"It is important to return to our foundational values to guide us forward.

For myself, I always return to the founding purpose of this university – that we are here to generate excellence for the sake of all humanity.

That idea serves as Stanford’s North Star."

University President Marc Tessier-Lavigne speaking to graduates at the 2019 Stanford University Commencement ceremony
DIRECTOR’S LETTER
to the Stanford Community

Dear Colleagues,

As 2019 comes to a close, we are delighted to present the FY 2019 Annual Program Report for Environmental Health and Safety. This report highlights some of the many accomplishments from this past year but also speaks to future challenges, as the university looks to extend the frontier of knowledge and solve real-world problems.

If FY 2018 was about shared learning and strengthening partnerships, the theme for FY 2019 was about putting strategy into action. Improvements in wildfire prevention and mitigation, fall prevention infrastructure, the introduction of new radiotherapy treatment options, and explosives mitigation work across the campus had a real impact on the lives of the Stanford community and could not have happened without strong partnerships. FY 2019 also saw the introduction of new services and programs such as the Workplace Health Innovation Lab (WHIL), PPE Cost-Sharing, and the online Safety Store.

We are appreciative of the support and continued commitment from all of our stakeholders, and would like to take this opportunity to thank the students, staff, and faculty for their work to support positive safety culture. We are especially grateful for the opportunity to support a campus community that is truly passionate about the mission of advancing research, scholarship, and service at Stanford. We look forward to the new year and the opportunity to support the incredible work that happens every day at Stanford.

Russell Furr
Associate Vice Provost for Environmental Health & Safety
EMERGENCY MANAGEMENT

HIGHLIGHTS

CardinalReady
OEM is continually looking for ways to educate Stanford community about the role each individual plays in emergency preparedness. This year, we created a new emergency preparedness website, CardinalReady, to serve the campus community as a single source for preparedness information. The website houses scenario-specific guidance for students, staff, and faculty. Scenarios include earthquakes, active threats, power outages, and more.

“This is an Exercise!”
Exercising emergency plans is an essential step in validating procedures and training staff to handle different scenarios. In 2019, OEM instituted a series of tabletop exercises for the University Situation Triage & Assessment Team (STAT). The team practices responding to simulated emergency events throughout the year. For example, in August 2019, the team explored the complications presented by a potential Public Safety Power Shutoff (PSPS) affecting the campus and the surrounding community. We have also coordinated exercises with many Department Operation Centers on campus to simulate the response to an earthquake and a PSPS. Future STAT exercises will explore a variety of scenarios.

FUTURE PLANS AND GOALS

Continuity Planning Working Group
The University Continuity Planning Workgroup continues to advance continuity planning education for departments across the University. The program and its curriculum is designed to help units assess their operations, identify critical functions, and develop strategies to continue performing these critical functions, or rapidly restart them if they are interrupted. Real events such as the PG&E PSPS threats and chilled water curtailments demonstrate the value of continuity planning. This year, the team reviewed commercial planning tools to allow for ease-of-re-entry, efficient data management, effective plan creation, and to serve as a consistent University standard.

ProtectSU Mitigation Project
The ProtectSU Mitigation Project supports research continuity by facilitating the installation of seismic restraints on high-value laboratory equipment deemed critical to research operations. ProtectSU managed the installation of restraints for research equipment moving into the new Bass Biology building. In the coming months, we will work with the Department of Project Management to manage restraint installations for the new CHEM-H/Wu Tsai Neurosciences Institute building, and then the new Biomedical Innovations Building.

FUTURE PLANS AND GOALS

Campus Emergency Operations Center
OEM continued to work with Land, Buildings & Real Estate (LBRE) and University IT on a combined Emergency Operations Center (EOC) and Electronic Communications Hub. The EOC provides a physical location for coordination of response and support for regularly scheduled major campus functions. In 2019, the overall project was re-evaluated for a reduction in project costs. With proper approval, the program should move to the next stage of planning and construction in 2020.

Emergency Response Toolkit
OEM will develop tools to assist in campus emergency response in the form of templates and guidance documents. Responders will use these curated scenario-specific templates and guides to help them address critical issues and identify available resources with greater efficiency and speed. These tools will be available to members of the University STAT team online, enabling responders to utilize the resources from any location as long as they have internet access.
FIRE MARSHAL

**HIGHLIGHTS**

**Streamlining Regulatory Processes**
A recent agreement with Santa Clara County, and in conjunction with the newly constructed ChEM-H/Wu Tsai Neurosciences Institute building, removes the traditional limitations imposed on solvent emission amounts used in chemical fume hoods. This allows researchers to plan and execute groundbreaking experiments without additional regulatory restrictions. This agreement will be implemented for future lab construction and renovation projects.

**Fire Inspection Service Design Project**
SUFMO has partnered with Stanford Business Affairs Improvement, Analytics, and Innovation Office’s Service Design team to redesign the fire inspection process. The goal of this effort was to reframe the inspection process to actively engage all parties, ultimately resulting in safer buildings and better awareness for fire and life safety. Through this process, we will be optimizing methods of communication, increasing outreach and training, and improving our data collection methods.

**Establishment of the Wildfire Management Plan**
For the 2019 fire season, SUFMO published the first annual Stanford University Wildfire Management Plan. The plan details wildfire risk mitigation measures for Stanford lands, SLAC, and neighboring communities, as well as a schedule for when these activities will be accomplished. The report is annually updated with the previous year’s hazard mitigation work and a summary of any fire incidents on Stanford land. Moreover, the plan highlights the collective effort of multiple Stanford departments to prevent wildfires on Stanford property.

**EMERGING TRENDS AND IMPACTS**

We worked with EH&S Research Safety to conduct investigations of two laboratory fire incidents that happened this year, both caused by the use of flammable liquids near open flames. To prevent similar incidents in the future, Lessons Learned reports are communicated campus-wide through multiple digital channels, as well as during collaborative interactions and building inspections.

Research operations often introduce equipment and processes that pose an increased fire risk, such as hydrogen generators, 3D printing technology, and -80°C freezers with flammable refrigerants. As such, we are evaluating usage trends within Stanford research facilities in order to provide appropriate fire safety guidance.

The Fire Protection Engineering group will be evaluating the impacts of the upcoming new building and fire codes, and changes to local ordinances that take effect in 2020. Detailed understanding of these changes will allow our design teams to accurately address the impacts on the University and to effectively implement new code into the building design review process.

**PROGRAM DIRECTION**

SUFMO is implementing a new annual fire prevention building inspection process in 2020. This new process assists building managers in addressing deficiencies quickly by reducing the number of reinspections, providing training on common issues, and improving awareness of new regulations affecting campus buildings.

The completion of the largest student residence project in Stanford’s history, Escondido Village Graduate Residences, presents maintenance challenges due to the complex nature of the fire safety systems installed. To address these challenges, we are planning to expand our team to conduct ongoing inspections and provide full service fire protection.

We will be working with Stanford’s Land Use & Environmental Planning group in commissioning an outside consultant that specializes in wildfire risk assessments and mitigation plans to review and recommend enhancements to the current Stanford Wildfire Management Plan. This effort supports our overall mission to continuously explore new research and predictive fire spread models to optimize hazard mitigation and emergency planning efforts on Stanford lands.

**The California Code of Regulations Public Safety Code mandates periodic inspection and testing of fire protection systems and equipment. In Fiscal Year 2018, SUFMO Fire Systems and Equipment Technicians conducted:**

- **940** Fire Alarm System Inspections and Tests
- **1,720** Fire Sprinkler System Inspections
- **9,617** Fire Extinguisher Inspections

**Rudy Garay, University Fire Inspector, supervises fire extinguisher training for graduate students**

**Martin Von Raesfeld, University Fire Inspection Supervisor, speaks to new graduate students about fire risk**

Stanford University Fire Marshal’s Office (SUFMO) provides fire protection and safety to the Stanford community through design, prevention, response, and maintenance services. SUFMO staff is comprised of highly trained personnel ready to respond 24 hours a day to campus incidents, complete fire investigations, and support the Palo Alto Fire Department during response operations.
PROGRAMS OVERVIEW

Establishment of Healthy Buildings Program
In Summer 2019, the Industrial Hygiene and Asbestos, Lead, and Construction Safety programs merged to form the new Healthy Buildings Program (HBP), fostering a more holistic approach to ensuring safe and healthy indoor environments. HBP delivers building-centric safety services before, during, and after construction and occupancy of buildings. Services include: establishing healthy building design standards; reviewing and consulting on building design; managing remediation of lead, asbestos, and other potentially hazardous building materials; and conducting laboratory decommissioning and closures. General workplace health and safety services such as hazard assessment, respiratory protection, and hearing conservation are also provided by HBP.

OCCUPATIONAL SAFETY AND HEALTH

Serious Injury and Fatality Prevention
Preventing serious injury and fatality (SIF) in spaces where hazards exists is important at Stanford. For University employees, common hazards can be conducting electrical work, accessing elevated locations or confined spaces, and operating heavy equipment. Key strategies for preventing SIF-risk includes recognition and control of serious safety hazards, incorporating prevention-through-design, comprehensive safety trainings, and promoting learning from near-miss incidents.

ACCOMPLISHMENTS

REDWOOD CITY CAMPUS OCCUPANCY SUPPORT
As the University began occupying the new Redwood City campus in Spring 2019, OSH ergonomists conducted floor-by-floor surveys to help staff adjust their new workstations and to share ergonomic best practices. Over 2,100 staff members at the Redwood City Campus have received Ergonomics Program support.

VARIAN LOADING DOCK SAFETY IMPROVEMENT
OSH safety engineers worked with Zone Management to upgrade the fall protection features at the Varian Physics Lab Building loading dock. The addition of guardrails and ground markings have helped ensure that our campus community is well protected from the risk of falls at this location. A campus-wide survey is underway to identify other locations that may benefit from such upgrades.

PLAYGROUND SAFETY
HBP’s in-house certified playground safety inspector ensured the safe design of playgrounds for newly constructed childcare centers, including Children’s Center for the Stanford Community (CCSC) and at the Redwood City campus. Efforts entailed playground design review, construction code compliance inspections, and final certification with State regulatory agencies.

FUTURE OUTLOOK

Online Incident Reporting System
OSH will be unveiling an online reporting system by early 2020 to replace the paper process for reporting incidents. The program will help departments easily capture and track incident follow-up and corrective actions. Data collected will improve our ability to trend incidents and analyze data to determine risk.

Wildfire Smoke Preparedness
In anticipation of future regional wildfires, HBP has developed a plan to protect the campus community from associated smoke. Training tools and procedures will be made available to help personnel understand how to minimize smoke exposure, and proper use of N95 respirator masks in compliance with the recently established Cal/OSHA regulation.

EH&S Ergonomists assisted Stanford Redwood City Staff in setting up their work stations
NEW FACILITY, EXPANDED SERVICES
This year SUOHC moved into a newly constructed state-of-the-art clinic where we continue to offer care for work-related injuries and illnesses, medical surveillance for occupational hazards, vaccinations, and pre-travel medical consultations. The SUOHC clinical space increased from two exam rooms to a clinical suite with five exam rooms, a clinical lab, and a designated space to provide physical therapy/therapeutic modalities treatments.

BUILDING ELECTRONIC HEALTH SURVEILLANCE
SUOHC continued to build the MyOHC employee health portal, an integrated electronic medical record and health surveillance system. This year we expanded the online platform, streamlining the process for University employees who are required to comply with OSHA hearing conservation and respiratory use regulations. The portal is used to effectively distribute the laboratory animal health, annual flu, and other surveillance questionnaires to thousands of Stanford faculty, staff, and students. The easy mobile device interface allows patients to complete the form moments before receiving their vaccine, resulting in fewer barriers to accessing flu shots on campus.

AN INTERDISCIPLINARY APPROACH TO WORKPLACE HEALTH SOLUTIONS
SUOHC launched an interdisciplinary research laboratory, the Workplace Health Innovation Laboratory (WHIL). WHIL recruits Stanford undergraduates and postdocs to collaborate at the intersection of medicine and computer science, and work to improve workplace safety through the application of novel technologies.

TOP THREE CLINICAL VISITS

Work-Related Injury
For Stanford employees who incur an injury or illness on the job, this is the medical treatment and care they would receive for that injury or illness.

OSHA-Mandated Surveillance
SUOHC provides medical examinations and clearances mandated by OSHA for Stanford employees whose work requires health monitoring (e.g., hearing conservation, respiratory protection).

Lab Animal Occupational Health Program
We conduct health screenings, allergy evaluations, and immunizations with Stanford employees who work with animals or infectious agents in the research environment.

PROGRAM DIRECTION
SUOHC foresees continued service expansion in 2020 as we move toward becoming a musculoskeletal center of excellence with onsite multidisciplinary care, including modalities such as physical therapy, acupuncture, and chiropractic care. We plan to incorporate an integrated treatment model into SUOHC injury care, reducing burden and delays for outside referrals. This same-day treatment improves injury outcomes by reducing barriers to care which can result in increased recovery time.

We also plan to increase our presence at the new Stanford Redwood City (SRWC) campus, which houses more than 3,000 University employees. SUOHC will set up space within the SRWC Recreation and Wellness Center to provide more accessible work-related injury and injury management care for employees at SWRC.

WHIL aims to continue working with artificial intelligence, as co-organizers of the 2020 AAAI Spring Symposium on the Stanford campus, with the end-goal of addressing real-world problems facing our campus and community.
Research Safety is dedicated to helping ensure the health, safety, and wellbeing of everyone in Stanford’s diverse laboratory community, from undergraduates to clinicians. Our team includes doctoral-level researchers and other subject matter experts who thrive on keeping pace with the rapid changes in science. As practitioners of applied sciences ourselves, we collaborate closely with our many stakeholders to carry out Stanford’s research mission.

AAALAC ACCREDITATION
Every three years, the Association for Assessment and Accreditation of Laboratory Animal Care (AAALAC) conducts site visits and reviews Stanford’s program in which we provide exemplary care to researchers, staff, and animals. Accreditation helps researchers obtain approval and funding for animal research. Led by Research Safety, the Animal Research Occupational Health and Safety Program (AROHSP) coordinated EH&S’ involvement in the accreditation process in early 2019. EH&S participated in mock inspections, operational planning meetings, animal care facility preparations, the accreditation visit itself, and final report production. We also continue to participate in routine mock inspections to ensure ongoing compliance.

HUMAN GENE THERAPY
After almost 30 years of clinical research, the FDA approved the first rDNA human gene therapy product four years ago. Since then, five additional gene therapies have been approved. Currently over 200 gene therapy studies are in advanced trials and many are likely to gain approval in the coming years.

At Stanford, the Administrative Panel on Biosafety (APB) approves gene therapy research protocols, with comprehensive support from the Biosafety group. Approval requires us to examine the health and safety risks associated with each protocol and to advise the APB accordingly. In consultation with the Research Compliance Office (RCO), we also offer in-person training for clinical staff on the safe handling of research compounds. We plan to continue developing staff resources to meet the demand for this expertise while also maintaining outstanding biosafety talent in basic research.

LASER SAFETY
The types and complexity of research applications involving Class 3B and 4 lasers continue to expand, with the current number of registered lasers reflecting a 52% increase from 2012 and 20% increase from 2017. The Laser Safety Committee welcomed new leadership and has begun evaluating an expansion in scope and activities. We have found vendors to supply reduced cost high quality laser safety products including eyewear, curtains, and perimeter guards. Managed by the Health Physics group, the program will seek additional resources to enhance research support and keep pace with our peers in academia.

OUTREACH ACROSS THE SPECTRUM
We support over 750 Principal Investigators (PIs) and approximately 8,000 researchers. Our research community members come from diverse backgrounds. They can be new students or experienced PIs, come from many cultures, and speak different languages. We consult regularly with laboratory safety coordinators, lab managers, and senior research scientists who have been designated by their PIs to carry out EH&S responsibilities.

This is all part of an effort to insure clear communication and support for laboratories at Stanford.

NEW FACULTY ONBOARDING
To help new faculty get up to speed quickly, we reach out before their arrival on campus to learn about the nature of their research. We then match each new PI with a knowledgeable staff member to offer services tailored to the regulatory and Stanford requirements prompted by specific research activities. This approach allows us to proactively demonstrate Stanford’s commitment to safety, and provide PIs with concrete steps to exemplify their own commitment as required by Stanford’s Code of Conduct.

MATCHING FUNDS FOR CENTRIFUGE SAFETY CAPS
Labs working with biohazardous materials are required to use safety caps on centrifuges. To encourage widespread use we make matching funds available to share the cost of these materials.

HIGH HAZARD MATERIALS
Working with 20 laboratories, we facilitated the removal of 1.25 pounds of potentially explosive research materials from 3 different schools. Laboratories that opted to keep potentially explosive research materials in their areas, received guidelines on proper maintenance, storage, and usage.
**FIELD SAFETY**

The Field Research Safety Program continues to grow with additional services to the Stanford research community. Through individualized consultations with researchers, we offer customized recommendations on work procedures, hazard identification, safety training, protective equipment, site access, emergency response, evacuation plans, and field communications. A Wilderness First Aid certification course is offered for researchers working in areas that are remote or lack adequate medical care. We also offer an equipment loan program to make satellite communication devices available to researchers who do not have reliable cellular phone coverage where they are working.

**PERSONAL PROTECTIVE EQUIPMENT (PPE)**

The Laboratory PPE Cost-Sharing Program aids researchers by covering up to half the cost of PPE purchases and maintenance. We have reimbursed users for over $70,000 in PPE-related costs this year. With the Schools of Engineering and Medicine, we offer monthly prescription safety eyewear events on campus. Over the summer, EH&S studied PPE use practices through direct observation of researchers in action. The study data will inform PPE policy decisions and help improve PPE programs.

**STREAMLINING THROUGH TECHNOLOGY**

Technology promises to simplify tasks for researchers and to improve our own efficiency. This year, we transformed the Controlled Substances and Precursor Chemicals Program from a paper-based to an electronic system. E-forms are now available for online submission, allowing researchers to quickly and securely submit purchase requests and required information.

We have leveraged Smartsheet to manage results from the Santa Clara County hazardous materials inspections, to improve communication with responsible parties, foster strong collaboration among EH&S and other SU safety teams, and share metrics dashboards to keep key stakeholders apprised of progress. This process allows multiple teams to update data while providing transparency and accountability to users and leadership.

**Safety Store**

The EH&S online Safety Store is a convenient, one-stop shop for researchers to browse through recommended equipment, resources, and supplies to buy, use, or borrow. Many items are complimentary from our department, and others are linked to external vendors for purchase.
ENVIRONMENTAL PROTECTION

The Environmental Protection Program (EPP) focuses on improving waste management practices, reducing waste volumes where possible, and promoting safety and environmental protection as it relates to work with hazardous materials at Stanford. Our goal is to improve our community’s health & safety practices while reducing the burden of waste management.

PROGRAM HIGHLIGHTS

SWEEPS Program Lightens the Load
EPP provides lab users with biweekly waste pickup services, called SWEEPS, at designated locations labeled ‘Place for Chemical Waste’. The SWEEPS Program framework allows the flexibility to adjust the frequency of waste pickups based upon volume trends. The SWEEPS program provides reduced administrative burden for the labs (no need to submit pickup requests), higher levels of compliance oversight on the part of EPP staff, and more engagement between our staff and laboratory personnel. For all waste-generating labs to benefit from SWEEPS, we recently launched an abbreviated version of the program known as “SWEEPS Lite”. SWEEPS Lite provides the same services to low volume waste generators, but on a quarterly basis. ‘Places for Chemical Wastes’ are established and the same protocols are followed. The School of Engineering and Independent Labs are now benefiting from SWEEPS Lite with further expansion on the horizon.

Building Closure Made Easy
Several groups from EH&S play critical roles in preparation for a building closure. EPP meets with building occupants several weeks in advance of their move to a new building in order to initiate hazardous waste disposal activities. When these early disposal steps are taken, lab decommissioning and subsequent building closure are accomplished expeditiously. This approach was successfully employed for the moves of researchers from Herrin Labs and Lokey Chemistry-Biology to the new Bass Biology building.

Hazardous Material Response Capability Grows
EPP has worked closely with other EH&S technical groups, including Chemical Safety, Biosafety, and Radiation Safety staff, to develop additional hazardous materials spill response capabilities. The Hazard Assessment and Reconnaissance Team (HART) recently completed a hands-on field exercise incorporating communication with Lands, Buildings and Real Estate (LBRE). Teams combed the Herrin Labs building to simulate the post-disaster response to hazardous conditions. The team evaluated simulated physical and chemical hazards, reported conditions to the EH&S Department Operations Center, and posted labs as “Caution” or “Closed”. This drill provides critical data to assist in prioritizing spill cleanups to facilitate the re-occupancy of labs following a disaster.

Recycling and Waste Management
EPP services 8 permanent off-site locations, including Hopkins Marine Station in Pacific Grove, that generate annual waste volumes between 10,000 & 15,000 pounds. Our team oversees the recycling of over 200,000 pounds of electronic waste each year. In 2019, EPP segregated, inventoried, and processed over 4,000 smoke detectors containing sealed radioactive sources. EPP processes an average of 30,000 pounds of batteries for recycling each year.

Our specialists recycled approximately 3,000 pounds of used nitrile gloves last year.

FUTURE PROJECTS

Toxic Air Contaminants (TACs) Emissions
A new regulation implemented by The Bay Area Air Quality Management District (BAAQMD) will require Stanford to estimate TACs emissions from laboratory fume hoods, in addition to known emissions from permitted diesel generators and gas-fired boilers. EPP will be reviewing methodologies to both estimate TAC emissions and to validate them by stack sampling.

Polychlorinated Biphenyls (PCBs) in Construction Debris
EPP and the Healthy Building Program are following developing requirements for sampling building materials for PCBs prior to demolition.
CLINICAL RADIATION SAFETY

KNOWLEDGE SHARED
This year, our academic contributions included co-authoring four peer-reviewed journal articles with Radiology faculty. We also made contributions to academic communities at the national level by serving as committee members on the American Board of Radiology, the American Association of Physicists in Medicine, The Image Gently Alliance, and the National Council on Radiation Protection and Measurements.

Health Physics participated in a training program for Cardiology and Radiology residents and graduate students by giving lectures on nuclear medicine safety and dosimetry calculations, medical imaging physics, and hands-on training with clinical equipment. In addition, we created three HealthStream training modules on medical imaging technology, covering dose optimization and radiation safety.

In July 2019, both Stanford HealthCare and VA Palo Alto Health Care System were surveyed by The Joint Commission. Programs involving the use of radioactive materials and X-rays for imaging were examined, and obtained excellent results from the surveyors.

If you build it, patients will come!
Stanford’s new 824,000 square-foot hospital officially opened this fall, and the Medical Health Physics team was busy behind the scenes designing shielding and testing 46 new state-of-the-art X-ray imaging devices for the facility.

Children with advanced-stage neuroblastoma have a new treatment option called Metaiodobenzylguanidine (MIBG) therapy. The therapy uses high-specific-activity iodine-131 to directly radiate tumors. To safely deliver this new technology, our team advised LPCH on safe construction of its new facility to administer this treatment. We also delivered staff safety training, mitigated room contamination, and conducted safety measurements. On treatment days we are onsite during the infusion, and on a daily basis throughout the week, we monitor radiation levels inside the patient room, review radiation exposures to staff, respond to concerns, and consult with the parents. As a result of these efforts, two therapy patients were successfully treated this summer.

Our team supported shielding design and regulatory logistics for SHC’s Radiation Oncology treatment accelerator upgrades and for two accelerator replacements. We also consulted on the addition of a second “high-dose rate” (HDR) after loader device. HDR therapy delivers internal radiation therapy that destroys many types of cancers. Its use has doubled in the last 5 years at Stanford.

The Clinical Radiations Safety Program, administered by the Medical Health Physics team within Health Physics, is dedicated to providing clinical support to Stanford University, Stanford Hospital and Clinics (SHC), Lucile Packard Children’s Hospital (LPCH), and Veterans Affairs Palo Alto Health Care System. Our group supports the safety and compliance of many research projects that utilize radioactive materials and ionizing radiation.

WHAT’S ON THE HORIZON?
The Medical Health Physics team is now involved in numerous meetings and planning groups to safely bring Theranostics to Stanford. Theranostics is a new field of medicine using radioisotopes to ushers in a closer relationship between diagnostics and therapy to individualize interventions. This new field will impact safety protocols for radiochemistry, animal imaging, and human drug trials research. Clinics that will have new departmental staff administering high levels of therapeutic radioactive drugs and housing patients exposed to these drugs will also be impacted.
Risk Assessment and Work Authorizations | Certain high hazard materials and activities require oversight and approval by EH&S prior to use or operation. The authorization process by EH&S subject matter experts fosters a safer work and learning environment. With a growing campus footprint and increasing numbers of faculty, staff, and students, our services remain in high demand.

Our staff review, present, and coordinate protocols with the University’s Administrative Panel on Biosafety (APB). The number of APB approvals continues to rise with 1,099 total approvals in FY 2019, due mainly to a rise in administrative approvals, which are completed by our staff leads to these increasing numbers.

In the past 5 years, the total number of Health Physics protocol reviews has been relatively constant, but the types of isotopes has shifted from traditional ones (e.g. 32P, 3H, 14C) to ones that involve more complex protocols (e.g. 18F, 15O) associated with cyclotron use.

The number of industrial hygiene workplace assessments remained relatively steady (at 53 assessments) in FY 2019 compared to the previous year. This year we saw a continued decrease in the number of chemical and noise assessments, reflecting fewer incidents and complaints. We also had a slight uptick in the number of physical safety assessments, due largely to an increased focus on electrical and shop safety this year.

Workers’ Compensation (WC) triggered ergonomic evaluations decreased by 5% in FY 2019 indicating more people are proactively seeking assistance before situations progress to the level of a workers compensation injury.

Some research materials require authorization for use. EH&S staff oversee and authorize the use of toxic gases (TGO), controlled substances (CS) and precursor chemicals, and the transfer of certain biological materials (MTA). The drop in MTA’s this year, compared to the previous year, was due to processes put in place that enabled the MTA office to handle certain authorizations to be automatically processed without EH&S input (i.e., MTA was previously approved under a current APB protocol).

In FY 2019, 2,420 move-in ergonomic evaluations were conducted in FY 2019 (a more than 11x increase from FY 2018) due largely to the opening of SRWC and 1701 Page Mill.

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DEPARTMENT METRICS

Education, Training, and Outreach

Our impact on the well-being of the campus community is dependent upon our safety, training, and outreach efforts. Effectively teaching students, staff, and faculty the safety and critical thinking skills necessary to identify and reduce hazards requires offering training options that are well suited for the learner and topic. EH&S also supports continuing education of our staff to keep up with the latest information and technology in our fields.

EH&S currently administers over 90 specialized trainings so that Stanford faculty, staff, and students gain the skills and training they need to stay safe. Online training continues to make up the majority of courses taken. A major focus for EH&S this year has been to update some of our online trainings to improve learning outcomes and learner experience.

EH&S conducts hands-on training on topics such as fire extinguisher use, first aid, forklift operation, spill response, compressed gas handling, personal protective equipment, and risk assessment. Experiential learning improves content retention and gives learners the opportunity to practice proper techniques and scenarios in a safe environment.

3.1k total learner hours of hands-on training facilitated by EH&S staff in FY 2019.

239 emergency training drills (e.g., fire drills, biosafety drills, and hazardous materials drills) and tabletop exercises (e.g., emergency response) were conducted to help the campus community be better prepared in the event of an emergency.

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Campus Support and Operations | EH&S provides numerous key operational functions for the university. This includes fine system care and maintenance; receiving, dispersing, and removing hazardous materials; tracking and support of high hazard materials and processes; as well as provision of occupational health services. All of these activities contribute to a safer and healthier campus community.

Individual containers were redistributed through the chemical surplus program in FY 2019.

$32k was saved through the surplus program in FY 2019 in avoided chemical purchases and hazardous waste disposal fees.

25 chemical inventory “deep dives” were conducted in FY 2019 to assist individual labs in carefully checking their chemical inventory and removing expired or high hazard chemicals no longer in use.

FY 2019 saw a dramatic decrease in the number of hazardous chemical waste containers removed from laboratories, shops, and teaching spaces through the regular pick-up process. This was due to the significant expansion of our SWEEPS program which now includes 30 buildings. We also had a significant increase in chemicals removed through lab cleanouts which was tied to major building moves and outreach efforts regarding cleanouts for existing labs.

While medical surveillance visits for the campus and SLAC community remained roughly steady, FY 2019 saw a slight drop in injury visits mirroring the drop in number of injuries compared to the previous year.

5,510 flu shots were administered during campus-wide flu clinics in FY 2019.

$45k was reimbursed to labs and academic departments through the PPE cost sharing program which began in FY 2019.

1,303 active high hazard lasers (class 3b and 4) were in use on campus in FY 2019. This represents a 31% increase over the last 5 years.
DEPARTMENT METRICS

Inspections, Incidents, and Regulatory Visits | Stanford is subject to regulation by numerous agencies. We work alongside these agencies to ensure compliance and assist local units with their regulatory requirements. We also inspect and respond to spills, injuries, and other incidents for over 35,000 faculty, staff, and students in more than 700 buildings.

- **Hazardous Materials Incident Response**
  - Compared to the previous year, there was an increase in total hazardous material incident responses for FY 2019. The most growth was seen in EH&S staff providing assistance to labs, and responding to requests (i.e., advising labs with their own spill clean-up and following-up to remove any associated waste).
  - The overall increase in response numbers is partly due to better awareness on campus (i.e., more labs reaching out to EH&S) and to better internal tracking processes within EH&S.

- **Fire and Life Safety Building Inspections**
  - Over two-thirds of the building inspections conducted are return visits to review initial findings. A major goal of our building inspection service design project is to increase awareness of fire and life safety regulations, as well as more efficiently correct findings and reduce the number of re-inspections.

- **EH&S ANNUAL REPORT**
  - Stanford’s injury rates continue to gradually decline due to continued collaboration with campus partners and maturing workplace safety programs. The Total Recordable Case Rate is the rate of OSHA Recordable Injuries per 100 employees. A case is OSHA recordable if it involved medical treatment beyond first aid, lost work time, or restricted duty from work.

- **Total Recordable Case Rate**
  - The chart shows the Total Recordable Case Rate for Stanford University and the National Average Case Rate - US Colleges and Universities.

- **Fire alarm acceptance tests**
  - The Situation Triage & Assessment Team (STAT) was activated four times in FY 2019 to respond to chilled water curtailments and power outages.

- **EH&S Staff**
  - 352 biosafety and biosecurity visits were conducted in FY 2019 to assist with safety and compliance.
  - 456 general lab safety consultations and regulatory compliance consultations were conducted by our staff in FY 2019.

- **Emergency Generators**
  - 30 hazardous materials inspections were conducted for campus buildings.
  - 15 inspections conducted for emergency generators.

- **New Buildings**
  - 81 fire alarm acceptance tests (for new buildings, major renovations, and system replacements) were conducted in FY 2019.