

16-304 Review of Laboratory Safety Practices

EXECUTIVE SUMMARY

The Laboratory Safety Group within the Department of Environmental Health and Safety (EH&S), is responsible for conducting annual inspections for all owned and leased laboratory space at the Institution. The purpose of these inspections is to ensure the health and safety of all laboratory employees. During fiscal year 2015, EH&S conducted a total of 2,194 basic science laboratory inspections.

Internal Audit partnered with EH&S to determine if the basic science laboratories were complying with the Institution's established lab safety practices. We concluded that controls and processes, such as ongoing inspections and follow-ups, are in place to help mitigate the potential risks that certain lab deficiencies may pose for personnel, research, and facilities. We identified the following areas where lab safety processes can be enhanced:

- Tracking and monitoring repeat deficiencies
- Ensuring required laboratory training is provided and documented
- Performing inspections as required
- Improving follow-up procedures

Further details are outlined in the *Detailed Observations* section. Other less significant opportunities for improvement were communicated to management separately.

Management Summary Response:

Management agrees with the observations and recommendations and has developed action plans to be implemented on or before *May 31, 2017*.

Appendix A outlines the methodology for this project.

The courtesy and cooperation extended by the personnel in the Environmental Health and Safety Department, and Laboratories are sincerely appreciated.



Sherri Magnus, CPA, CIA, CFE, CRMA
Vice President & Chief Audit Officer
August 30, 2016

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BACKGROUND INFORMATION

The Laboratory Inspection Program is administered by Environmental Health and Safety (EH&S). EH&S provides regulatory enforcement and technical expertise with respect to hazardous chemicals, radiological, and biological agents' exposure in basic science labs, which include clinical, research, and teaching labs. EH&S employs five Safety Specialists and two Safety Technicians who provide significant resources to ensure a safe laboratory environment. EH&S conducts laboratory inspections on an annual basis.

Environmental Health & Safety notifies Principal Investigators (PIs) of lab inspections planned for the upcoming month; however, inspection visits may occur at any time during the month. EH&S takes a proactive approach to address compliance issues found in laboratories and, in most cases, facilitates the corrective action process. Timelines for corrective actions vary depending upon the severity level of the laboratory deficiencies identified. The Lab Safety Deficiencies and Recommendations Guide provides suggested corrective actions for each noted deficiency.

Principal Investigators have full responsibility to ensure all laboratory deficiencies are resolved in a timely manner; otherwise, they may risk cessation of their research operations. PIs are required to complete the Lab Inspection Corrective Action Commitment Form to record corrective actions. EH&S performs a follow-up inspection 30 days after the initial inspection memorandum is issued. If deficiencies remain at 30 days, a 60 day inspection follow-up is conducted to ensure deficiencies are resolved by the PIs.

DETAILED OBSERVATIONS

Observation 1:

Lab Inspection Results

RANKING: Medium

Internal Audit, in partnership with EH&S's Lab Safety Specialists, inspected 15 labs consisting of 43 laboratory rooms under the direction of 15 responsible PIs.

Our inspections focused on severe and critical areas based upon the laboratory safety inspection checklist ranking. Severe deficiencies require resolution within 7 days after initial inspection. Critical deficiencies are considered hazardous or dangerous and require resolution within 24 hours.

Safety Areas Inspected

- Laboratory Management
- Training
- Laboratory Safety Principles
- Engineering Controls
- Chemical Safety
- Biological Safety
- Waste Management
- Equipment Safety

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We identified 89 new deficiencies, with 78 categorized as severe, and 11 considered critical. Most of the deficiencies we identified related to the following areas:

- Personal protective equipment was not available or not worn when necessary (*Severe*)
- Chemicals were not adequately labeled to identify contents or hazards (*Severe*)
- Chemicals were not separated by hazard class (*Severe*)
- Chemical waste containers were not properly labeled with the words “Hazardous Waste” (*Severe*)

When deficiencies occur related to lab safety practices, the safety of employees and the lab environment may be jeopardized. Principal Investigators have been notified of these deficiencies and are responsible for resolving them.

Recommendation:

EH&S should follow-up to ensure resolution of the identified deficiencies during the next scheduled inspection cycle.

Management’s Action Plan:

Responsible Executive: Ethan Dmitrovsky / Dan Fontaine

Owner: Matthew Berkheiser

Due Date: October 31, 2016

EH&S will provide follow-up final completion memos noting resolution of identified deficiencies.

Observation 2:

Track and Monitor Repeat Deficiencies

RANKING: Medium

EH&S does not have a monitoring process in place to track repeat violations by PIs over multiple fiscal years. Twenty-five of the deficiencies identified were recurring, and had been noted in the prior year. Of these, 64 percent were considered severe or critical.

Currently, violations are followed up after 30 and 60-day periods to determine whether corrective actions have been taken. If deficiencies are corrected during the follow-up inspection period, no further monitoring is performed. As a result, it increases the risk that violations can be corrected for the short-term, yet may reoccur after follow-up and persist for the long-term.

Recommendation:

Environmental Health & Safety should develop monitoring procedures to track repeat deficiencies, in order to identify trends for laboratory rooms that continue to violate lab safety requirements.

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Management's Action Plan:

Responsible Executive: Dan Fontaine

Owner: Matthew Berkheiser

Due Date: May 31, 2017

EH&S will develop a monitoring process to track repeat deficiencies and identify trends utilizing reporting capabilities of current software system.

Observation 3:**Complete Required Laboratory Training****RANKING: Medium**

The Laboratory Safety and Chemical Hygiene Plan (LSCHP) requires that the *Safety in a Laboratory Environment* training be completed upon the employee's initial assignment and every three years thereafter. This course provides employees with information on hazardous materials identification and control measures to prevent potential exposure. The *Control Band 1 and 2 Laboratory Procedures* training provides guidance on standardized protective equipment, practices, and engineering controls assigned to agents. The guidance, when used correctly, ensures that personnel are protected from acute adverse effects of agents assigned to that band. During our laboratory inspections, we noted the following:

- *Control Band 1 and 2 Laboratory Procedures* training for laboratory-specific hazards is not always performed or documented, as required by the LSCHP and the Institutional Biosafety Committee (IBC). During our physical inspection of eight labs, two labs (25%) did not have any documentation of control band training, and five labs (63%) had missing control band documentation for some employees.
- For 937 laboratory employees who have badge and/or key access to the laboratory rooms, we found that 93 (10 percent) of the individuals had either not completed the required *Safety in a Laboratory Environment* training course or their training had expired.

When the appropriate lab safety training is not completed by lab personnel, the safety of employees and the lab environment may be jeopardized. Principal Investigators have been notified of these training deficiencies and are responsible for resolving them.

Recommendation:

EH&S should continue to follow-up during regularly scheduled lab inspections to confirm that training has been taken and is current.

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Management's Action Plan:

Responsible Executive: Ethan Dmitrovsky / Dan Fontaine

Owner: Matthew Berkheiser

Due Date: May 31, 2017

EH&S will confirm that the required Control Band and Laboratory Safety trainings have been taken and are current as part of its routine laboratory inspections. For individuals who are noncompliant, EH&S will document the deficiency, notify the PI, Department Chair and Division Head as required by Institution Policy ADM0169. For the Laboratory Safety training, EH&S will explore the feasibility of sending an email notification 30 days prior to the training expiration due date.

Observation 4:**Perform Required Lab Inspections****RANKING: Low**

According to the 2014 Laboratory Safety and Chemical Hygiene Plan, laboratory safety inspections are conducted on an annual basis in all of the research laboratories to evaluate adherence to laboratory standards. However, safety inspections had not been conducted on the lab areas for one PI since 2011. This occurred because the PI moved to a different location and was mistakenly excluded from the population used to schedule the annual lab inspections. Lab Safety became aware of this error during a laboratory move request and performed an inspection of the PI's lab areas in September 2015. If laboratory safety inspections are not conducted annually, there is an increased risk that the labs would be non-compliant with safety requirements, placing employees at risk.

Recommendation:

EH&S should ensure that all the research laboratories are inspected annually to ensure adherence to the laboratory safety standards.

Management's Action Plan:

Responsible Executive: Dan Fontaine

Owner: Matthew Berkheiser

Due Date: August 31, 2017

EH&S will develop a formal process flow within Facilities Management to identify locations assigned to each Principal Investigator.

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Observation 5:**Improve Follow-up Procedures****RANKING: Low**

Follow-up inspections occur at 30 and 60 days after the initial annual lab inspections to ensure that corrective actions have been taken to resolve all safety deficiencies. Inspection results are tracked in the EH&S Assistant Software.

We identified the following during testing of 25 follow-up inspections:

- Two inspection follow-ups were not documented in the EH&S Assistant Software, and a notification informing the PI of deficiency status could not be obtained. Internal Audit could not confirm whether the PI was informed.
- Two deficiencies identified in the original inspection checklists were not reported to the PI. Internal Audit was unable to determine whether these deficiencies were corrected at the time of inspection or should have been included in the follow-up.

According to management, they are in the process of upgrading EH&S Assistant Software and some procedures will be automated.

Recommendation:

EH&S should document all deficiencies, and follow up within the 30-day and 60-day periods, as established in the Laboratory Inspection Standard Operating Procedures.

Management's Action Plan:

Responsible Executive: Dan Fontaine

Owner: Matthew Berkheiser

Due Date: May 31, 2017

EH&S will implement a Quality Control program to ensure that all deficiencies are documented and follow-up as established by the department's Laboratory Inspection Standard Operating Procedures.

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Appendix A

Objective, Scope and Methodology:

The objective of this engagement was to assess basic science laboratories for compliance with established lab safety practices. The scope of our review included activity between September 2014 and March 2016.

Our methodology included the following procedures:

- Interviewed key personnel responsible for the laboratory safety program
- Reviewed relevant federal regulations and organizational policies and procedures
- Reviewed and tested inspections performed during fiscal years 2015 and 2016 year-to-date
- Reviewed and tested inspection follow-ups performed during fiscal year 2015
- Partnered with Lab Safety Specialists to conduct laboratory safety walk-throughs and inspections
- Compared employee lists with access to selected laboratory rooms and HR current and terminated employee lists
- Reviewed training records for employees

Our internal audit was conducted in accordance with the *International Standards for the Professional Practice of Internal Auditing* and *Government Auditing Standards*.

Number of Priority Findings to be monitored by UT System: None

A Priority Finding is defined as “*an issue identified by an internal audit that, if not addressed timely, could directly impact achievement of a strategic or important operational objective of a UT institution or the UT System as a whole.*”