

STANFORD UNIVERSITY
ENVIRONMENTAL HEALTH & SAFETY
2024 ANNUAL REPORT



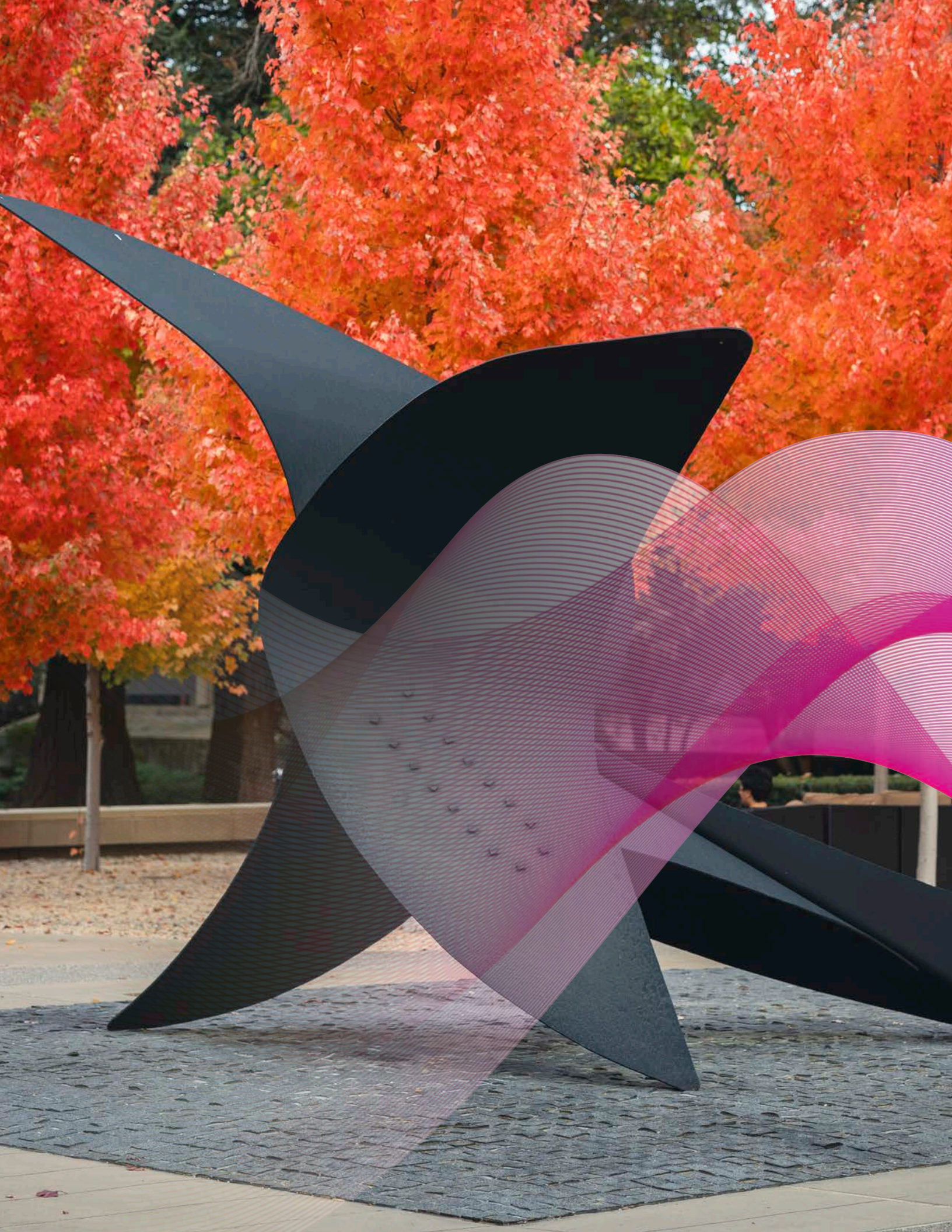


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Director's Letter

Dear Campus Community,

It is a privilege to present the Environmental Health & Safety 2024 Annual Report. Reflecting on the past year, I am grateful for the progress made with our department and campus partners to protect the health and safety of our campus community. Our core commitment is to ensure every individual on campus is supported and protected, guiding our work so that everyone can contribute fully and return home safe and sound.

Building on our commitment to safety, we've worked to strengthen collaborations across campus to address emerging concerns. As research continues to evolve, EH&S remains dedicated to working closely with researchers to identify and mitigate current and future hazards. This hands-on approach helps build trust, fosters understanding, and highlights the importance of collaborative problem-solving in ensuring safety.

This year, we celebrated the opening of the Emergency Operations Center and made significant advances in emergency response across departments. Our team conducted targeted drills in a range of environments, from high-containment labs to administrative offices, to improve flexibility and foster unity in crisis response. At EH&S, we believe it's essential that every employee feels prepared, supported, and part of a larger team, ready to collaborate in pursuit of our collective mission.

I am proud to share this report, which highlights our initiatives and expanded programs. My deepest gratitude goes to our dedicated staff and campus partners for their unwavering efforts. Our goal is to ensure every community member can contribute with confidence, knowing they will return home safe, healthy, and fulfilled.

In Good Health,

Russell Furr
Associate Vice Provost, Environmental Health & Safety

Campus Readiness

EH&S is dedicated to cultivating a prepared and responsive campus environment. By prioritizing emergency infrastructure such as facilities, drills, and resource planning, we are making it easier for our institution to activate swiftly and effectively when it matters most.

A PREPARED CAMPUS

The new state-of-the-art Emergency Operations Center (EOC), was opened this year. The building serves as the physical center for coordinating responses in the event of a major emergency or disaster. In 2016, the Board of Trustees approved the construction of the earthquake-hardened facility and construction began on May 20th, 2022. The building was officially opened with an open house May 20, 2024. Without much delay, the EOC was put into action including during significant student protests and on stand-by for the June commencement ceremony. During these activations, the Office of Emergency Management (OEM) effectively mobilized situational awareness, communications, and operational coordination to support university leadership, ensuring a secure environment for decision-making.

Transported for a day into the future, OEM collaborated with the Stanford Existential Risk Initiative (SERI) in the Friedman Spogli Institute to conduct an experimental, large-scale exercise where 50 participants addressed simulated global catastrophes set in the year 2040. This exercise not only tested potential response strategies but also validated the use of EOC capabilities and systems for large groups.

Additionally, OEM organized a comprehensive workshop for over 30 university schools and units in early November, resulting in a coordinated response plan for power outages—a critical initiative as we navigate an era of increasing utility challenges. The Spring quarter Community Emergency Response Team (CERT) course has also been a great success, with 19 students participating.

SKILLS DRILLS

Every year, Environmental Protection Programs (EPP) conducts an annual Toxic Gas response drill. These drills aim to prepare and train the university and first responders in the event of a toxic gas leak on campus. Any toxic gas leak can potentially cause adverse health effects to those nearby. This year's drill involved implementing the Incident Command System and executing an entry into the toxic gas vault with supplied air. Members of the Palo Alto Fire Department observed and gave input both at the drill and during an afternoon lecture and demonstration of monitoring equipment.

RESPONSE TRAINING FOR HIGH CONTAINMENT

The past year represented a year of incredible growth for the programs supporting Biosafety Level 2 and 3 labs on campus. In March, Biosafety & Biosecurity (B&BS) hosted a multi-day training for researchers in the Biosafety Level 3 (BSL-3) labs. The training, led by the University of California, Irvine, instructed research personnel from EH&S, the School of Medicine, the Veterinary Service Center, and the Keck BSL-3 on proper PPE donning and doffing, safe work in a biosafety cabinet, and emergency response. Over the summer, B&BS participated in and led tabletop exercises to plan for emergencies in the BSL-3 facilities. Exercises included overviews of the work and facilities, particularly for our emergency response partners like Palo Alto Fire Department (PAFD), as well as discussions of incidents and planning for response.



PREPARED FOR 'WHEN' NOT 'IF'

With attention still on infectious disease risk to campus, the Public Health Steering Committee has begun to focus on disaster medical response and the public health impact of natural and human-made disasters. The committee works with university leadership and critical stakeholders to assess new and emerging public health threats, align decision making,

and generate awareness for emerging threats. EH&S plays a critical role by providing expertise on emergency management, medical care, and safety protocols, and positioning these initiatives well with regulatory and university standards. Our ability as an institution to quickly respond and adapt during emergencies is directly correlated with our preparation.



Everyone Home Safely

From advancements in safety initiatives, to strengthening collaborations, to reaffirming our commitment to reducing risk, the health and safety of people continues to be our top priority.

COLLABORATIVE LEARNING IN INCIDENT MANAGEMENT

Our priority is the well-being and safety of people. When incidents happen, it matters how we communicate and follow up with those who are affected. This year we initiated an effort to improve communication processes on incidents that result in Serious Injury or Fatality (SIF). As part of the effort, we developed a process for an Incident Inquiry Team Charter. The goal of the charter is to not only ensure consistency, but also create intentionality for incident follow up.

It matters to us that employees and managers know we care about what has happened and how to prevent it from happening again. Following a SIF or near-SIF, leadership from EH&S and the affected department serve as executive sponsors, formally charging incident review — causal analysis as well as determining safety improvements to prevent the incident from happening in the future. Leadership charges two co-leads, a safety learning lead from EH&S and a subject matter expert from the affected unit's line management, to conduct the review and provide them with periodic updates.

By bringing stakeholders together, we can engage in a collective learning around SIF incidents and how they can be prevented. Clear roles for follow up create accountability not just for schools and departments, but for ourselves as well. With EH&S as a partner, we are positioned to see where similar interventions may be implemented across the university.

LEVERAGING TECH IN THE URBAN WILDLANDS

50 sensors capable of measuring particulate matter down to the 2.5PM level were installed in the wildlands surrounding the main campus. An effort led by Lands, Buildings & Real Estate (LBRE), the Stanford University Fire Marshal Office (SUFMO) Fire Prevention & Wildfire Management group partnered with various local organizations—including LBRE Resiliency, Palo Alto Fire, Woodside Fire, and the Santa Clara County Fire Safe Council—on a Department of Homeland Security grant aimed at deploying these advanced wildfire early detection and air quality sensors.

The sensors are strategically placed in a 1½ to 2-mile grid covering the Wildland Urban Interface areas of Stanford, Palo Alto, and Woodside. After receiving the first batch of wildfire and wind sensors in June, the team worked diligently to install them by early September. This joint accomplishment significantly enhances our ability to monitor fire conditions and ensure that we can respond quickly to potential threats.



NEUTRALIZING DANGER

If you asked a Chemical Safety expert what chemicals keep them up at night, Hydrofluoric Acid (HF) is likely one of them. HF is an extremely hazardous chemical with the ability to cause severe damage to skin and other organ tissues. Skin exposure can be acutely damaging (causing deep, severe burns upon contact), or fatal if not treated immediately. Recognizing that HF has many applications within a lab environment, Lab Safety worked proactively with labs to educate researchers on treatment following an exposure; researchers should use the safety shower for only five minutes, and then apply calcium gluconate to the affected area. Calcium gluconate is an over-the-counter topical treatment that neutralizes HF while the researcher seeks medical care. In a “break glass in case of emergency” style, Lab Safety provides labs with tubes of calcium gluconate affixed to exposure response instructions, to be posted next to the safety shower. When working with HF, something as simple as having a tube of calcium gluconate available can make a huge impact on our researchers’ health.

IT’S ELECTRIC!

This year saw the launch of the Electrical Safety Authority (ESA), a panel of experts ranging from faculty to electricians to safety professionals who provide EH&S with guidance for developing the program, and act as a bench of technical experts who can assist researchers. During Research Safety (RS)’s annual Fall Training, a new module introduced new graduate students entering labs to electrical safety basics. Students viewed video footage of an arc blast, measured the resistance of their own skin, and got a live demonstration of the explosive results of overloading a (small!) capacitor. Additionally, EH&S and University Safety Partners were engaged in a workshop on how to identify electrical safety concerns in a lab. Topics included proper wiring connections, the hazards of exposed capacitors, and daisy-chaining of power strips. These activities supported the Electrical Safety Management Plan for Research, a framework for safe conduct of research activities involving routine and higher levels of electrical hazards.

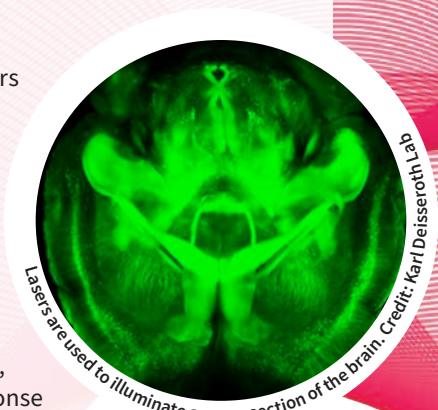
LASER FOCUSED

The use of Class 3B and 4 lasers in research at Stanford is rapidly increasing. Each year, 500 new laser users are trained in laser safety. In the last five years, the number of registered lasers has grown from 1,100 to 1,600, and the number of research groups using them is over 170, and continues to rise. In response to this surge, the Laser Safety Program appointed its first full-time Laser Safety Officer in September 2023. Having a dedicated laser safety expert has a massive impact on our ability to support safe research with lasers; it puts in place the necessary support and expertise for laser users.

The program has also worked to foster connections with laser users and initiate improvements to safety protocols, including the implementation of a new online training course, a registration portal for lasers, and standard operating procedures. This year’s Fall Training introduced a laser safety module, demonstrating how to work safely with or near lasers. The Laser Safety Program also organized the first Laser Safety Vendor Fair, bringing together Stanford users and industry leaders.

FLU FIGHTERS

The Stanford University Occupational Health Center (SUOHC) was pleased to continue to bring free influenza vaccinations to university staff, faculty, and postdocs for over ten years. In October 2023, 2,702 faculty, staff, post-docs, and retirees were vaccinated in 20 events throughout the Stanford campus. Getting a flu shot remains the most effective way to protect yourself and others from getting the seasonal flu. Often, half the battle to get a flu shot is making the time to get it. By offering centrally-located flu clinic events, as well as adding walk-in options and smaller, targeted outreach events to those more remotely situated, we helped ensure that the Stanford community has the opportunity to minimize their winter illness risk.



RESEARCHERS IN GOOD HEALTH

For all of our researchers, safely navigating potential hazards comes with the job. At EH&S, we recognize that for our biomedical researchers working with lab animals, the hazards become more complicated. RS and SUOHC work together to support the Laboratory Animal Occupational Health Program (LAOHP). The program addresses potential health risks associated with the use of animals in the research environment by easing access to pre-work requirements, ongoing medical care, and research support.

The on-campus accessibility of SUOHC simplifies the medical care requirements set by LAOHP – our clinicians provide allergy monitoring, immunization verification, N95 respirator clearance, and zoonotic disease screening. As clinic offerings have expanded, SUOHC can provide additional consults for ergonomic injuries or address other work-related health concerns. Ultimately researchers are able to achieve wellbeing and minimize work-related risks, while also ensuring the welfare and safe environment of the animals with which they work.



SIMPLIFYING HEALTH SURVEILLANCE

Many of our university employees are required to keep up on a number of medical surveillance, exposure assessments, and training in order to be cleared for work. In an effort to simplify this process, Occupational Safety and Health (OSH) and SUOHC collaborated on a dashboard that provides a streamlined view into employee occupational requirements with medical surveillance data. Available to select departments, the dashboard provides managers with transparency into the requirements their staff needs to meet in order to safely work with fewer disruptions. The process has helped to reduce communication delays between OSH, SUOHC, employees, and managers. Currently, this process is being used to support the Hearing Conservation, Respirator Protection, and Lab Animal Research Programs.

HOT DECISION MAKING

With hotter months come an increased risk of wildfire activity in California, and with that the possibility of poor air quality stemming from wildfire smoke. Though the Bay Area was largely spared from wildfire and poor air quality this year, staying prepared is key. At the request of the Public Health Steering Committee, OSH and OEM hosted a tabletop exercise for the Air Quality Decision-Making Committee to prepare for the wildfire season. Typically during times of poor air quality and higher temperatures, university and department leadership must make decisions to curtail work, especially for our employees who spend most of their day working outdoors. The matrix is designed to help guide decision making. This drill made sure that stakeholders could employ air quality decision-making matrix when needed, in alignment with the university’s situational decision making process for a wildfire smoke event.

It Takes a Campus

Partnerships are an integral part of fostering a positive safety culture on campus. Department and school safety professionals provide key insights for identifying risks and implementing effective strategies. Meanwhile, the leveraged support of our operational colleagues has allowed us to streamline services and systems and eliminate administrative hurdles.

PARTNERSHIPS ROOTED IN SAFETY

Anyone who has spent any time at Stanford knows that the campus is constantly bustling with energy. From ground breaking research, to maintaining its natural beauty, the diversity of campus activities is never ending. At EH&S, our responsibility is to assure the health and safety of all individuals at Stanford. Through the years, we have developed relationships with campus units and departments in order to learn more about the needs of their students, faculty, and staff, therefore helping us better anticipate how and when they will need us.

As we have learned more about our partners, we've built trust and improved communications. We have had the opportunity to collaborate on initiatives and solicit their input on new processes and systems. This last year, we formalized our relationships with over 10 schools in the form of partnership agreements. These agreements are designed to provide a common

understanding of how safety is carried out, promoting mutual trust and accountability. They are a symbol of our commitment to communication, continuous learning, and growing together. In the end, we want our partners to know we will be there when they need us most.



This year began a partnership agreement to support Hopkins Marine Station.

SUPPORTING OUR COASTAL CAMPUS

EH&S and the Doerr School of Sustainability established a partnership agreement to ensure consistency in the delivery of environmental health and safety compliance services to Hopkins Marine Station (HMS), as well as field safety support for marine research operations. Due to the serious and risky nature of scientific diving, EH&S has increased its involvement in the Dive Safety Program. The Dive Control Board (DCB), required by American Academy of Underwater Scientists (AAUS) standards, was restructured, and an EH&S staff member is a voting member.

The Boating Safety Program also underwent revision and expansion. The Boating Safety Committee was re-established and reformulated to include a voting member from EH&S. The Boating Safety Manual was implemented, as required by the Scientific Boating Safety Association (SBSA). The manual is intended to cover all university-related boating operations and sets guidelines for obtaining and maintaining proper boat operator authorizations and administrative and operational procedures to ensure the safety of all university boating activities. Overall, these efforts have contributed to a more fortified diving and boating safety program for our researchers working in a different type of "wet" lab. As a team, we are excited to continue our support of HMS and see it grow.



A look at the CardinalShield user interface.

IMPROVING PROCESSES, IMPROVING PARTNERSHIPS

In another example of fostering alignment with campus partners, the Department of Project Management (DPM) and SUFMO worked to improve the construction safety plans review cycle. SUFMO plays a critical role in campus construction by ensuring fire-life safety systems meet current regulations and are up to code. In a three-part workshop facilitated by Stanford's Improvement, Analytics, and Innovation Services, DPM and SUFMO analyzed their part of the current process by identifying and diagnosing pain points for the two units, and collaborating on solutions. In addition to gaining a more streamlined and efficient process satisfactory to both parties, both groups came away with an improved awareness and understanding for each other's roles. Ultimately, our campus community benefits the most from improved collaboration, as construction projects will be achieved with more efficiency.



EH&S staff engage in analyses of multiple digital systems.

TECH TRANSFORMATIONS

CardinalShield

CardinalShield is a new system that provides the University's diverse organizations with a single, comprehensive software platform to support emergency preparedness, response and mission continuity planning. Key service areas include Incident Management, Mission Continuity, and Information Technology - Disaster Recovery. Schools and business units can use CardinalShield to improve planning and decision-making, better mitigate risk, lead mission continuity planning, enhance training, and support a unified, university-wide response.

EH&S IT Modernization

The department's digital modernization project continued this year with the kick-off of the Incident Management and Compliance Calendar modules. The project will help improve user experience, integrate with campus enterprise databases, and provide more comprehensive service through a centralized system. University IT has continued to be a valued partner in this effort.

Pinnacle Project

Due to our extensive library of training courses, the EH&S Training Team was asked to participate in the learning management system (LMS) module of the University Human Resources Pinnacle Project. As a stakeholder, we provide feedback, participate in process mapping, and determine requirements for a new LMS. Our team is looking forward to continued collaboration and engagement as an upgraded system is selected for implementation.

Safety Built In

Health and safety must be part of the foundation for all of our campus infrastructure. Our staff play a key part in the planning, construction, installation, and maintenance of all campus facilities, including labs, classrooms, and clinics. They ensure the safety of campus spaces.

THE END OF AN ERA: BONAIR SIDING DEMOLITION

The demolition of the Bonair Siding complex was a significant milestone for university facilities. The complex was the longtime home of LBRE until their move to 560 Fremont Road. This demolition project involved meticulous coordination of hazardous materials closure permitting and collaboration with contractors to safely remove materials containing asbestos and lead. Working closely with DPM and EH&S Health Buildings Program, EPP successfully coordinated removing all hazardous materials and waste from Bonair Siding. Meanwhile, at 560 Fremont Road, the team developed new waste storage locations and hazardous waste handling procedures for waste generated by the relocated shops. Our teams will continue to provide necessary construction support as the Bonair Siding complex land transitions into a new use. This represents a huge change for our LBRE partners, and we are excited to have them as our new neighbors on the west side of campus.



The new LBRE facility at 560 Fremont Road.

PROPELLING MEDICAL DISCOVERIES

What is a cyclotron? It's not the villain in a sci-fi movie, but a particle accelerator that creates radioisotopes used in specific medical drugs called radiopharmaceuticals. Radiopharmaceuticals are very efficient at detecting or treating cancers. In early 2024, members of the Health Physics (HP) team participated in a ribbon-cutting ceremony to commemorate the completion of a new cyclotron at 1701 Page Mill Road. This new cyclotron will provide the Department of Radiology with added capacity to synthesize short-lived isotopes, make advancements for theragnostic radiolabeling and dispensing for human translation, and more. HP worked alongside the Department of Radiology, the Office of Facilities Planning Management, DPM, and many other departments and outside contractors to plan, install, and license the new particle accelerator.

SUPPORTING CANCER RESEARCH

At the end of 2023, the School of Medicine, Radiology Department installed a new GE HealthCare photon counting CT (PCCT) scanner, the second in the United States, which now lives at 3155 Porter Drive. The photon detectors in photon counting CTs are more sensitive to signals, allowing less radiation dose to patients, especially children. Physicians will also be able to obtain more clinical information from the CT images because the photon counting detectors can preserve tissue-specific information that is usually lost in conventional CT. The HP's Medical Physics team conducted acceptance testing and radiation surveys and will provide ongoing support for patient imaging clinical trials.

FIRE SAFETY FIRST

Every year soon after student arrivals, SUFMO conducts evacuation drills for all Residential & Dining Enterprises (R&DE) student residences, including both graduate and undergraduate dormitories. The maintenance of our university's fire system requires continuous collaboration between SUFMO and R&DE. Our dedicated team, composed of Fire Prevention Inspectors, Fire Protection Engineers, and Alarm Technicians, works efficiently with R&DE staff, including Facility Managers and Emergency Management personnel, to ensure all fire systems are in safe, working order. This year, SUFMO's Fire Protection Maintenance

Group and Fire Protection Engineers worked with R&DE Maintenance & Capital Projects to renew 11 fire alarm systems. All 11 projects were completed promptly, ensuring our buildings maintain the highest standards of fire safety. Though not always popular, evacuation drills and alarm testing are important for ensuring the fire-life safety of our student residences. Our teams are always grateful for the cooperation we receive from students.



Photo credit: Aaron Kehoe

Supporting Our Staff

Investment in our staff remains at the core of everything we do. From professional development, to supporting administrative systems, to nurturing diversity, equity, inclusion, and belonging, we want our staff to know and feel that they have a purpose at EH&S.

SAFETY TAKES PLANNING

Making positive impacts in reducing risks, improving compliance, and advancing systems and processes takes a lot of planning. As an investment in ourselves, we set out to increase our department's project management skill set and capacity. All of our teams navigate complex problems in their daily work. Investing time now to improve our project skills will elevate and accelerate our department's ability to have a big impact on campus.

Staff participated in project management workshops where they learned common project management terminology and principles, and were introduced to new planning tools tailored for EH&S projects. They also had opportunities during the workshop to practice the skills on teams. So far we have seen success with staff using the tools and skills they learned in their work, leading to higher efficiency and clarity across department projects.



EH&S staff celebrated Pride Month!

YOU BELONG AT EH&S

No matter how long our staff have been with us, it is important they always know they have a place at EH&S. To complement our department's professional development, we have continued to nurture inclusion and belonging amongst our staff through developments in our diversity, equity, inclusion, and belonging (DEIB) programming. At the beginning of the year, a committee led by department staff met to establish a plan for acknowledging and celebrating cultural events throughout our year.

One highlight of the year was our Pride celebration. Staff were invited to get creative and tie-dye custom "EH&S has PRIDE!" t-shirts. This event was an opportunity for staff to come together in appreciation for what makes each of us unique and of value. In addition to cultural celebrations, it is also important that staff feel a sense of inclusion all year round. With each new staff person that is onboarded, our Human Resources team works with the rest of the department to ensure they receive a warm welcome. Additionally, EH&S Human Resources and Digital Solutions teams collaborated to create a Campus DEIB Event Calendar on our EH&S Staff portal. The calendar compiles DEIB events from around campus into one convenient online location for our staff.



EH&S Snapshot

Here are snapshots of the operational work which the department carries out day-in and day-out. These efforts support the campus emergency readiness, enable research, and foster the health and wellbeing of campus staff, faculty, and visitors.

SUPPORT OF THE BUILT ENVIRONMENT

- Fire/life safety building inspections
- Plans reviews
- Laboratory decommissioning
- Management of hazardous materials in construction
- Indoor air quality evaluations
- Hazardous waste pickups
- Surplus chemical management
- Underground tank remediation

SAFETY DEVICE MANAGEMENT

- Fire alarm/extinguisher inspections and testing
- Biosafety cabinet management
- Calibration and readiness of EH&S monitoring equipment

URGENT RESPONSE

- Hazardous materials spill/release response
- Regulatory reporting
- Incident investigations/root cause evaluation
- Business continuity consultations

EH&S OPERATIONS

- Leadership in panels, committees, and safety meetings
- Submissions of HMMPs to county
- Management of permits, licenses, registrations, matching fund programs, MOU/SLAs
- Management of EH&S IT systems and infrastructure

MEDICAL CARE

- Delivery of occupational injury/illness care
- Medical surveillance services
- Travel consultations
- PT, acupuncture, chiropractic care
- COVID medical management

WORKER HEALTH & SAFETY

- Ergonomics assessments
- Exposure assessments
- Respirator fit testing
- SU-17 follow-ups
- Field safety consultations
- Shop/makerspace consultations

ADMINISTRATION OF SAFETY PROGRAMS

- Updates of institutional safety programs
- Authorizations (e.g., toxic gas, hot work, use of controlled substances, lasers)
- Development of EH&S online trainings
- Delivery of EH&S trainings
- Activation of STAT Team/DOCs

RESEARCH & CLINICAL SUPPORT

- Biosafety protocol reviews
- SOP reviews
- Research animal administration
- Radioisotope and x-ray safety oversight
- Radiation surveys
- Dosimetry management
- HP clinical support of patient spaces





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