June 14, 2019

Dr. Mary A. Papazian, President
San José State University
One Washington Square
San José, CA 95192

Dear Dr. Papazian:

Subject: Audit Report 19-01, Health and Safety, San José State University

We have completed an audit of Health and Safety as part of our 2019 Audit Plan, and the final report is attached for your reference. The audit was conducted in accordance with the Institute of Internal Auditors' International Standards for the Professional Practice of Internal Auditing.

I have reviewed the management response and have concluded that it appropriately addresses our recommendations. The management response has been incorporated into the final audit report, which has been posted to Audit and Advisory Services' website. We will follow-up on the implementation of corrective actions outlined in the response and determine whether additional action is required.

Any observations not included in this report were discussed with your staff at the informal exit conference and may be subject to follow-up.

I wish to express my appreciation for the cooperation extended by the campus personnel over the course of this review.

Sincerely,

Larry Mandel
Vice Chancellor and Chief Audit Officer

c: Timothy P. White, Chancellor
EXECUTIVE SUMMARY

OBJECTIVE

The objectives of the audit were to ascertain the effectiveness of operational and administrative controls related to health and safety (HS) and to ensure compliance with relevant federal and state regulations; Trustee policy; Office of the Chancellor (CO) directives; and campus procedures.

CONCLUSION

Based upon the results of the work performed within the scope of the audit, the operational and administrative controls for HS as of March 15, 2019, were unlikely to provide reasonable assurance that risks were being managed and objectives were met.

Overall, the campus had a framework for HS in which the environmental health and safety (EHS) department provided guidance to the colleges and departments. However, we found that the campus did not have an effective HS training program to ensure that all employees and students who handled hazardous materials (HAZMAT) and hazardous waste (HAZWASTE) completed required training. Additionally, we found that the campus did not consistently perform and monitor inspections of laboratories and other instructional workshops, such as art and industrial studios. We also found that the campus did not always conduct regular maintenance and inspections of the working conditions of safety equipment and did not always inspect HAZWASTE accumulation sites or accumulate HAZWASTE in accordance with regulatory requirements. Also, the administration of the campus Chemical Hygiene Plan (CHP) needed improvement as it was missing required elements, including the clear designation of the chemical hygiene officer (CHO). Moreover, the campus did not formally document or implement campus-specific policies and procedures for purchasing hazardous chemicals, and the campus Hazard Communication Plan (HCP) did not include all of the elements required by California Code of Regulations (CCR) Title 8, §5194, Hazard Communication. Further, the campus Respiratory Protection Program did not include all of the elements required by 8 CCR §5144, Respiratory Protection. The campus also did not perform written hazard assessments to determine the personal protective equipment (PPE) necessary for employees during 2016 and 2017, as required by 8 CCR §3380. Additionally, the campus did not properly comply with all notification requirements regarding hazards for asbestos and radiation, did not have a written and comprehensive laser safety program, and did not have an institutional biosafety committee or equivalent review body during the audit period.

Specific observations, recommendations, and management responses are detailed in the remainder of this report.
OBSERVATIONS, RECOMMENDATIONS, AND RESPONSES

1. HEALTH AND SAFETY TRAINING

OBSERVATION

The campus did not have an effective HS training program to ensure that all employees and students who handled HAZMAT and HAZWASTE completed required training.

We noted that the campus Injury and Illness Prevention Program (IIPP) and CHP gave significant responsibility for key components of HS training to the colleges and campus departments. However, we found that the colleges and campus departments did not always:

- Develop and implement a training program designed to instruct employees and students about HS.
- Identify all employees and students who were required to take initial and refresher training, including specialized training in areas such as laser and radiation safety.
- Track and notify employees and students who did not complete the training.
- Document and maintain training records.

An effective HS training program increases awareness of HAZMAT and HAZWASTE and reduces potential injuries, accidents, and liabilities to the campus.

RECOMMENDATION

We recommend that the campus develop and implement an effective training program that instructs employees and students about HS; identifies all employees and students who are required to take initial and refresher HS training, including specialized training; tracks and notifies employees and students with overdue or incomplete training; and documents and maintains training records.

MANAGEMENT RESPONSE

We concur. The campus will develop and implement an effective training program that instructs employees and students about HS; identifies all employees and students who are required to take initial and refresher HS training, including specialized training; tracks and notifies employees and students with overdue or incomplete training; and documents and maintains training records.

This will be completed by October 30, 2019.
2. LABORATORY AND WORKSHOP INSPECTIONS

OBSERVATION

The campus did not consistently perform and monitor inspections of laboratories and other instructional workshops, such as art and industrial studios.

We found that the campus IIPP assigned each department responsibility for scheduling a regular and systematic inspection process for all departmental areas subject to HS risks. Additionally, the IIPP stated that the College of Science, College of Engineering, and College of Humanities and the Arts must perform a laboratory audit of HAZMAT practices in collaboration with EHS each semester. The College of Science further required that these audits be performed by a three-person team. The IIPP also stated that the results of the inspections were to be risk-ranked in a specified methodology and provided to the department chairs and EHS.

We reviewed semester laboratory audits from 2016 to 2018 for four labs and shops, totaling 24 semesters, and the separate inspections required of each area as outlined in the IIPP. We found that:

- The campus was unable to provide completed laboratory audits for 19 of the semesters.
- None of the College of Science laboratory audits were conducted by a three-person team.
- There were inconsistencies in the scheduled performance of the separate inspections required in each department.
- There was no evidence that any of the inspection results were risk-ranked in accordance with the instructions in the IIPP, and results of the department inspections were not consistently provided to EHS.

Additionally, we reviewed 13 locations with HAZMAT and found that:

- At five locations, specific chemical safety data sheets (SDS) were not always included in SDS binders or accessible through a nearby computer terminal.
- At two locations, chemical identification and HAZMAT labels on several containers were missing or illegible.
- At one location, several chemical containers appeared to be in deteriorated or otherwise poor condition.

Performing regular and systematic inspections helps to ensure compliance with the campus IIPP; increases the likelihood of identifying unsafe conditions; and reduces potential accidents, injuries, and liabilities to the campus. Additionally, proper labeling and storage of HAZMAT communicates potential danger, and maintaining current SDS printouts or access to the online SDS database helps to ensure the safety of employees and students who encounter HAZMAT.
RECOMMENDATION

We recommend that the campus:

a. Strengthen the monitoring and documentation of workplace inspection and laboratory audit processes as detailed in the IIPP and college policies.

b. Provide training to the appropriate campus administrators, staff, and faculty to properly label and store HAZMAT and maintain current SDS printouts or access to the online SDS database in accordance with regulatory and campus requirements.

MANAGEMENT RESPONSE

We concur. The campus will:

a. Strengthen the monitoring and documentation of workplace inspection and laboratory audit processes as detailed in the IIPP and college policies.

b. Provide training to the appropriate campus administrators, staff, and faculty to properly label and store HAZMAT and maintain current SDS printouts or access to the online SDS database in accordance with regulatory and campus requirements.

This will be completed by August 30, 2019.

3. SAFETY EQUIPMENT MAINTENANCE AND INSPECTIONS

OBSERVATION

The campus did not always conduct regular maintenance and inspections of the working conditions of safety equipment.

We reviewed 13 locations with HAZMAT or other laboratory hazards and found that:

• In six locations, fire extinguishers were not consistently inspected on a monthly basis.

• In two locations, emergency eyewash and shower stations were not consistently inspected.

• In two locations, workers would not be able to reach plumbed eyewashes within ten seconds.

• In one location, a fume hood was not annually certified for proper airflow.

Additionally, we found that the process for monitoring air-handling unit maintenance and inspections needed improvement. Specifically, we reviewed maintenance records of HVAC systems and found that the campus did not use a standard checklist for inspections until 2018. Additionally, we found that the campus facilities workflow system tracks HVAC units and their maintenance and inspections by floor or whole building, rather than by the individual unit, which made it difficult to verify that all HVAC units had been inspected.
Regular inspection of safety equipment helps to ensure that equipment is in good working condition and helps to ensure a healthy and safe environment for employees and students.

**RECOMMENDATION**

We recommend that the campus:

a. Develop and implement a written process to ensure that all safety equipment is subject to routine and comprehensive maintenance and inspections.

b. Install plumbed emergency eyewashes and showers in areas where required, or move covered activities to a space with adequate access to the equipment.

c. Develop and implement an improved maintenance monitoring process for the individual units comprising the HVAC system.

**MANAGEMENT RESPONSE**

We concur. The campus will:

a. Develop and implement a written process to ensure that all safety equipment is subject to routine and comprehensive maintenance and inspections. This will be completed by August 30, 2019.

b. Install plumbed emergency eyewashes and showers in areas where required, or move covered activities to a space with adequate access to the equipment. This will be completed by July 30, 2019.

c. Develop and implement an improved maintenance monitoring process for the individual units comprising the HVAC system. This will be completed by August 30, 2019.

4. **HAZARDOUS WASTE**

**OBSERVATION**

The campus did not always inspect HAZWASTE accumulation sites or accumulate HAZWASTE in accordance with regulatory requirements.

We reviewed nine locations with HAZWASTE, and we found that:

- At one location, HAZWASTE had been accumulated past the appropriate time period.
- One accumulation site was not consistently inspected on a periodic basis during the audit period.

In addition, we noted that in one location, a student who had not received HAZMAT safety training was responsible for disposing hazardous waste.
Timely and consistent inspection of HAZWASTE accumulation sites and timely disposal of HAZWASTE reduces the risk of accidents and injuries from mismanagement of HAZWASTE and potential liability to the campus.

**RECOMMENDATION**

We recommend that the campus train employees involved in handling HAZWASTE on the importance of timely disposal and site inspections in accordance with regulatory requirements.

**MANAGEMENT RESPONSE**

We concur. The campus will train employees involved in handling HAZWASTE on the importance of timely disposal and site inspections in accordance with regulatory requirements. This will be completed by July 30, 2019.

5. **CHEMICAL HYGIENE PLAN**

**OBSERVATION**

Administration of the campus CHP needed improvement.

We found that the campus CHP did not include the following elements required by 8 CCR §5191, *Occupational Exposures to Hazardous Chemicals in Laboratories*:

- Clear designation of the CHO from 2016 to 2018.
- Circumstances under which a particular laboratory operation, procedure, or activity shall require prior approval from a qualified individual in management.
- Decontamination procedures.
- Annual review and update.

A complete and annually evaluated CHP improves compliance with regulatory requirements and increases protection of employees and students working in laboratories from the health hazards of certain chemicals.

**RECOMMENDATION**

We recommend that the campus:

a. Review and update the CHP to include the elements noted above.

b. Communicate and distribute the updated CHP to the appropriate campus administrators, staff and employees.

c. Develop and implement a written process to annually evaluate and update the CHP.
MANAGEMENT RESPONSE

We concur. The campus will:

a. Review and update the CHP to include the elements noted in the audit report. This will be completed by October 30, 2019.

b. Communicate and distribute the updated CHP to the appropriate campus administrators, staff, and employees. This will be completed by October 30, 2019.

c. Develop and implement a written process to annually evaluate and update the CHP. This will be completed by October 30, 2019.

6. HAZARDOUS CHEMICALS PROCUREMENT

OBSERVATION

The campus did not formally document or implement campuswide policies and procedures for purchasing hazardous chemicals.

The Hazard Control and Work Practices section of the CHP specified that chemicals purchases should be a centralized function, in which one person who is knowledgeable of all the chemicals on hand does all the purchasing so that excess chemicals in stock can be used before buying more. We noted that not all colleges and departments purchasing HAZMAT were following this process.

Campuswide procurement policies and procedures help to ensure consistent practices for the purchasing of HAZMAT and reduce the potential liability to the campus.

RECOMMENDATION

We recommend that the campus document and implement policies and procedures for purchasing hazardous chemicals that comply with CHP policy.

MANAGEMENT RESPONSE

We concur. The campus will document and implement policies and procedures for purchasing hazardous chemicals that comply with CHP policy. This will be completed by October 30, 2019.

7. HAZARD COMMUNICATION PLAN

OBSERVATION

The campus HCP did not include all of the elements required by 8 CCR §5194, Hazard Communication.
HCPs describe standards for labeling, SDS, and employee information and training. However, we found that the following required elements were not included in the campus HCP:

- A listing of hazardous chemicals known to be present or an explanation of the chemical inventory system.

- Descriptions of criteria for labeling and other forms of warning. Specifically, the plan did not address the proper labeling of secondary containers or those to which the chemicals are transferred from the original container.

A complete HCP improves compliance with regulatory requirements and promotes a healthy and safe environment for employees and students.

RECOMMENDATION

We recommend that the campus:

a. Review and update the HCP to include the elements noted above.

b. Communicate and distribute the updated HCP to the appropriate campus administrators, staff, and faculty.

MANAGEMENT RESPONSE

We concur. The campus will:

a. Review and update the HCP to include the elements noted above.

b. Communicate and distribute the updated HCP to the appropriate campus administrators, staff, and faculty.

This will be completed by July 30, 2019.

8. RESPIRATORY PROTECTION PROGRAM

OBSERVATION

The campus RPP did not include all of the elements required by 8 CCR §5144, Respiratory Protection.

Specifically, we noted that the RPP did not include information stating that respirators, training, and medical evaluations should be provided at no cost to employees. The RPP also did not specify whether voluntary respirator use was permissible or whether voluntary use was subject to certain requirements within the CCR.

A complete RPP improves compliance with regulatory requirements and helps to protect employees from the hazards of airborne contaminants by ensuring the proper use of protective devices.
RECOMMENDATION

We recommend that the campus:

a. Review and update the RPP to include the elements noted above.

b. Communicate and distribute the updated RPP to the appropriate campus administrators, staff, and faculty.

MANAGEMENT RESPONSE

We concur. The campus will:

a. Review and update the RPP to include the elements noted above.

b. Communicate and distribute the updated RPP to the appropriate campus administrators, staff, and faculty.

This will be completed by July 30, 2019.

9. HAZARD ASSESSMENTS

OBSERVATION

The campus did not consistently perform written hazard assessments to determine the PPE necessary for employees, as required by 8 CCR §3380.

We noted that the CHP states that EHS will perform an employee exposure determination and document the findings with the collaboration of each department manager. However, we found that although this assessment was conducted in 2018, it had not been conducted in 2016 or 2017.

Written hazard assessments of campus workplaces helps to ensure that hazards and corresponding PPE are identified and communicated to faculty and staff.

RECOMMENDATION

We recommend that the campus:

a. Perform and record hazard assessments for the workspaces on campus and determine the PPE required for each area.

b. Communicate and distribute information on the selected PPE required for each affected employee based on the hazard assessments.
MANAGEMENT RESPONSE

We concur. The campus will:

a. Perform and record hazard assessments for the workspaces on campus and determine the PPE required for each area.

b. Communicate and distribute information on the selected PPE required for each affected employee based on the hazard assessments.

This will be completed by October 30, 2019.

10. HEALTH AND SAFETY NOTIFICATIONS

OBSERVATION

The campus did not properly comply with all notification requirements regarding hazards for asbestos and radiation.

We found that the campus did not provide a written annual asbestos notification to each employee, as required by the California Health and Safety Code (HSC) 25915.2 (a), and instead, posted the notification on the EHS website.

Additionally, the campus did not comply with all requirements for radiation hazard posting. We reviewed five locations where radioactive materials were stored or machines generating ionizing radiation were housed. Although all five areas had posted form RH-2364 and radiation warning signs, we found that four had not posted a current copy of 17 CCR §30255 or a notice of where it may be examined.

Proper notification of asbestos and radiation decreases the risk that employees will be exposed to asbestos and radiation and decreases the risk of potential injuries, accidents, and liabilities to the campus.

RECOMMENDATION

We recommend that the campus provide employees with an annual written asbestos notification and establish and implement a written process to ensure that radiation hazard postings meet all regulatory requirements.

MANAGEMENT RESPONSE

We concur. The campus will provide employees with an annual written asbestos notification and establish and implement a written process to ensure that radiation hazard postings meet all regulatory requirements. To be completed by October 30, 2019.
11. LASER SAFETY PROGRAM

OBSERVATION

The campus did not have a written and comprehensive laser safety program.

We found that:

- The campus did not have a written laser safety program or other policies and procedures to provide guidance for laser safety.
- One location that used lasers did not have proper laser warning signs posted in accordance with the American National Standards Institute (ANSI).
- One laser’s maximum output was inaccurately labeled.

A written and comprehensive laser safety program, including proper warning signage and equipment labeling, reduces the risk of injuries associated with the use of lasers.

RECOMMENDATION

We recommend that the campus:

a. Develop and implement a written laser safety program and communicate the program to employees.

b. Post proper laser warning signs in equipment locations in accordance with ANSI.

c. Correct the output label on the laser identified in the audit.

MANAGEMENT RESPONSE

We concur. The campus will:

a. Develop and implement a written laser safety program and communicate the program to employees. This will be completed by October 30, 2019.

b. Post proper laser warning signs in equipment locations in accordance with ANSI. This will be completed by July 30, 2019.

c. Correct the output label on the laser identified in the audit. This will be completed by July 30, 2019.
12. BIOSAFETY COMMITTEE

**OBSERVATION**

The campus did not have an institutional biosafety committee (IBC) or equivalent review body during the audit period.

The committee is required by the NIH Guidelines for institutions that receive NIH support to perform research relating to recombinant or synthetic nucleic acid molecules.

IBCs can help improve compliance with NIH requirements and help principal investigators review research involving recombinant or synthetic nucleic acid molecules.

**RECOMMENDATION**

We recommend that the campus create an IBC based on the structure recommended by the NIH.

**MANAGEMENT RESPONSE**

We concur. The campus will create an IBC based on the structure recommended by the NIH. This will be completed by August 30, 2019.
GENERAL INFORMATION

BACKGROUND

California state regulations require all employers, including the California State University (CSU), to provide a safe and healthy work environment. Each campus has a designated EHS program administrator that is responsible for developing and maintaining a campus HS program.

All CSU campuses purchase hazardous materials for both instructional and research purposes, most prominently in colleges that focus on the sciences, fine arts, and liberal arts. In addition, campus maintenance departments such as custodial services, facilities, and auto shops may use materials that are known to have properties that are harmful to humans and the environment. Nearly all of the areas that use hazardous materials generate hazardous waste that is subject to strict regulations for safe and proper storage, transport, and disposal.

California regulations relating to HS are primarily codified in the California HSC and in Titles 8 and 22 of the CCR. California’s Division of Occupational Safety and Health (Cal/OSHA) is primarily responsible for the enforcement of the state’s occupational HS laws and regulations. Title 8 of the CCR addresses hazardous materials safety, including, but not limited to, training, communication, storage, and safety. Specific to laboratory environments, the Occupational Exposure to Hazardous Chemicals in Laboratories standard (8 CCR §5191) requires that the employer designate a chemical hygiene officer and have a written chemical hygiene plan that includes, among other things, provisions for worker training, criteria for the use of personal protective equipment and engineering controls, and standard operating procedures for handling hazardous materials. Title 22 of the CCR addresses hazardous materials waste management.

The primary CSU HS policy is Executive Order (EO) 1039, Occupational Health and Safety. This policy requires campuses to develop, implement, and maintain a HS program and also addresses student HS training. EO 1069, Risk Management and Public Safety, delegates systemwide administration oversight and programmatic responsibility for environmental HS to Systemwide Risk Management.

At San José State University (SJSU), the responsibility and authority to develop and maintain the campus IIPP and environmental compliance programs are delegated to the director of EHS. EHS reports to the senior director in the facilities development and operations department within the Administration and Finance division. The staff includes two EHS specialists and the director. EHS collaborates with all university colleges, departments, and organizations to help develop and implement initiatives to create a safe and healthful work environment. University auxiliary and affiliate organizations are responsible for applying similar practices to their respective businesses and activities.

In 2017, due to HS concerns at two CSU campuses, the Joint Legislative Audit Committee directed the California State Auditor (CSA) to review HS compliance at four campuses (Channel Islands, Sacramento, San Diego, and Sonoma), as well as oversight by the CO. The review noted several issues, including observations relating to the annual evaluation of chemical plans; monitoring and documenting of student and employee HS training; and consistent and timely inspections of safety equipment. Based on the nature and trends of the observations
noted in the CSA review, Audit and Advisory Services informed the Board of Trustees that it would perform reviews at all CSU campuses in 2019.

SCOPE

We visited the SJSU campus from January 28, 2019, through March 15, 2019. Our audit and evaluation included the audit tests we considered necessary in determining whether operational and administrative controls are in place and operative. The audit focused on procedures in effect from January 1, 2016, to March 15, 2019.

Specifically, we reviewed and tested:

- Oversight and administration of the campus HS program, including clearly defined roles and responsibilities; appropriate safety and chemical committees; departmental self-audits and monitoring practices; and current policies and procedures.

- The adequacy and availability of safety equipment, including evaluation of the chemical hygiene plan; provision of personal protective equipment; and regular inspections and monitoring of key safeguards and engineering controls.

- Proper storage and safety of hazardous materials, including procurement; maintenance of accurate inventories; appropriate labeling and storage practices; and access controls.

- Communications and training processes, including evaluation of the hazard communication plan; availability of material safety data sheets; asbestos notifications and signage; and documentation and monitoring of student and employee training.

- Whether appropriate safety programs were in place, when applicable, for radiation sources; laser safety; bloodborne pathogens; respiratory protection; and spill containment.

- Appropriate identification, storage, and monitoring of accumulated hazardous waste.

As a result of changing conditions and the degree of compliance with procedures, the effectiveness of controls changes over time. Specific limitations that may hinder the effectiveness of an otherwise adequate system of controls include, but are not limited to, resource constraints, faulty judgments, unintentional errors, circumvention by collusion, and management overrides. Establishing controls that would prevent all these limitations would not be cost-effective; moreover, an audit may not always detect these limitations.

Our testing and methodology, which was designed to provide a review of key operational and administrative controls, included interviews, walkthroughs, and detailed testing on certain aspects of the HS program. The review was limited to gaining reasonable assurance that essential elements of the HS program were in place and did not examine all aspects of the program.
CRITERIA

Our audit was based upon standards as set forth in federal and state regulations and guidance; Trustee policy; Office of the Chancellor directives; and campus procedures; as well as sound administrative practices and consideration of the potential impact of significant risks. This audit was conducted in conformance with the Institute of Internal Auditors’ *International Standards for the Professional Practice of Internal Auditing*.

This review emphasized, but was not limited to, compliance with:

- ANSI Z136.1, *Safe Use Of Lasers*
- 10 Code of Federal Regulations (CFR) Part 20, *Standards for Protection Against Radiation*
- 29 CFR Part 1910, *Occupational Safety and Health Standards*
- California HSC Division 20, *Miscellaneous Health and Safety Provisions*
- CCR Title 8, *Industrial Relations*
- CCR Title 17, *Public Health*
- CCR Title 19, *Public Safety*
- CCR Title 22, Division 4.5, *Environmental Health Standards for the Management of Hazardous Waste*
- EO 1031, *Systemwide Records/Information Retention and Disposition Schedules Implementation*
- EO 1039, *California State University - Occupational Health & Safety Policy*
- EO 1069, *Risk Management and Public Safety*
- Collective Bargaining Agreement, Unit 6, Article 28, *Health and Safety*
- NIH Guidelines for Research Involving Recombinant or Synthetic Nucleic Acid Molecules
- SJSU *Bloodborne Pathogens Program*
- SJSU *Chemical Hygiene Plan*
- SJSU *Hazard Communication Program*
- SJSU *Injury & Illness Prevention Program*
- SJSU *ProCard Program Manual*
- SJSU *Radiation Safety Program*
- SJSU *Respiratory Protection Program*
- SJSU *Spill Prevention Control and Countermeasures Plan*
- SJSU *College of Science Safety Inspection Program*

AUDIT TEAM

Audit Manager: Ann Hough
Internal Auditor: Allen Tung
Internal Auditor: Cinthia Santamaria