Carnegie Mellon University Environmental Health & Safety FIRE | LAB | WORK	**Environmental Health and Safety Inspection Guideline**
Date of Issuance: 06/2023	**Revision Date:** 06/02/2025
Revision Number: Initial	**Prepared by:** Environmental Health and Safety

1. Purpose

The mission of Environmental Health and Safety (EHS) is to support the University's mission and values by sustaining and enhancing a safe and healthy environment for the CMU community.

2. Scope

This Guideline provides information to ensure compliance with the university's Environmental Health and Safety Authorization Policy and establishes expectations, roles and responsibilities as a part of the safety inspection process at CMU. The inspection process detailed within this Guideline is managed through SciShield (formerly known as BioRAFT), a third-party safety training and inspection compliance software. This guideline does not cover inspections for Fire and Life Safety Assessments, Radiation Safety and Radiation Producing Devices.

3. Roles and Responsibilities

a. Carnegie Mellon University Environmental Health and Safety is responsible for:

i. Maintaining safety inspection information within SciShield;
ii. Conducting safety inspections, at least annually, or in accordance with Appendix A to ensure that safe laboratory and workplace practices are followed in accordance to this Guideline;
iii. Confirming that group membership is accurate and that members have completed required safety training;
iv. Ensuring that hazardous material and equipment inventories are accurate and up to date; v. Documenting and communicating inspection findings in a detailed and concise manner, providing photographic evidence of findings when applicable;
vi. Assisting Principal Investigators (PI), Group Safety Coordinators, and other responsible parties in resolving any issues found during the safety inspection;
vii. Extending safety inspection resolution due dates when PIs or their designee(s) provides justification for an extension such as when awaiting assistance from a third party, health challenges, scheduling conflicts, or other event outside of the group's control;
viii. Escalating safety inspection issues to applicable department heads when resolution does not occur by the due date and/or no extension has been requested, and;
ix. Holding EHS inspector team meetings at least monthly to review progress of inspections required, provide support, address any inspection-related issues, and assign future inspections.

b. Principal Investigators (PI), Group Safety Coordinators, and/or other responsible parties are responsible for:

i. Ensuring group membership is accurate;
ii. Ensuring members of the group have been assigned required safety training requirements and that all members have completed required safety training via SciShield;
iii. Ensuring hazardous material and equipment inventories are accurate;
iv. Being available or designating a knowledgeable group member to answer questions and address issues before, during, and after the inspection visit;
v. Ensuring that inspection findings are addressed by the resolution due date; vi. Communicating any delays in addressing inspection findings and requesting support from EHS if needed; and vii. Communicating when and how inspection findings were resolved and providing support material such as photographs to confirm completion, if applicable.

c. Deans, Department Heads, and Applicable Oversight Committees are responsible for:

i. Providing assistance to groups and EHS in resolving escalated inspections;
ii. Meeting with Principal Investigators, Group Safety Coordinators, and/or other responsible parties to identify reasons for inspection escalation; and
iii. Facilitating resolution of escalated inspections.

d. Facilities Management and Campus Services (FMCS) are responsible for:

i. Performing maintenance and repairs of installed safety equipment when requested via fixit@andrew.cmu.edu.

4. Training

a. **EHS Training:**

i. New EHS inspectors receive initial training and refresher training as needed on the following;
1. An overview of the SciShield system and its capabilities; and 2. Inspection process by shadowing existing inspectors.

b. **PI, Group Safety Coordinator, or designee Training:**

i. New PIs, Group Safety Coordinators or designees receive one on one initial training and refresher training as needed from EHS on the following:
1. Setting up their group within SciShield;
2. Identifying potential hazards within their space(s);
3. Designating required training through population of job activities of members in SciShield;
4. Uploading required documentation such as "Permission to Work Alone Forms, "Particularly Hazardous Substances Forms", "Standard Operating Procedures", etc.;
5. Creating and maintaining hazardous materials and equipment inventories in SciShield/ChemTracker;
6. Overview of the inspection process; and
7. Overview of the escalation process.

c. PIs, Group Safety Coordinators or designee can also participate in SciShield/ChemTracker training

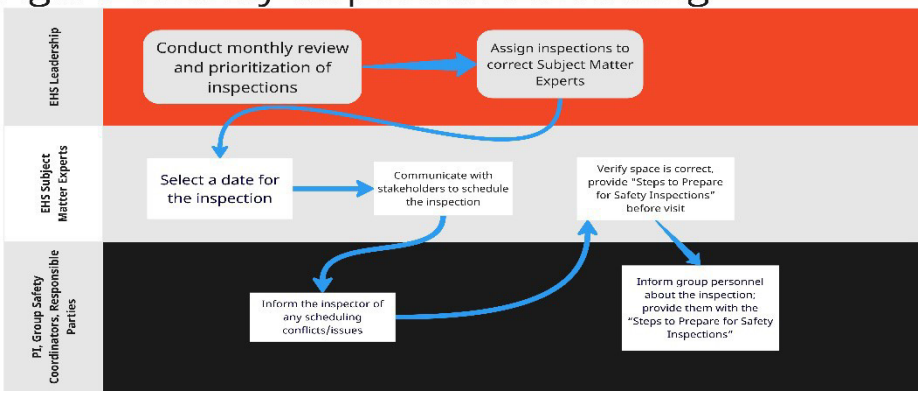
5. Inspection Scheduling (see Figure 1 for a visualization of this process)

a. **To schedule safety inspections, EHS will**:

i. Review inspection due dates listed in SciShield based on inspection prioritization listed in Appendix A on a monthly basis;
ii. Assign inspections to the proper EHS subject matter expert(s) such as Laboratory and Research Safety, Workplace Safety, or Fire Safety;
iii. Communicate with PI, Group Safety Coordinators, and/or other responsible parties to schedule the inspection at least 10 business days prior to the inspection due date;
iv. Request participation of PI, Group Safety Coordinators, and/or other responsible parties during the inspection;
v. Provide reasonable flexibility (e.g., within 5 business days of the inspection due date) on proposed date(s) and time(s) of inspections to accommodate inspection participants;
vi. Verify that spaces slated for inspection are occupied by the identified group and adjust as needed; and
vii. Provide group with "Safety Inspection Pre-Inspection and Verification Form" when the inspection date is scheduled.

b. **To schedule safety inspections, PI, Group Safety Coordinators, and/or other responsible parties will:**
i. Select a date provided by EHS or recommend a preferred date and time to perform the inspection;
ii. Inform laboratory personnel about the upcoming inspection and provide them with the "Safety Inspection Pre-Inspection and Verification Form" so they can begin preparing for the inspection; and inform the inspector, at least 5 calendar days in advance, of any scheduling conflicts after the initial date/time has been confirmed.

Figure 1.Safety Inspection Scheduling



6. Inspection Preparation (see Figure 2 for a visualization of this process)

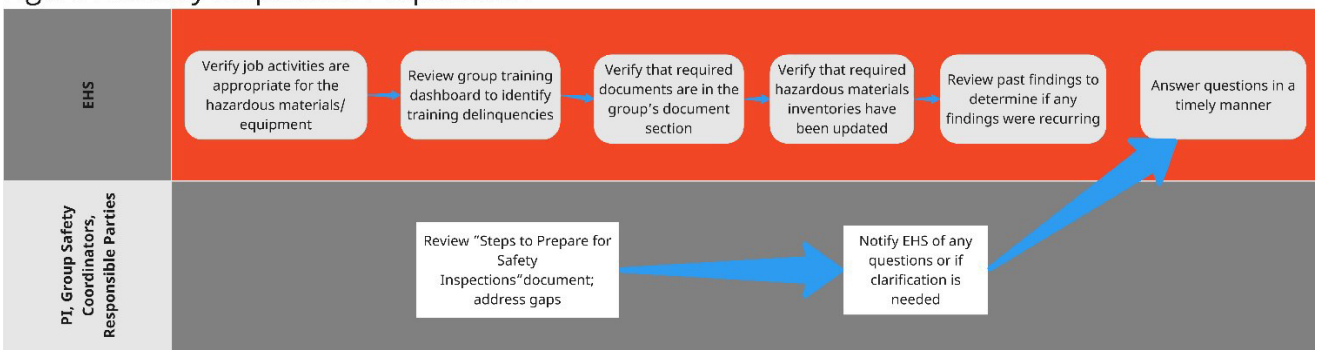
a. **EHS will:**
i. Review group membership list and verify populated job activities are appropriate for the hazardous materials and equipment present in the group space(s);
ii. Review group training dashboard to identify any training delinquencies;
iii. Verify that required documents are located in the group's document section;
iv. Verify that the group's required hazardous materials inventories have been updated within the past calendar year; and
v. Review previous inspection report(s) to determine if recurring findings are present.

b. **PI, Group Safety Coordinators, and/or other responsible parties will:**

i. Review the "Safety Inspection Pre-Inspection and Verification Form" document and address gaps as needed; and

ii. Notify EHS if any questions arise or if clarification is needed regarding the inspection process.

Figure 2.Safety Inspection Preparation



7. Inspection Process (see Figure 3 for a visualization of this process)

a. **During the inspection, EHS will:**

i. Provide introductions to any lab personnel present in the space and inform them the nature and purpose of the visit;

ii. Inquire whether lab personnel present in the space are able to participate in the inspection process and answer questions;

iii. Don appropriate personal protective equipment (PPE) such as lab coats, eye protection, and chemical-resistant gloves;

iv. Perform the inspection using questionnaire inspection format in SciShield;

v. Provide safety documentation to group members, and

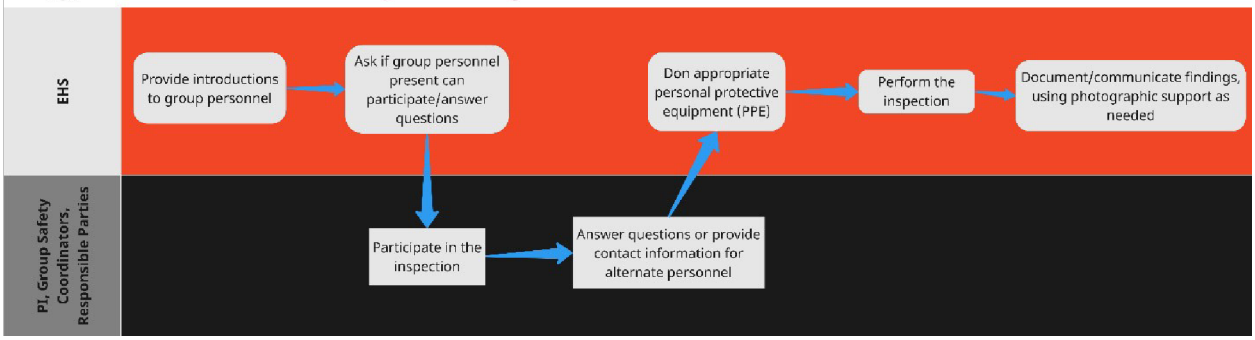
vi. Document and communicate any findings, and use photographic support when appropriate.

b. **During the inspection PI, Group Safety Coordinators, and/or other responsible parties will:**

i. Participate in the inspection if possible; and

ii. Answer questions to the best of their ability, and provide contact information in case someone else is better suited to answer questions.

Figure 3.Safety Inspection Process



8. Inspection Results (see Figure 4 for a visualization of this process)

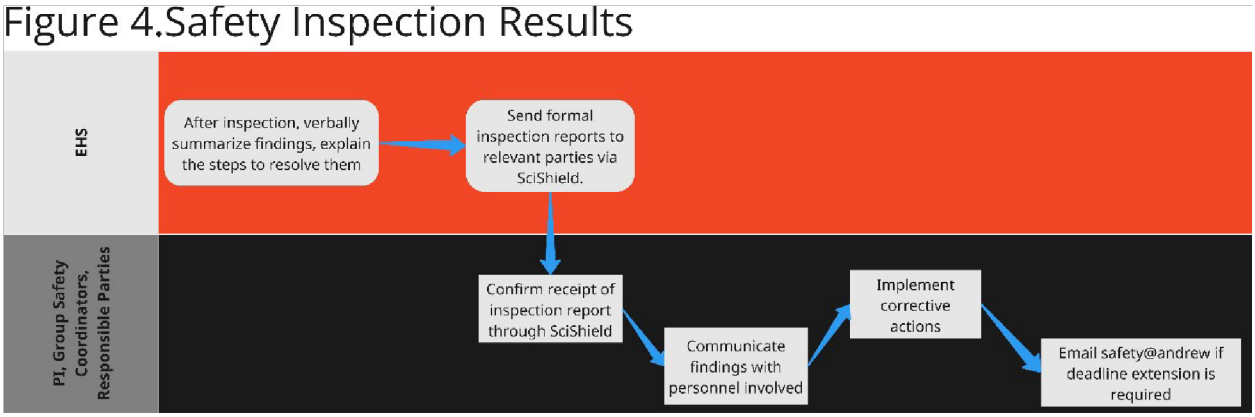
a. **At the conclusion of the inspection, EHS will:**

i. Verbally summarize inspection findings to the personnel present, and explain the steps required to resolve findings; and

ii. Send the formal inspection reports to the PI, Group Safety Coordinators, and/or other responsible parties via SciShield. The information contained in the inspection report will contain at a minimum:

1. Findings and remarks observed during the inspection;
2. Photographic support when appropriate;
3. Expected follow-up date based on Appendix B;
4. Clear explanation about how to contact the inspector in case any assistance is needed; and
5. Ensure that the summary section of the safety inspection report contains information such as:
   a) Name of the lab personnel present during the inspection;
   b) Overall state of spaces (e.g. a lot of clutter, very clean, etc.); and
   c) Summary of the most significant finding(s).

Figure 4.Safety Inspection Results



b. **At the conclusion of the safety inspection, PI, Group Safety Coordinators, and/or other responsible parties will:**

i. Confirm the receipt of the Inspection report through SciShield;

ii. Communicate inspection findings with personnel involved;

iii. Implement corrective actions as outlined in Appendix B; and
iv. Communicate with the inspector if an extension of the deadline is required.

9. Post-inspection follow-up process and finalizing the safety inspection

a. Following delivery of the inspection report, EHS will:

i. Monitor the inspection status for activity and meeting the corrective actions deadline established in Appendix B;
ii. Offer assistance to PI, Group Safety Coordinators, and/or other responsible parties 3 calendar days prior to the corrective action deadline if no updates have occurred;
iii. Notify PI, Group Safety Coordinators, and/or other responsible parties of the potential to escalate findings to the department head if no updates have occurred one calendar day prior to the corrective action timeline;
iv. Extend inspection resolution due dates when PIs, Group Safety Coordinator or designee has provided justification for the extension such as when awaiting assistance from a third party, health challenges, scheduling conflicts, or other event outside of the group's control, etc. and has demonstrated a good faith effort in remediation;
v. Perform follow-up inspections as established in Appendix B and/or after the inspection has been finalized by the PI, Group Safety Coordinators, and/or other responsible parties; and
vi. Finalize inspections where all findings have been resolved.

b. Following delivery of the safety inspection report, PI, Group Safety Coordinators, and/or other responsible parties will:

i. Address inspection findings within the timeframe specified in Appendix B;
ii. Respond and communicate with the EHS about their progress;
iii. Request a resolution due date extension when needed such as when awaiting assistance from a third party, health challenges, scheduling conflicts, or other event outside of the group's control, etc. (Note: More than 3 requests for extension may result in escalation as outlined in Appendix B); and
iv. Ask for assistance during this process when needed.

10. Revisions

Date	Documented Changes	Initials
08/02/2023	Added numerical values to finding severity categories	AJL
01/03/2024	Adjusted tier levels and added information to escalation process	AJL
03/21/2024	Added information regarding Pre-inspection Google Form	AJL
06/01/2025	Information added for Incidental inspections	JM

Appendix A-Inspection Prioritization

Inspection frequency is driven by the tier level each group is assigned by EHS. Each group is assigned a tier level based upon group hazards and the group's performance. Tier levels are assessed, adjusted as needed and documented during safety inspections and hazard reviews conducted by EHS. New groups are assessed during onboarding and assigned a Tier Level. Based on Tier Level assignment, inspection frequency is adjusted in SciShield.

Tier Levels are assigned as follows:

Tier 3-Groups that Require Quarterly Inspections

- Groups that routinely use significant quantities or varieties of highly hazardous materials or equipment as determined by the EHS Lab and Research Safety Team. Such materials include, but are not limited to, acutely toxic gases, pyrophoric materials, highly reactive materials, equipment that pose significant electrical hazards and/or other physical hazards.
- Groups that had a critical finding (see Appendix B) during their previous inspection.

Tier 2-Groups that Require Semi-Annual Inspections

- Groups that had more than 10 important findings, 15 moderate findings or a combined total of 12 important and moderate findings (see Appendix B) in the prior inspection and/or
- Groups that have multiple repeated findings in the moderate or important category when deemed appropriate by EHS.
- Groups that have other compliance issues that require close oversight from EHS.

Tier 1-Groups that Require Annual Inspections

- Groups not categorized as Tier 3 or 2

Tier level assignments may be modified in two ways. First, a tier 1 or 2 laboratory may be designated as a higher tier level by changes to hazardous materials and/or equipment inventories that increase risks or observation of findings and compliance issues as noted by EHS. Second, a laboratory may be designated at a lower tier level by removal of hazardous materials and/or equipment inventories, or by two consecutive inspection cycles during which observed findings and compliance issues are remediated and do not recur. Any change in tier level designation will be adjusted in SciShield and communicated to the PI prior to commencement of the modified inspection schedule.

<u>Incidental Inspections:</u>

In addition, EHS may also perform Incidental inspections. Incidental inspection may occur when the following examples are observed:

- Clutter that blocks exit and/or presents fire hazard
- Hazardous waste that is not properly closed, labeled, or stored
- Hazardous materials that are not properly closed or stored
- Use of equipment without proper training

If any of these (or any other hazardous behavior) are encountered by EHS staff, they will perform an Incidental inspection and send the report to a PI and GSC responsible for that space. Depending on severity of delinquency, inspectors may request that issues are resolved in less than 30 days, and may reduce time to resolution at their discretion.

Each group is permitted three incidental inspections per year per offense. Following that all members of the group will be required to re-take training for the hazard posed by the observation(s). In addition, escalation to the applicable department head may occur and may require further action by the Principal Investigator.

Appendix B-Inspection Findings and Follow-Up

Inspection Finding Categories

Inspection findings risks are categorized in SciShield according to severity level. To assign/asses severity levels, impact and likelihood of an event are evaluated as follows:

Likelihood

Likelihood is expressed in terms of probability that an event will occur within a specified timeframe. As a part of CMU's ERM Program, three levels of likelihood are used for assessing risk:

- **Low** – The probability that a risk will seldom happen or has not happened (10+ years if ever)
- **Moderate** – The probability that a risk will happen infrequently, or sometimes occurs (every 2-10 years)
- **High** – The probability that a risk will happen frequently, occurs often, on-going event, predictable, or a one-time event that may recur (once every two years)

Impact

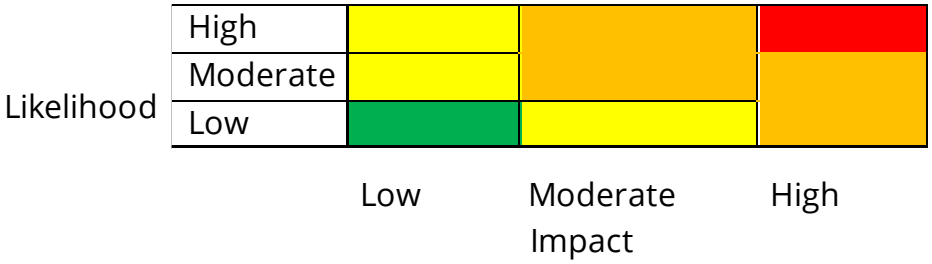
Impact is expressed in terms of the severity of the consequence in the event the risk should become realized. As a part of CMU's ERM Program, three levels of impact are used for assessing risk:

- **Low** – No impact, minor interruption, manageable financial loss
- **Moderate** – Minor/moderate injury, financial loss greater than budget allowance, external audit/regulatory finding, short term program interruption
- **High** – Severe injury, loss of life, millions in financial losses, loss/suspension of programs, legal liability, inability to operate campus

Based on assessment of likelihood and impact the assignment of severity level is illustrated using the risk management heat map shown in Figure 5.

Figure 5. CMU's Assignment of Risk Severity in SciShield and Corrective Action Categories

Risk Severity Assignment



Corrective Action Categories

NOTICE (+1)	MODERATE (+2)	IMPORTANT (+3)	CRITICAL (+4)

Corrective Actions

Corrective actions will take place based on the corrective action categories depicted above. If any finding falls in the critical category, immediate corrective actions must occur. Depending on the finding, this may include resolving the finding at the time of the inspection or stopping all work and/or evacuating until corrective actions can be taken. A report will also be forwarded to the Department Head for review and follow-up.

If a finding falls into the important, moderate, or notice categories, corrective actions must take place no later than 30 days of the initial inspection visit unless an extension is granted. For findings that fall into the important categories, EHS will contact the group within 5 calendar days of the remediation due date to conduct a follow-up inspection. The follow-up inspection allows EHS to confirm that corrective actions are being implemented and consult with the PI, Group Safety Coordinators, and/or other responsible parties. Findings that fall into the notice category do not require a follow-up inspection by EHS, however, the inspector reserves the right to perform a follow-up inspection. Examples of findings in each corrective action category can be seen in Table 1.

Table 1-Examples of Findings in Each Severity Category

Corrective Action Category	Finding Examples
Critical (+4)	Lack of current, complete, and accessible HF First Aid Kit, Improper use or storage of pyrophoric materials
Important (+3)	Improper storage of corrosive materials, lack of or improper labeling of chemicals
Moderate (+2)	Lack of permission to work alone documentation, presence of unwanted or surplus chemicals
Notice (+1)	Lack of proper labeling for food items, expired items in first aid kits

Escalation Process

Safety inspections findings are escalated to the applicable department head and require further action by the Principal Investigator if any of the following occurs:

- A safety inspection finding designated as critical is observed during an inspection.
- Safety inspection findings are not remediated within the established timeframe noted above.
- Multiple repeated findings designated as moderate or important category when deemed appropriate by EHS.