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July 19, 2024

Katherine Yelick
Vice Chancellor
Research

Marc Fisher
Vice Chancellor
Administration

Dear Vice Chancellor Yelick and Vice Chancellor Fisher:

We have completed our audit of UC Berkeley's Environment, Health & Safety (EH&S) department per our annual service plan in accordance the University of California Internal Audit Charter.

Our observations with management action plans are presented in the accompanying report. Please destroy all copies of draft reports and related documents. Thank you to the staff of EH&S for their cooperative efforts throughout the audit process. Please do not hesitate to call on Audit and Advisory Services if we can be of further assistance in this or other matters.

Respectfully reported,

Jaime Jue

Jaime Jue
Assistant Vice Chancellor and Internal Audit Director
Audit and Advisory Services

cc: Acting Director Alicia Bihler
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AUDIT AND ADVISORY SERVICES

Environment, Health and Safety (EH&S) Audit Project No. 24-785

July 19, 2024

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Audit and Advisory Services
Environment, Health and Safety (EH&S)

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OVERVIEW

Executive Summary

The purpose of the audit was to assess selected governance, administrative, internal control, and risk management practices of the Environment, Health & Safety (EH&S) department. Our audit procedures consisted of the identification and walkthrough of various management processes, review of related documentation, testing of process administration, and interviews within EH&S, campus stakeholder units, the Office of the President, and other UC campuses.

EH&S performs a critical role in achieving campus compliance with environmental, health and safety requirements and regulations. Based on the results of the audit work performed, we observed the following opportunities to strengthen administrative practices and internal controls associated with the EH&S function:

- **Policy, Authority, and Responsibility:** Currently, there are insufficient campus-level policies in key areas and formal delegations of authority to establish, reinforce, and communicate EH&S's and broader campus environmental, health and safety undertakings on campus. In addition, the scope of responsibility within each activity area has not been explicitly delineated or documented.
- **Risk Identification, Metric Analyses, and Operational Planning:** EH&S has not adopted risk identification, metric development and reporting, and operational planning as part of its normal operations. These are important management tools that can reveal both actual and potential issues affecting the EH&S function and can also provide a means to identify, solidify, communicate, and implement functional direction.
- **Operating Documentation:** EH&S has not implemented a consistent framework and developed internal step-by-step procedural documentation to define requirements and to document processes for the operations of the department. Absent such documentation to guide EH&S staff and management in each of the EH&S areas of responsibility, there is risk that work performed may not align with management expectations, may not appropriately address key operational risks or resource constraints, and may be performed without a sufficient level of consistency. There is also significant risk that institutional knowledge may not be appropriately codified and transferred.
- **Tracking of Injury Recommendations to Mitigate Safety Hazards:** EH&S does not have tracking and follow-up mechanisms and controls in place to ensure that EH&S safety recommendations related to reported employee injuries are implemented.

Management agrees with our observations and has provided management responses that, if implemented, should address the risks noted in our audit.

Source and Purpose of the Audit

The purpose of the audit was to assess selected governance, administrative, internal control, and risk management practices of the Environment, Health & Safety (EH&S) department.

Scope of the Audit

The review covered key operational areas, including Environmental Protection, Fire Prevention, Radiation Safety, and Health & Safety. Audit procedures consisted of the identification and walkthrough of various management processes, review of related documentation, testing of process administration, and interviews with key individuals within EH&S, campus stakeholder units, and the Office of the President (UCOP). We also interviewed EH&S directors at two peer UC campuses. Fieldwork was conducted August - November 2023. The structure and content of individual EH&S programs, compliance with regulations and policies, and technical operations were outside the scope of our review.

Background Information

EH&S represents a campus first line of defense regarding environmental and safety issues. It is instrumental in promoting the safety of its employees, students, and visitors. EH&S's range of departmental operations encompasses the entire campus (and satellite sites) and includes all academic and non-academic departments. EH&S is primarily responsible for campus compliance with various federal and state regulations and requirements related to health and safety. The primary regulators of EH&S activities are the California Department of Public Health and Cal/OSHA. Key regulations include the Cal/OSHA Occupational Safety & Health Standards and the California Code of Regulations Title 19 (Building Inspections) and Title 24 (Fire Code).

UCOP has identified over one hundred unique areas of responsibility for an EH&S function at a UC campus. Each area of responsibility is distinct, with different regulatory and performance standards, and specific procedural requirements such as facility inspections and external reporting obligations. At UC Berkeley, certain areas of responsibility also involve specific governance committees or groups including members from the campus community, in particular those areas pertaining to research safety and controlled substances. Some areas of responsibility are more complex and entail greater inherent risk than other areas.

EH&S is organized around the following five functions: Environmental Protection, Fire Protection, Radiation Safety, Health & Safety, and Administration. The department is staffed by approximately seventy employees, some of whom are funded by specific programs.

Summary Conclusion

EH&S performs a critical role in achieving campus compliance with environmental, health and safety requirements and regulations. Based on the results of the audit work performed, we observed the following opportunities to strengthen administrative practices and internal controls associated with the EH&S function:

Policy, Authority, and Responsibility

Currently, there are insufficient campus-level policies in key areas and formal delegations of

authority to establish, reinforce, and communicate EH&S and broader campus environmental, health and safety undertakings on campus. In addition, the scope of responsibility within each activity area has not been explicitly delineated or documented. Especially given the complex operating and regulatory environment, formalizing these foundational program elements underscores the campus' commitment to the subject and to EH&S, and helps ensure the appropriate prioritization of activities and assignment of responsibilities. We identified the following opportunities:

- *Formal Policy.* Working with the campus, EH&S should examine its current inventory of policies, identify potential gaps relative to other UC campuses, and consider issuing formal policies related to key areas of responsibility not currently addressed.
- *Delegation of Authority.* EH&S should work with campus leadership and UCOP, as needed, to develop or update appropriate delegations of authority.
- *Scope of Responsibility.* EH&S should review the areas of responsibility identified by UCOP to assess whether the components are fully assigned and adequately covered, including areas such as external incubators, the ergonomic unit, and student organizations.

Risk Identification, Metric Analyses, and Operational Planning

EH&S has not adopted certain fundamental management tools as part of its normal operations. These tools can reveal both actual and potential issues affecting the EH&S function, can provide a means to identify, solidify, communicate, and implement functional direction, and can identify which areas of responsibility require targeted improvement and whether or not incremental improvement has been realized over time. We identified the following opportunities:

- *Risk Identification.* EH&S should develop and implement a methodology to identify specific risks and risk magnitude for each of the areas of responsibility identified by UCOP. The department's work should be prioritized based on the level of assessed risk.
- *Metrics Analyses and Reporting.* EH&S should adopt a culture of metric usage based on risk, that includes routine reporting of actual metric results and development of metric standards.
- *Operational Planning: Objectives, Goals, and Long-Term Plans.* EH&S should engage in operational planning by developing operating objectives, goals, and long-term plans. The larger campus and external environment are not static, and as such formal planning processes are essential to ensure that EH&S can effectively and timely respond to changing requirements and circumstances.

Operating Documentation

EH&S has not implemented a consistent framework and internal step-by-step procedural documentation to define requirements and to document processes for the operations of the department. Absent such documentation to guide EH&S staff and management in each of the EH&S areas of responsibility, there is risk that work performed may not align with management expectations, may not appropriately address key operational risks or resource constraints, and may be performed without a sufficient level of consistency. There is also significant risk that institutional knowledge may not be appropriately codified and transferred. We recommend that

EH&S implement a consistent framework and internal step-by-step procedural documentation to direct the operations of the department.

Tracking of Injury Recommendations to Mitigate Safety Hazards

EH&S does not have tracking and follow-up mechanisms and controls in place to ensure that EH&S safety recommendations related to reported employee injuries are implemented. To help ensure the timely mitigation of conditions or practices potentially contributing to or causing injury, we recommend that EH&S management strengthen and formalize recommendation follow-up protocols and accountabilities.

EH&S Management Summary Comment

EH&S is in a time of significant change. The department recognizes the urgency of addressing these recommendations, but must also balance them against current operational priorities. These include our current and most pressing priority of filling the substantial number of vacancies in the department, recruiting and filling our Executive Director position, and fulfilling the requirements of President Drake's mandate on maximum allowable quantities which is pulling substantial resources from an already lean unit. Against this backdrop, the department will initiate a program evaluation by an external consultant, which will provide further recommendations to the department. Given these current priorities, leadership changes, and additional program review, EH&S provides suggested timeframes for completion below some may shift in priority as we move through this process.

SUMMARY OF OBSERVATIONS & MANAGEMENT RESPONSE AND ACTION PLAN

Policy, Authority, and Responsibility

Observation

Currently, there are insufficient campus-level policies in key areas and formal delegations of authority to establish, reinforce, and communicate EH&S and broader campus environmental, health and safety undertakings on campus. In addition, the scope of responsibility within each activity area has not been explicitly delineated or documented. Especially given the complex operating and regulatory environment, formalizing these foundational program elements underscores the campus's commitment to the subject and to EH&S, and helps ensure the appropriate prioritization of activities and assignment of responsibilities.

Formal Policy

EH&S has relatively fewer formal policies in key areas than most other comparable UC campuses. Examples of key areas where policy does not exist include lasers, lab and shop machine safety, lead hazards, forklifts, and elevated work. Most of Berkeley's existing EH&S-related policies are associated with chemical safety or controlled substances. While in many instances, standard operating procedures (SOPs), guidance, and website materials are available, absent formal policies covering the various environmental, health, and safety areas of responsibility, there is no formal delineation and communication of the campus' position on each responsibility topic. We recommend that EH&S examine its current inventory of policies, identify potential gaps relative to other UC campuses, and consider issuing formal policies related to key areas of responsibility not currently addressed.

Delegation of Authority

At UC Berkeley, there are limited formal delegations of authority involving EH&S. Although EH&S's responsibilities are sometimes documented in various SOPs and may also be generated directly by external agencies, they may not be known, clear, or recognized by the campus community and others. In order to establish proper authority and to identify and adjust for potential misalignment or lack of clarity in role assignments, we recommend that EH&S initiate an assessment of formal delegations of authority for its key activities and programs. We also recommend that EH&S work with campus leadership and UCOP, as needed, to then develop appropriate delegations of authority.

Scope of Responsibility

UCOP identified over one hundred areas of functional responsibility it deemed to be typically associated with a UC campus' EH&S function. At UC Berkeley, some areas of responsibility are shared with other campus departments, while others are totally outsourced to them. We recommend that EH&S ensure that the areas of responsibility identified by UCOP are appropriately assigned and adequately covered. We also recommend that EH&S work with campus Legal Counsel and campus executives to specifically assess those areas that are currently excluded from EH&S's purview in order to confirm the ongoing appropriateness of these

exclusions and to possibly redefine EH&S's role. As noted during our audit, such areas include, but are not limited to, the following:

- *External Incubators.* While EH&S performs certain safety inspections (related to biosafety and fire safety) of external incubators, it does not consistently and comprehensively perform safety inspections and other monitoring activities for all external incubators. According to EH&S management, there has been a lack of clarity as to the full scope of EH&S's responsibility and it is not clear that all risk areas are appropriately covered. The operating agreement for at least one significant external incubator lessee indicates that EH&S has "jurisdiction over campus operations and over private, third-party incubated tenants operating within the . . . facility". We understand that the situation is similar to a visiting professor . . . external incubators are assigned work space on UCB premises; they do not have exclusive rights regarding their assigned space. The lack of more direct engagement on EH&S's part creates potential risk and exposure for the campus should an environmental or safety incident occur at one of the external incubators. We recommend that EH&S work with campus executives and others to clearly define its responsibility regarding external incubators.
- *Ergonomic Unit.* EH&S has indicated that ergonomics is a normal EH&S activity and that it aligns with other EH&S work. In addition, UCOP includes it as an area of responsibility for an EH&S function. At UC Berkeley, however, the Ergonomics Unit is not part of EH&S's organizational structure. We recommend that EH&S work with campus executives to clarify this issue and consider whether it may be beneficial to realign the ergonomic function with EH&S.
- *Student Organizations and Activities.* EH&S's role pertaining to student organizations and activities on campus (e.g., the rocketry clubs) is currently limited and has not been holistically assessed or explicitly defined. Given the range of student organizations and activities, there is potential risk to the campus should an environmental or safety incident occur. Absent a defined assignment of responsibility, it is not clear that risks are being or can be appropriately identified and mitigated. EH&S, working with campus executives, should clarify and assign environmental and safety responsibility for student organizations and activities on campus. Once assigned, related policy and standard procedures should be developed and consistently applied.

We also found that there are several departments performing EH&S safety-related activities that work, to varying degrees, in cooperation with EH&S. These departments include, but are not limited to College of Chemistry, Facilities, and Student Services, as well as other selected research laboratory facilities. As EH&S and these functions evolve and demands change, ambiguity and confusion in the roles and responsibilities between these groups can emerge. We recommend that EH&S identify those campus departments also performing EH&S safety-related activities and, in cooperation with them, codify the roles and responsibilities of each department in relation to EH&S. Where documentation currently exists, the documentation should be reviewed and updated, as needed.

Management Response and Action Plan

Policy. EH&S will examine gaps in policy coverage compared to peer institutions and UCOP. The gap analysis will result in an analysis summary document, with a target completion date of November 30, 2024. Any necessary policy development will commence thereafter.

Delegation of Authority. EH&S will examine gaps in formal delegations of authority. The gap analysis will result in an analysis summary document, with a target a completion date of November 30, 2024. Any necessary delegation development or modification will commence thereafter.

Scope of Responsibility. EH&S is currently engaged in a process to better define areas of responsibility as it pertains to various campus populations (faculty, student, staff, visitor, etc.). As part of this exercise, EH&S will work with appropriate campus stakeholders to clarify roles and responsibilities, and how those are informed by leadership priorities. This exercise will be a primary input into our strategic planning analysis. The target date for completing the exercise and creating an EH&S Areas of Responsibility Matrix that identifies EH&S (and others) assigned responsibility at UC Berkeley is December 31, 2024.

Risk Identification, Metric Analyses, and Operational Planning

Observation

EH&S has not adopted risk identification, metric development and reporting, and operational planning as part of its normal operations. These are important management tools that can reveal both actual and potential issues affecting the EH&S function and also provide a means to solidify, communicate, and implement functional direction.

Risk Identification

The effective operation of a compliance function entails a need to identify specific areas of operational risk, compliance risk, and related risk tolerances, and to manage risks within those tolerances based on the existing risk landscape. EH&S does not currently use risk analyses to identify and assess environmental, health, and safety operational and compliance risks and their magnitude within its areas of responsibility. Effective assessment of risks can guide EH&S in directing and/or concentrating its work effort and resources. This is particularly important considering the nature and extent of EH&S's responsibility. We recommend that EH&S identify, assess, and document operational and compliance risks, and periodically update them, for each of the areas of responsibility identified by UCOP, as are applicable to the campus.

Metrics and Metric Analyses

EH&S does not fully, routinely, and consistently use metrics as a management tool. Without metrics, it is difficult, if not impossible, to accurately and precisely assess which areas require targeted improvement and whether or not incremental improvement has been realized over time. Metrics are also useful in adjusting operating priorities, monitoring the accuracy and completeness of work, assessing staffing needs, and demonstrating and communicating effectiveness. Examples of some key areas where metrics could be used include safety training compliance, bio-safety requirements, hazardous material management, and injury management. Examples of possible metrics that apply to several EH&S areas of responsibility could include the number of inspections required compared to those completed (by specific EH&S staff and campus department); the number, classification, and priority of recommendations; the number of recommendations addressed and those outstanding; the number of required drills or trainings vs. those performed, etc. This information could be summarized and made available to both EH&S and campus departments.

We recommend that EH&S adopt a culture of metric usage and analyses. This should include identification of which metrics are to be monitored, development of metric standards, and protocols and timeframes for metric result reporting and escalation. During our fieldwork, we identified that two of our UC campus peers use metrics extensively and routinely to monitor and measure their operations. EH&S may wish to consult with these locations to learn more about their programs, and potentially leverage elements, as appropriate.

Operational Planning: Objectives, Goals, and Long-Term Plans

Establishing operating objectives and goals that are based on risk assessment is an important part of a compliance function's operations. Objectives and goals provide a common vision for management and employees, and provide direction to the operation. Likewise, strategic and long-term plans prepare the function for the future, move the function forward, and create value to the organization. We found that in recent years EH&S has not engaged in formal

organizational planning processes and is operating without formal operating objectives, goals, and long-term plans. We recommend that EH&S establish and engage in formal planning processes to develop operating objectives, goals, and long-term plans. Long-term planning should consider emerging issues such as a potentially required implementation by UCOP of the full RSS system. Performance against these plans should be routinely measured and the plans adjusted accordingly, based on the current environment.

Management Response and Action Plan

Risk Identification. EH&S will document operational and compliance risks associated with each of its areas of responsibility as identified in the EH&S Areas of Responsibility Matrix (see 1c above). The target date for identifying criteria, developing a standard format, completing the risk analysis, and updating the EH&S Areas of Responsibility Matrix (to indicate the risk assigned to each area of responsibility) is December 31, 2024.

Metrics and Metric Reporting. EH&S will develop a plan to evaluate and implement metrics reporting informed by the risk analysis completed above. Elements of the plan will include 1) a strategy for implementing a risk-based approach, 2) a tool to track and report on metrics, and 3) a timeline to address all areas of responsibility under EH&S. Following completion of the plan, the next milestone will be to evaluate metrics tracking and reporting for areas identified as high risk. These areas will be prioritized first, with a goal to address the top 10 areas within six months. The metrics reporting plan will be completed by December 31, 2024. The target date for identifying metrics for the top 10 program areas is February 2025.

Operational Planning. EH&S last updated its strategic plan in 2017. A new strategic plan is a leadership priority for the department, and has intentionally been placed on hold until the recruitment of a new executive director (anticipated start fall 2024).

Operating Documentation

Observation

EH&S has not implemented a consistent framework and internal step-by-step procedural documentation to define requirements and to document processes for the operations of the department. Absent such documentation to guide EH&S staff and management in each of EH&S's areas of responsibility, there is risk that work performed may not align with management expectations, may not appropriately address key operational risks or resource constraints, and may be performed without a sufficient level of consistency. There is also significant risk that institutional knowledge may not be appropriately codified and transferred.

As noted earlier in the report, there are over one hundred functional areas of responsibility that UCOP has deemed to be normally associated with and covered by a UC EH&S function. Many of the EH&S staff are subject matter experts in a specific technical field and often only in specific areas of responsibility. A unique certification may be required to perform specific work. In some instances, a single employee may be the only employee familiar with a particular subject area and its associated requirements and regulations. Because internal documentation is lacking, EH&S currently relies on each employee's personal experience with the subject area, along with any institutional knowledge shared between employees. During our fieldwork, we noted that recently one area of responsibility (crane lift safety) had not been covered when a long-term employee left the organization and a new employee took over who was not familiar with related campus requirements and procedures. A framework and internal procedures could have prevented this omission.

We recommend that EH&S implement a consistent framework and develop internal step-by-step procedural documentation to direct the operations of the department. The documentation should delineate specific step-by-step procedures that EH&S staff are expected to perform, and should reference applicable regulations, required certifications, internal requirements, specific timeframes, and due dates within each area of responsibility. Ideally, procedures documentation that captures the requisite information should use a standard format to ensure appropriateness and completeness of work, consistency of operations, and retention of institutional knowledge. Such documentation of procedures can also help identify and eliminate duplication of effort between EH&S units and between staff within the same unit, improve the overall efficiency of the department, and facilitate cross training. EH&S may wish to consult with other UC campuses to learn more about the various documentation structures currently being used and potentially leverage elements of those structures. We recommend that a shorter-term deliverable include a written development plan with prioritization of the areas of responsibility to be documented and timeframes for completion. Longer-term deliverables could include the actual completion of the documentation. The sequence of documentation development should be based on an assessment of risk assigned to each area of responsibility, with documentation developed sooner for higher risk and/or impact areas.

Management Response and Action Plan

EH&S has identified a procedure documentation tool. Our approach described below will identify the path towards adopting this tool more broadly across the department. Initially, EH&S will develop a plan to evaluate and implement procedural documentation informed by the risk

analysis completed above. Elements of the plan will include a strategy for implementing a risk-based approach and a timeline to address all areas of responsibility under EH&S. The procedural documentation plan will be completed by December 31, 2024. Following completion of the plan, the first milestone will be to create a documentation template then assess existing documentation for areas identified as high risk. Those with little or poor documentation will be prioritized first, with a goal to address the top 10 areas within six months. The target date for creating documentation templates and assessing existing documentation is February 28, 2025.

Tracking of Injury Recommendations to Mitigate Safety Hazards

Observation

We found that EH&S does not have tracking and follow-up mechanisms and controls in place to ensure that EH&S safety recommendations related to employee injuries are implemented. Identification, tracking, and follow-up of EH&S recommendations are key to reducing the total number of recurring injuries on campus. We recommend that EH&S take the following actions:

- Implement a mechanism to readily identify and summarize which injuries resulted in EH&S recommendations to a department supervisor. EH&S should determine the most appropriate solution, whether it is adopting a new analysis tool, modifying the existing Injury and Illness Reporting system, or possibly utilizing the RSS system, in some way.
- Follow-up on EH&S recommendations to determine whether the recommendation has been implemented by the department supervisor and that the root cause of the injury has been mitigated. Follow-up should be prioritized based on the relative ongoing risk that similar injuries may recur.
- Develop a report or other means that identifies and summarizes which EH&S recommendations have not been implemented so that additional action can be taken. The results should be reported to the respective department management and appropriate campus executives.

We also found that EH&S does not have written criteria and/or standards to identify which injuries EH&S will investigate and which EH&S staff should be assigned, based on their level of knowledge and expertise. We recommend that EH&S identify and adopt such criteria and standards. As part of criteria and standards identification, EH&S should consider whether realignment of staff into a designated unit to handle injury follow-up may create a more efficient delivery structure.

Management Response and Action Plan

Tracking Injury Recommendations. Following the adoption of the injury incident investigation criteria described in 4b, EH&S is developing a tool that will track EH&S injury investigations and resulting recommendations. The tool will include the ability to track and report on relevant metrics. The target completion date is September 30, 2024. EH&S will advocate that this type of tool be integrated into the existing injury tracking system.

Injury Investigation Criteria. Currently, EH&S prioritizes incidents that qualify as Cal OSHA reportable injuries, those with high-severity risks, and those with significant frequency of recurrence. Moving forward, EH&S will establish written criteria and standards to better determine which injury incidents will need an investigation. The target completion date for creating criteria and begin using the criteria to determine which injuries require investigation is September 30, 2024.