.g. HSRM staff, DSO, lab personnel etc.) does a review of documentation and an in-person walkthrough of the lab.
4. HSRM documents deficiencies.
5. HSRM reviews the findings with laboratory personnel before leaving.
6. HSRM enters findings in Inspection Management System.
7. HSRM distributes inspection findings through the Inspection Management System and copies all HSRM inspectors, the laboratory contact, PI, DSO, and other department/unit leadership as requested.
8. HSRM tracks responses to critical items to ensure laboratories respond within the assigned due dates of the distribution of the inspection results. Less severe findings are not followed up on directly by HSRM staff. However, the Inspection Management System will continue to send reminders until the laboratory staff rectify the deficiency. See "Failure to Respond to Deficiencies" below for labs who do not respond within the assigned due dates.

The inspection is considered "open" if there are deficiencies and the lab has not yet responded to the inspection management system. The inspection is considered "closed" if there are no (remaining) critical deficiencies and a response to any other items has been recorded by 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 HSRM and the Departments/Units a measure of safety culture and compliance thought-out the year.

- HSRM staff may perform periodic documented-compliance observations in labs.
- Results are reviewed and communicated to the laboratories and safety committees as needed.
- If an egregious safety violation is observed, HSRM 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 assigned due date window, there are several levels of escalation available:

1. An automated "REMINDER" email will be sent by the Inspection Management System to the PI, lab safety officer and DSO, for all deficiencies with a reminder that they are past due for lab inspection audit response and corrective action. This email will repeat until a response is received.

2. A “SECOND NOTICE” email, for critical deficiencies only, will be sent by HSRM staff to the PI and lab safety officer, copying the DSO, Safety Committee Chair, and Department Head/Center Director, 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 critical issue needs to be fixed immediately, and an in-person follow up may result.
    a. Note: College/Department/Center leadership must determine final consequences.

## VII. REFERENCES

ANSI Z10-2012 Occupational Health and Safety Management Systems
Approach to Establishing Chemical Hazard Levels - American Chemical Society

## IX. APPENDIX

UMN Chemical Hygiene Plan
UMN Chemical Hygiene Plan 2.6 - Inspections

**Inspection Checklist**

- Biosafety
- Chemical Safety
- Compressed Gas Safety
- Electrical
- Emergency Equipment/First Aid
- Field Safety
- General Laser Safety
- Hazardous Waste
- Housekeeping
- Hygiene
- Machine Guarding
- Personal Protective Equipment
- Posting and Signage
- Respiratory Protection
- Training and Documentation
- Work Attire
- Worksite General
- Other