



Item: **AC: I-1**

AUDIT AND COMPLIANCE COMMITTEE

Tuesday, April 5, 2022

**SUBJECT: FINAL FOLLOW-UP AUDIT ON LABORATORY SAFETY (REPORT #FY22-A-03).
THE ORIGINAL REPORT (#FAU18/19-2) WAS ISSUED ON JULY 12, 2019**

PROPOSED COMMITTEE ACTION

Information Only.

BACKGROUND INFORMATION

The Office of Inspector General (OIG) conducts follow-up audits every six months (March and September) for up to two years to determine the adequacy, effectiveness, and timeliness of corrective actions taken by management to address and resolve reported observations and recommendations. As part of this process, OIG determines whether the actions plans established by management has been effectively implemented or that senior management has accepted the risk of not developing an action plan.

The primary purpose of this **final** follow-up audit is to report on the status of efforts made by management to satisfactorily resolve and implement the recommendations in the original audit report issued in 2019. As a result of the audit, we noted that Environmental Health and Safety (EH&S) has successfully completed and resolved all four action plan steps.

IMPLEMENTATION PLAN/DATE

Not Applicable.

FISCAL IMPLICATIONS

Not Applicable.

Supporting Documentation:

Audit Report FY22-A-03

Presented by – Mr. Reuben Iyamu, Inspector General

Phone: 561-297-6493



MEMORANDUM

TO: FAU BOT Audit and Compliance Committee
Dr. John Kelly, President

FROM: Reuben Christian Iyamu, Inspector General

DATE: March 15, 2022

SUBJECT: **Final Follow-up Audit of Laboratory Safety, [Report No. FY22-A-03](#)**

We have completed a final follow-up audit on actions taken by Environmental Health and Safety (EH&S) management to address the findings and recommendations from our original audit of Laboratory Safety (Report #FAU18/19-2) issued July 12, 2019. This report provides a description of the original audit findings, recommendations, management action plans, and the status as of March 15, 2022. The result of our follow-up audit showed that the four action plans established by management to address our audit recommendations have been successfully completed and resolved. Management's response is also included in this report.

We appreciate the cooperation and assistance provided by EH&S during this follow-up audit.

Respectively Submitted,

Reuben C. Iyamu
Inspector General

cc: University Provost
Vice Presidents
Florida Auditor General
Wendy Ash Graves, Environmental Health and Safety Director



**Final Follow-Up Audit Report (#FY22-A-03)
Laboratory Safety**

(Original Report #FAU 18/19--2 issued July 12, 2019)

SUMMARY OF THE ORIGINAL AUDIT REPORT

The primary objectives of the original audit were to evaluate adequacy of policies, procedures, and practices related to: (1) Timely and comprehensive inspections of all campus labs, including correction of any lab deficiencies; (2) Required lab safety training of students, faculty, and employees who work in University laboratories; (3) Lab accountability for tracking the acquisition, storage, and usage of hazardous chemicals and disposal of chemical waste; (4) Physical laboratory security; and, (5) Conformance with applicable federal (OSHA) regulations pertaining to laboratory safety, as a best management practice. Based on the audit work performed, we noted that the University's laboratory safety program practices and established policies and procedures were generally adequate and in accordance with best business practices. In addition, we also identified a few areas where improvement is warranted. Those areas include lab inspections, employee safety training, and maintenance of hazardous chemical inventories to better comply with applicable federal (OSHA) regulations, established policies and procedures, and sound business practices. Four action plan steps were developed by management to address the audit recommendations.

FOLLOW-UP OBJECTIVE, SCOPE, AND METHODOLOGY

The purpose of this final follow-up audit is to report on the status of efforts made by management to satisfactorily resolve and implement the recommendations from our initial audit. To achieve our follow-up objectives, we made inquiries to management and reviewed the policies and procedures, and applicable documentation provided to us.

PREVIOUS AND CURRENT CONDITION OF ACTION PLAN STEPS

This is our final follow-up audit on actions taken by Environmental Health and Safety (EH&S) management to address the findings and recommendations. In response to our previous follow-up efforts, management indicated actions were initiated but not completed in addressing the audit recommendations. The table below provides a description of the original audit findings, recommendations, management action plans, and the status as of March 15, 2022. As shown in the table below, EH&S has successfully completed and resolved all four action plan steps.

We appreciate the cooperation and assistance provided by EH&S during this follow-up audit.

We conducted this follow-up audit in accordance with the *International Standards for the Professional Practice of Internal Auditing* and with *Principles and Standards for Offices of Inspectors General*. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

MANAGEMENT ACTION PLAN STATUS

Audit Finding #1: Improvements Recommended for the University's Lab Inspection Process

Recommendation #1: To enhance the existing laboratory inspection processes and address the various issues noted during our testwork, we recommend Environmental Health & Safety (EH&S) take the following steps: 1) Consider developing a risk-based inspection schedule of the various laboratories to determine the nature and frequency of inspections necessary to ensure a safe teaching and working environment; 2) Continue the process of contracting with software vendors (e.g. Skillsoft Compliance Solutions and/or Bioraft) to implement inspection modules which supplement internal practices to effectively administer the University's laboratory safety inspections; 3) Revise the current laboratory inspection policy to include detailed procedures such as completion of checklists, signoffs on inspections, reporting inspection results to responsible University officials, and timely follow-up on any inspection deficiencies; 4) Evaluate and implement software solutions for management of laboratory safety inspections, to include formal tracking of all lab safety deficiencies identified including regular status updates of corrective actions taken and scheduled follow-up visits based on the standard implementation dates to ensure appropriate corrective actions have been taken; and 5) Work with the Division of Research management to obtain a current list of all research labs and reconcile it to the lab inventory listing currently in use to ensure EH&S has accurate and complete lab data for its inspection program.

Management Action Plan	Status as of March 15, 2022
<p>The FAU Office of Environmental Health and Safety (EHS) has undergone a significant restructuring with new leadership over the past year and a half. A major part of the new reorganization is the introduction of a Laboratory Safety Officer. One of the primary aims of EHS in the area of Laboratory Safety is to shift the culture from an EHS-driven safety program to one that is driven by the departments and areas most impacted by potential hazards, such as laboratories. For instance, the new inspection program provides a detailed list of requirements to the lab owners several weeks before a scheduled inspection. The Laboratory Owners have the opportunity to learn what is expected of them ahead of time, get their lab in order, and keep in order even after the inspection is over. This new process has begun to show promise with the 12-month follow up inspections. The inspections are now a collaborative two-way discussion where the lab owner can ask questions and EHS can point out areas of success as well as opportunity.</p> <p>EHS establishes the policies and programs, and it is incumbent on the Lab Owners to implement those programs in their labs and then assurance proper implementation can be evaluated by EHS through its various network of inspections conducted in those labs. EHS has a wide variety of inspections that occur in the labs on a weekly, monthly, semi-annual, and annual basis, in addition to the Laboratory Safety inspections. These inspections include Monthly</p>	<p><u>Completed (Resolved)</u> – EH&S has taken the following steps to enhance the laboratory inspection processes:</p> <p>1) We verified that a wide variety of inspections occur in the labs on a weekly, monthly, semi-annual, and annual basis in addition to the Laboratory Safety inspections. The frequency of many of these inspections lends to the idea of a risk-based process.</p> <p>2) We verified that the Laboratory Safety Manual includes laboratory inspection processes and procedures.</p> <p>3) According to EH&S management, lab owners are responsible for implementing the policies and programs established by EH&S. EH&S evaluates proper implementation during its inspections conducted in the labs.</p> <p>4) According to EH&S management, all lab safety deficiencies identified are housed in the new laboratory safety software platform, BioRaft, and tracked until completion. Follow-up inspections are performed to verify appropriate corrective actions have been taken.</p> <p>5) According to EH&S management, the list of laboratories utilized by EH&S is more current and comprehensive than the Division of Research (DOR) list since the EH&S list includes academic labs.</p> <p>Therefore, we consider this step completed and resolved.</p>

<p>Inspections of Radiation Labs, Monthly Fire Inspections of all labs, Semi-annual IACUC Inspections of Animal Labs, Annual Fire Marshall Inspections, and many others. The frequency of many of these inspections would lend to the idea of a risk-based process; additional risk categories for the Laboratory Safety Inspections would not be necessary. The list of laboratories utilized by EHS is likely more current and comprehensive than the DOR list as the EHS list includes academic labs. We obtain our information on lab locations based on waste generation, which is a part of the lab set up criteria used at FAU. There are no requirements for the use of software systems for laboratory inspections, however, EHS will be creating a Laboratory Inspection Manual and will include laboratory inspection processes and procedures within that document.</p>	
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Audit Finding #2: Deficiencies Noted During Laboratory Safety Observations

Recommendation #2: In order to properly address issues resulting from our observations, we recommend EH&S take the following actions: 1) Ensure each lab, as applicable, implement the guidelines and standards regarding maintenance of *Standard Operating Procedures* (SOPs) and *Safety Data Sheets* (SDS) for all hazardous chemicals noted on their chemical inventory listings as required by the University's CHP and *Hazard Communication Program*. EH&S should consider enhancing their current lab inspection processes to more thoroughly include spot-checks and enforce required maintenance of SOPs and SDS in each lab with hazardous chemicals; and, emphasizing to all lab principal investigators and each member of a laboratory group their responsibility for complying with the standards set forth in the University's CHP and *Hazard Communication Program*; 2) Ascertain that a copy of the University's *Chemical Hygiene Plan* is maintained in each laboratory covered by the CHP and made readily accessible to lab workers; 3) Ensure that PIs and Lab Managers develop a *Written Emergency Action Plan* and ensure that a copy is kept in all labs available to lab personnel for review; 4) Document the annual review of the University's CHP and *Hazard Communication Program*, and revise with any necessary updates. (Indication of the last review date and the last revision date on the front cover page of each plan/program document would be preferable). Ensure that any significant change(s) are communicated to all responsible University personnel; 5) Consult with the College of Medicine and Division of Research to ensure that best practices are in place to effectively manage lab operations, including access; and 6) Consider a mechanism to report unsafe laboratory conditions and practices (e.g. hotline).

Management Action Plan	Status as of March 15, 2022
<p>The goal of EHS is to provide laboratories with the resources they need to execute compliant safety programs within their spaces. A lot of progress has been made in this area.</p> <p>Each lab maintains a chemical inventory and safety data sheets are available to all personnel. This process is the responsibility of lab owners and is clearly outlined in the Chemical Hygiene Plan. Chemical inventories and SDS records are discussed with the labs during each inspection. The Chemical Hygiene Plan is reviewed annually. Further, the Chemical Hygiene Plan is available on the EHS website for all personnel at FAU. If the Chemical Hygiene Plan specifies something different, it will be updated. EHS is planning a document management system that will record annual policy and procedure reviews to demonstrate the activity. The Written Emergency Action Plan is a form within the Chemical Hygiene Plan (page 87) which allows each lab to fill in their site-specific information and post for reference; this form is in use in the labs. Each lab must have their own plan as the emergency procedures are based on the hazards within the lab. EHS is not responsible for personnel access or the completion of volunteer forms; these are not considered a part of EHS's scope unless access to the lab is available to inappropriate persons. EHS has a hazard reporting system in place on the EHS Website.</p>	<p>Completed (Resolved) – EH&S has taken the following actions to properly address issues resulting from our observations:</p> <ol style="list-style-type: none"> 1) The Chemical Hygiene Plan provides laboratories with the resources they need to execute compliant safety programs within their spaces and indicates that Principal Investigators and Laboratory Managers have overall responsibility for chemical hygiene in their labs. Chemical inventory and safety data sheets for all labs are housed in the new lab safety software platform, BioRaft, and are available to all lab personnel. EH&S discusses these records with the labs during each inspection. We verified that <i>Safety Data Sheets</i> (SDS) for all hazardous chemicals noted on the chemical inventory listing for a sample lab were maintained. 2) We verified that the University's <i>Chemical Hygiene Plan</i> (CHP) is maintained on the EH&S website and is readily accessible to all FAU personnel. In addition, the CHP QR Code on the <i>Written Emergency Action Plan</i> is posted inside and at the entrance of all labs. 3) All labs have a <i>Written Emergency Action Plan</i> housed in the new lab safety software platform, BioRaft. We verified the Emergency Action Plan for a sample lab. EH&S ascertains that the labs have emergency procedures posted during each inspection. 4) We verified that EH&S management created an FAU Manual Revision and Review Table to document the last revision and next revision dates for all plans/procedures that they are responsible for. 5) According to EH&S management, they conduct a 100% evaluation of lab membership during each inspection to ensure all lab members receive proper training prior to obtaining access. 6) We verified that a Safety Hazard / Near Miss Reporting Form was created on the EH&S website to report unsafe laboratory conditions and practices. The form goes directly to the email of the Associate Director of EH&S. In addition, the CHP QR Code on the <i>Written Emergency Action Plan</i> is posted inside and at the entrance of all labs. <p>Therefore, we consider this step completed and resolved.</p>

Audit Finding #3: Lab Safety Training

Recommendation #3: With respect to lab safety training, we recommend EH&S perform the following: 1) Ensure all lab personnel (students, faculty, employees) with potential exposure to hazardous chemicals and other hazardous materials/pathogens receive safety training prior to initial exposure to these materials; 2) Complete current efforts to migrate lab personnel safety training to the *Skillsoft Compliance Solutions*; and 3) Provide additional instruction and enforcement as needed to ensure lab PIs/Lab Managers verify all their lab personnel complete required safety training prior to allowing them into the lab.

Management Action Plan	Status as of March 15, 2022
EHS recognizes the importance of proper safety training and an effective training program. EHS verifies training during grant and protocol reviews and laboratory inspections. Training is reinforced in many of the EHS interactions in the laboratories. The launch of the new training system will resolve any potential gaps in the training of laboratory personnel. The Skillsoft project has been underway and is expected to soft launch by September 2019.	Completed (Resolved) – We found that all lab personnel (students, faculty, employees) are required to attend Laboratory Safety training annually. According to EH&S management, they verify training during grant and protocol reviews and laboratory inspections. If training deficiencies are identified for any employees as a part of the inspection process, they are identified and recorded inside the BioRaft inspection module as a finding which is then tracked and verified in Percipio when corrected. Therefore, we consider this step completed and resolved.

Audit Finding #4: Chemical Inventory Accountabilities

Recommendation #4: As a best practice, and as recommended by the premier chemical safety organization, Labsafety.org, we recommend that EH&S develop and implement a “cradle to grave” chemical inventory tracking system to track chemicals from the time they are purchased through the time they are used and discarded. Continue current efforts of evaluating different software vendors, such as Bioraft, regarding implementing their ChemTracker module to better facilitate more real-time monitoring of chemical inventories, including maintenance of required Safety Data Sheets. A good chemical tracking system can reduce procurement costs, eliminate unnecessary purchases, and minimize disposal expenses. Implementation of such a chemical tracking system would help ensure chemicals are maintained in accordance with the University’s *Chemical Hygiene Plan* and *Hazard Communication Program*.

Management Action Plan	Status as of March 15, 2022
Although not required for compliance, EHS recognizes that tools can be effective in helping Laboratory Owners maintain compliance within their areas. EHS will continue to pursue software solutions as a promising addition to our laboratory safety program.	Completed (Resolved) – According to EH&S management, they are using the ChemTracker module as part of the new laboratory safety software, BioRaft. All chemical inventories are housed in there and updated when labs receive new items or dispose of waste. For a sample lab, we verified that a chemical inventory listing, and Safety Data Sheets are maintained. Therefore, we consider this step completed and resolved.

MANAGEMENT (Stacy Volnick, VP – Administrative Affairs & CAO)'S RESPONSE

Environmental Health and Safety (EH&S) continues to strive for improvements to its programs and outreach to the FAU community. Since 2018, EH&S has brought about many improvements to the laboratory safety program at FAU including the configuration and launch of two safety management platforms, BioRaft and Skillsoft Percipio. BioRaft is a full suite of laboratory software tools designed to provide full visibility to laboratory safety including online chemical inventories and safety data sheets, laboratory hazards and lab members, management of hazardous waste, radiation registrations and inventory, and medical surveillance. Skillsoft Percipio provides a full suite of environmental, safety and health training available to all staff, faculty, and students. Both systems have been fully implemented and adopted by the FAU community, and EH&S will continue to work with the community it serves to maximize the value of these systems and all EH&S programs.

This Follow-up Engagement was Conducted by:
Allaire Vroman, Internal Auditor/Investigator

Supervised and Approved by:
Reuben Iyamu, MBA, CIA, CFE, CIGA, Inspector General

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