

UNIVERSITY OF
MARYLAND

DEPARTMENT OF ENVIRONMENTAL
SAFETY, SUSTAINABILITY AND RISK

ANNUAL REPORT 2018-2019



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DEPARTMENT OF ENVIRONMENTAL
SAFETY, SUSTAINABILITY AND RISK

ANNUAL REPORT 2018-2019

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MESSAGE FROM THE EXECUTIVE DIRECTOR

Dear UMD Community,

The Department of Environmental Safety, Sustainability and Risk (ESSR) at University of Maryland (UMD) was established to provide leadership in the identification and management of safety and environmental risks and to foster safety and sustainability. Our department staff offer technical expertise in a number of disciplines that you will read about in this report.

Did you ever wonder how the department started? You may be surprised to learn that the first position devoted to safety at UMD was established in the mid 1950's with the appointment of Mr. Roy Berry as a Safety Supervisor within the Physical Plant. In 1962, a Radiation Safety Officer was appointed and a few years later, safety was combined with security. As more regulations were promulgated, an office of Radiation and Laboratory Safety was created in 1971.

In 1975, the safety function was separated from the police function and became the Department of Environmental Safety (DES). Sustainability became a program within DES in 2007. And the department was renamed Environmental Safety, Sustainability & Risk in 2015.



Today, ESSR offers a full-service, robust safety, sustainability and risk management program spanning many areas of practice. Our vision is for UMD and its people to value safety and sustainability at every level of the institution.

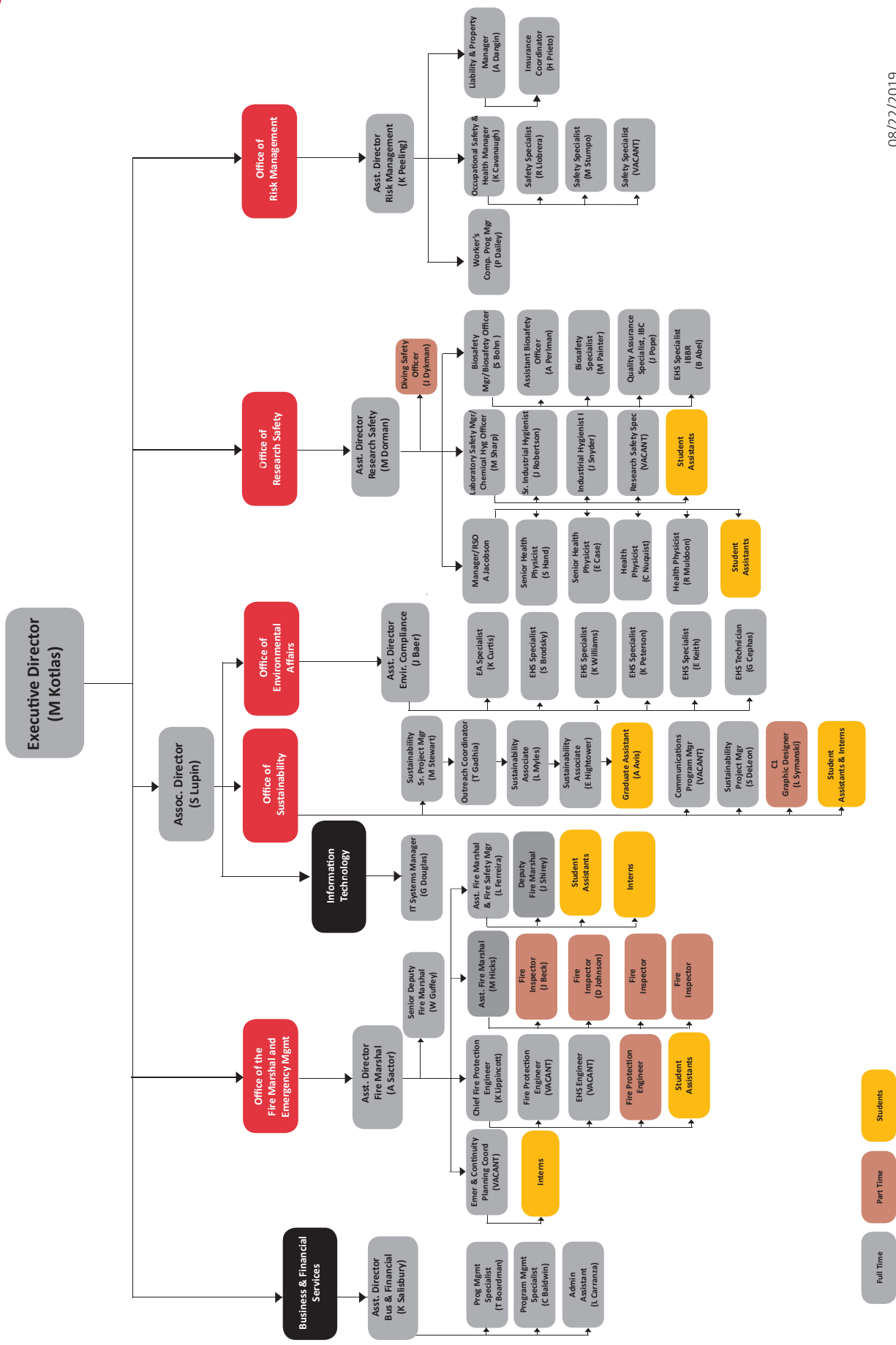
We hope you will continue to be our partners in this journey.

Sincerely,

Maureen Kotlas
Executive Director



DEPARTMENT OF ENVIRONMENTAL SAFETY, SUSTAINABILITY & RISK



08/22/2019

DEPARTMENT OF ENVIRONMENTAL SAFETY, SUSTAINABILITY & RISK

Our Vision

Our vision is a campus where safety and sustainability are core values at every level of the institution.

Our Mission

Our mission is to provide leadership in the identification and management of safety and environmental risks and to foster excellence in safety and sustainability through our technical expertise, our quality of work and our professional integrity.

Our Values

The Department of Environmental Safety, Sustainability & Risk (ESSR) holds these values as intrinsic to our mission —

Protect People and the Environment

We put the highest priority in returning people home the same or better than they arrived. Through education, training and knowledge sharing we promote a culture of safety and sustainability.

Excellence

We expect state-of-the-art competencies of ourselves and others in all areas of workplace safety, environmental management and sustainability. We deliver high quality programs and services to the campus community.

Leadership

Our people at all levels, have ownership and take initiative in their areas of responsibility and demonstrate the safe, sustainable and environmentally friendly behaviors we expect of others.

Service

We provide professional services to the University of Maryland community. We are a resource for those we support and we follow through on our commitments in a timely manner.

Diversity

We acknowledge and honor the fundamental value and dignity of all individuals. We are committed to inclusiveness and actively seeking and encouraging discussion and participation from a diverse group with different perspectives and experiences.

Collaboration

We are committed to building partnerships and working together to find the best solutions to collectively achieve our goals. We are open to new ideas and creative solutions. We seek to engage and motivate the campus community to accept ownership of the university's safety and sustainability culture.

OFFICE OF ENVIRONMENTAL AFFAIRS

The Office of Environmental Affairs (OEA) is engaged in two primary areas of focus – regulated waste management and environmental compliance assurance for the University. OEA works with campus stakeholders to facilitate campus-wide compliance with federal and state environmental regulations including regulated waste management (chemical, biological, and radioactive), air quality permits, fuel and oil storage tank management, stormwater and water quality permits, environmental assessments, and real estate initiatives. OEA helps the campus community manage environmental risk by developing policies, procedures, training, and consulting with campus entities including faculty, staff and students in labs, offices, and maintenance shops. Additionally, OEA provides oil and hazardous materials spill response and cleanup capabilities for the campus.

Regulated and Universal Waste Management Programs

The regulated waste programs encompass the collection, management, and disposal of all chemical, biological, radioactive and “universal” waste generated at the College Park campus and UMD’s satellite facilities. OEA operates a fully-permitted storage facility on campus, one of only 18 such facilities in the State of Maryland. The facility’s operations are performed in a safe manner to ensure that all waste is managed safely and practices meet all federal and state environmental regulations. Additionally, the permitted facility allows the university

to manage the wastes generated in the most cost-effective manner. In FY19, OEA collected and managed approximately 38,000 pounds of hazardous chemical waste, 27,000 pounds of biohazardous waste, and 5,000 pounds of radioactive waste.

OEA also manages and disposes of universal waste. Batteries, fluorescent bulbs, and light ballasts are collected and recycled when possible to minimize hazards to the environment.

OEA collected and recycled approximately 11,000 pounds of batteries and 13,000 pounds of fluorescent bulbs in FY19. In addition to this, OEA was able to divert and recycle over 20,000 pounds of scrap and semi-precious metals last year.

OEA staff member, Kaitlyn Peterson leads a training session for Transportation Services employees on Spill Response.



OEA staff member, Samantha Brodsky takes a water sample from Campus Creek.



Stormwater Management

Stormwater management, permitting, and pollution control continued to be a priority area of focus for OEA, who currently oversees three National Pollutant Discharge Elimination System (NPDES) permits for the university: an Individual Industrial Permit, which specifically regulates campus outfalls to surrounding streams (Permit #08-DP-2618), a 12-SW Permit, which permits the discharge of stormwater from certain facilities that are targeted as high potential sources for stormwater pollution, and a NPDES Municipal Separate Storm Sewer System (MS4) Phase II General Permit (Permit #13-SF-5501), which covers the general discharge of stormwater run-off from land, pavement, building rooftops and construction sites on campus. Collectively, these permits require the university to monitor its discharges, meet certain discharge limitations, and employ Best Management Practices (BMPs) to minimize pollutants discharged in the stormwater.

As required by the University's NPDES permits, and in conjunction with the SPCC Plan requirements, OEA manages UMD's Stormwater Pollution Prevention Plan (SWPPP). OEA developed a SWPPP training program and provided that required annual training on the deployment of BMPs to various university departments during FY19. OEA trained a total of 214 UMD staff members in the requirements of the SPCC Plan and SWPPP Plan in FY19. Training was provided in person, as well as online.

Air Quality Permitting and Reporting

UMD is required under federal and state regulations to hold a Title V Air Quality Permit, with this requirement being primarily driven by the university's Combined Heat and Power (CHP) facility. OEA collaborates with other departments on campus to ensure that various management tasks associated with the Title V Air Quality Permit are completed and submitted in a timely manner, including testing fuel-burning equipment, permitting new fuel-burning equipment and reporting air emissions from the campus, including "greenhouse gas" emissions. During the last year, OEA began a facility-wide audit in support of the renewal of this permit, which governs the operation of over 80 pieces of fuel-burning equipment, including turbines, boilers, generators, water heaters, furnaces, and charbroilers. The renewal application package for the Title V Air Quality Permit will be submitted in FY20.

Spill Response

Clean up and spill responses for most HAZMAT incidents are managed by the OEA unit. OEA staff are on call 24 hours a day, 365 days a year to respond to and mitigate environmental incidents on the campus. OEA responded to 15 incidents in FY19. Most of these spill responses were conducted solely by OEA staff, while several were conducted with the assistance of the Prince George's County Fire Department. Additionally, OEA staff conducted investigations of 6 reported illicit stormwater discharges, as part of the Illicit Discharge Detection and Elimination (IDDE) program required by the MS4 stormwater permit.

Pollution Prevention Compliance and Training

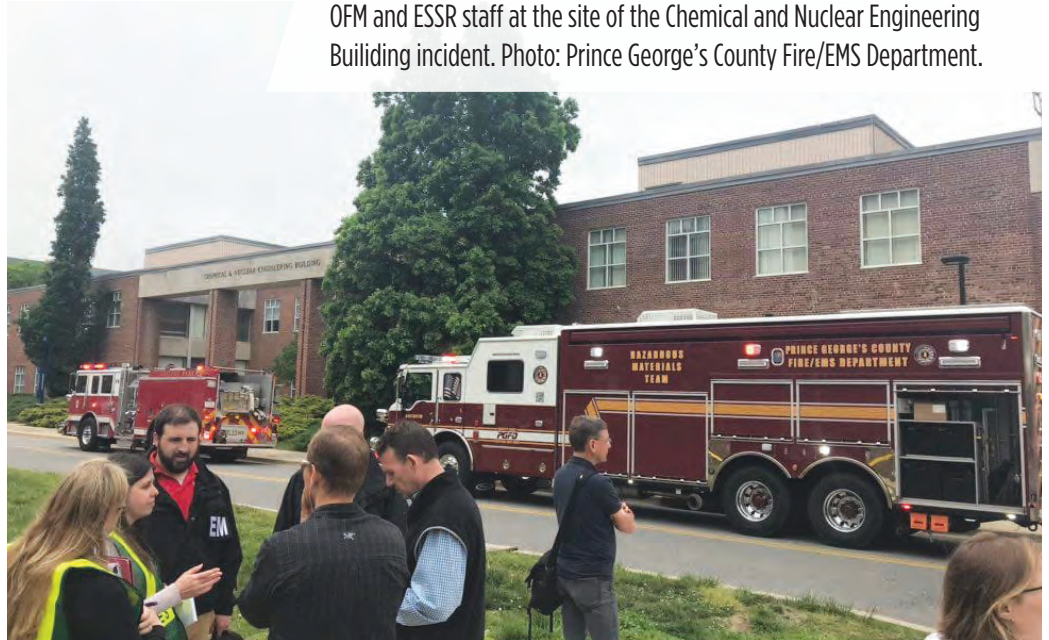
As required by the federal Clean Water Act, OEA has developed and maintains a "Spill Prevention Control and Countermeasure" (SPCC) Plan to prevent and mitigate oil spills on campus. OEA is responsible for tank and piping testing, monthly tank inspections, personnel training, above ground fuel storage tank projects, and SPCC Plan revisions. During FY19, OEA conducted a comprehensive audit of approximately 400 oil tanks on campus and initiated a required 5-year overhaul of the SPCC Plan. Additionally, new, voluntary SPCC Plans were prepared for 6 research farms operated by the University throughout the State of Maryland.

OFFICE OF THE FIRE MARSHAL

The Office of the Fire Marshal (OFM) works to preserve and protect life and property from fire, explosion, and natural hazards. This is accomplished through enforcement of the State Fire Prevention Code, fire protection engineering, training, public education, fire investigation, and emergency response and preparedness. OFM is the Authority Having Jurisdiction (AHJ) for the University of Maryland. Fire Marshals are delegated legal authority by the Maryland State Fire Marshal.

Explosion and Fire in Chemical and Nuclear Engineering Building

A graduate student was working in a Semi-Conductor Materials Processing Laboratory when a small precursor vessel attached to an ALD (atomic layer deposition) reactor began to over-pressurize, make a noise and create a smoke like haze. The graduate student left the laboratory with the assistance of a Facilities Management worker and contractor who were nearby. Shortly after she left the room, the vessel exploded, sending hot debris across the room and igniting a trash can.



OFM and ESSR staff at the site of the Chemical and Nuclear Engineering Building incident. Photo: Prince George's County Fire/EMS Department.

The Office of the Fire Marshal led ESSR's response and the incident investigation when an explosion and fire occurred in the Chemical and Nuclear Engineering Building. A Deputy Fire Marshal was one of the first responders on the scene and initiated the evacuation of the building.

Prince George's County Fire and EMS (PGFD) responded along with University of Maryland Police (UMPD), the Office of the Fire Marshal, and representatives of ESSR Environmental Affairs, Research Safety, and Occupational Safety & Health. PGFD extinguished the fire and initiated a hazardous materials operation. ESSR worked closely with the PGFD Hazardous Materials Team to determine what the material was and how it should be handled. ESSR operations included interviewing the principal investigator (PI), identifying potential hazards, and material testing coordination. PGFD entered the laboratory, in protective equipment, to take samples and test the environment.

PGFD provided initial medical evaluation for seventeen fire, police, fire marshal, and facilities management personnel that were inside the building and exposed to smoke. All were transported to hospital and no one was injured.

When PGFD determined that the immediate hazard was contained, the scene was released to ESSR with the Fire Marshal as Incident Commander. The affected area of the building was secured with the assistance of UMPD and the recovery phase was initiated. The Office of Environmental Affairs brought in a hazardous materials contractor to provide clean-up services. Occupational Safety & Health and Laboratory Safety monitored conditions, worked with building occupants, and made the technical determination as to when the affected areas of the building could be reoccupied. Risk Management coordinated the insurance claim with the State Treasurer's Office to restore the building and equipment. A "town hall" style meeting was moderated by the ESSR Executive Director to address concerns of building occupants.

The Office of the Fire Marshal conducted the fire and explosion investigation with a systematic process of witness interviews, examination of physical evidence, examination of the scene, and consultation with experts. Based on the results of the investigation, it was concluded that the explosion was caused by an over-pressurization of the vessel by an unwanted chemical reaction. Laboratory Safety will use the information from the investigation and the lessons learned to work with the research community in developing safety procedures and protocols.



University representatives at the Big Ten Emergency Management and Special Events Conference.

Big Ten Emergency Management and Special Events Conference

The Office of the Fire Marshal hosted the Big Ten Emergency Management and Special Events conference in summer 2018. The conference brings together Big Ten colleagues to discuss current issues to learn from each other's experiences with major events and incidents. The conference is held at a different Big Ten school on the rotating basis. Important partners that worked with ESSR included Department of Public Safety, Intercollegiate Athletics, Dining Services, Stamp Student Union, and Transportation Services. More than 50 people representing Big Ten schools attended the conference. In addition to seminars, attendees were treated to activities that highlighted the University of Maryland, as well as the state of Maryland.

Fire Safety in Research Laboratories Workshop

A two-day workshop, "Fire Safety in Research Laboratories Workshop" was cosponsored by the Office of the Fire Marshal and the Office of Research Safety and offered to UMD faculty, staff and students at no charge. The workshop covered the requirements of NFPA (National Fire Protection Association) 45 — Fire Protection in Laboratories Using Chemicals, 2015 Edition. Participants were instructed in the safe handling of flammable and combustible chemicals in laboratories, laboratory ventilation, best management practices for fire prevention and laboratory safety. Lessons learned from

accidents and fires in laboratories nationwide were reviewed. Each participant received a copy of the NFPA 45 standard. The workshop was presented by Andrew Minister, P.E., a graduate mechanical engineer and a registered fire protection engineer with 39 years of experience in fire protection engineering. Mr. Minister has been a principal member of the NFPA 45 Fire Protection for Laboratories Using Chemicals technical committee for 20 years and was appointed as Chair of the committee in January 2007.

Andrew Minister leads a Fire Safety in Research Laboratories Workshop for UMD employees.



ESSR Collaborates with Dining Services

The Department of Dining Services invited ESSR to present information during their Leadership Staff meeting in August. ESSR staff developed a cross functional hour long program that outlined ESSR services available to Dining Services. In addition to general information, each unit reviewed activities and incidents that occurred during the year. Topics included:

- Emergency Management Evacuation and Shelter plans developed and posted. Automatic External Defibrillators (AED's) installed at each dining hall
- Fire Marshal's Office training for Food Truck Fire Safety and Crowd Manager
- Environmental Affairs Spill Prevention, Control and Countermeasures (SPCC)
- Risk Management Occupational Safety & Health programs including Hazard Communication, Personal Protective Equipment (PPE), Bloodborne Pathogens, and Hearing Conservation
- Risk Management Workers' Compensation Review of Procedures.

OFFICE OF RESEARCH SAFETY

The Office of Research Safety (ORS) includes the expertise of the Biosafety, Laboratory Safety, Radiation Safety and Scientific Diving Safety professional staff who support the research community in meeting the University's Expectations for Conducting Safe Research. At UMD, our researchers know that research excellence and safety are inextricably intertwined. Thus, safety is a core value of our institution and an integral part of the responsible conduct of research. The university's leadership expects all members of our research community to integrate safety into their research activities, to strive for excellence and to go beyond minimum compliance.

From collecting samples in remote areas around the world to handling hazardous materials within the research and teaching laboratories on campus, research often has multiple health and safety risks and regulatory requirements that need to be identified and managed. ORS offers a broad range of services and partners with the research community by providing comprehensive safety training classes, conducting risk assessments and exposure monitoring, and assisting with implementation of safety controls to minimize risks. ORS directly administers many of the university's federal and state licenses and registrations for hazardous and risk significant materials, ensuring regulatory commitments are met as the research community achieves their research goals.

Shining a Spotlight on Biosafety

In October, Biosafety professionals within ORS spearheaded a Biosafety Awareness Month outreach campaign, encouraging researchers to focus attention on biosafety and biosecurity standards in their research laboratories. National Biosafety Month occurs every October and is an initiative of the American Biological Safety Association. The 2018 theme was "Promoting a Culture of Biosafety and Responsibility." Events at the University of Maryland commenced with a letter from Dr. Laurie Locascio, Vice President for Research, fully supporting Biosafety Awareness Month, reinforcing the campus' commitment for research excellence and encouraging researcher participation and engagement with ORS.

At the start of each week, Biosafety provided useful tips, tools and educational materials to the campus research community who utilize biological materials in their research endeavors. Included in the messages were quick, achievable actions the



2018 Biosafety Champion,
Dr. Margaret A. Scull,
Assistant Professor, CBMG.

researchers could take to immediately strengthen their laboratory biosafety programs. With web links embedded into the guidance, actions to be taken included checking biological registrations, updating laboratory personnel lists, printing and reviewing waste disposal guides, and completing safety training. Researchers who provided feedback of their successful actions were entered into a drawing for a prize.

Biosafety Awareness Month culminated with a focused spotlight on three members of the research community who demonstrate a continuing commitment to biosafety and research excellence.

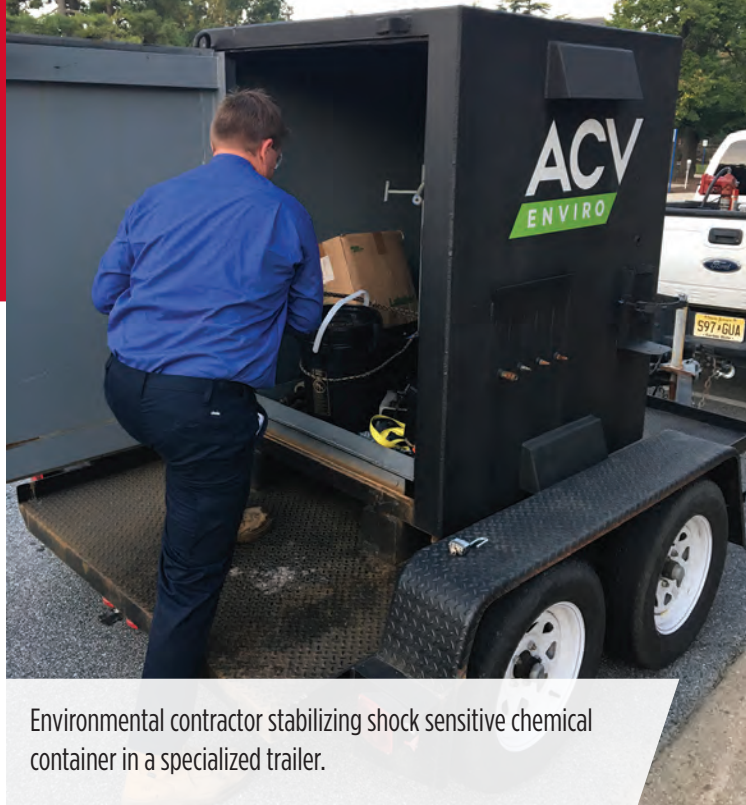
These Biosafety Champions were interviewed and openly shared how they promote a culture of safety within their laboratories. Dr. Margaret A. Scull, Assistant Professor, within the Department of Cell Biology & Molecular Genetics was one of the Biosafety Champions along with Daniel Shill, Lab Manager for the Hagberg Lab within the School of Public Health and Sylvester J. Gates III, Lab Manager for the Losert Lab within the Institute for Physical Science and Technology.

Proactively Managing for Laboratory Risks

As research activities may involve a wide range of hazards, including chemical, biological, radiological, physical, and electrical, planning for emergencies is one of critical components of the *Expectations for Conducting Safe Research*. At the planning stage, researchers systematically identify the hazards of the materials they are using and assess the risks; engineering controls are employed, personal protection is identified, and safe work practices to manage these anticipated risks are written into laboratory procedures. Researchers must

also anticipate what could go wrong during an experimental procedure and plan for these types of situations. These situations may include unexpected disruptions, such as campus closures for severe weather or sudden loss of utilities that could impact safety.

This year ORS launched new guidance documents to assist laboratories in their emergency planning. A comprehensive *Emergency Preparedness for Laboratories* checklist was rolled out to the research community with actions to prepare for temporary closures and unexpected losses which can impact research



Environmental contractor stabilizing shock sensitive chemical container in a specialized trailer.

experiments and safety. Researchers began using the checklist as they planned their departure during the 2018 winter break. The systematic advanced planning and preparing for these situations protect laboratory materials, equipment, animals, and research from losses. This will minimize the risk of hazardous conditions developing during the temporary closure, when the university's normal resources on campus are reduced and severe weather potentials are more likely to occur.

Certain chemicals present unique safety risks because they become explosion hazards over time if they dry out, concentrate, destabilize or degrade. For this reason, research laboratories are required by university policy to maintain up-to-date chemical inventories. To raise awareness to these "potentially explosive compounds", ORS Laboratory Safety introduced a *Disposal of Outdated Chemicals in the Laboratory — Potentially Explosive Compounds* fact sheet. This fact sheet identifies problematic compounds and provides actions that labs can take to avoid creating a hazardous chemical storage situation. The communication was distributed to all research Principal Investigators on campus. Email metrics indicate that this was the most opened mass communication ORS has sent to the research community. As a result of this communication, actions were taken by ORS and ESSR's Office of Environmental Affairs to safely remove unwanted shock sensitive chemicals. The safe removal required coordinating with a high-hazard waste contractor.

Synergizing with Research Support Partners

This year marked the inclusion of an ORS Laboratory Safety representative as a standing reviewer for Institutional Animal Care and Use Committee (IACUC) protocols. ORS

Laboratory Safety offers technical expertise in chemical knowledge and industrial hygiene, and in the identification and management of chemical hazards within the research laboratories. By directly engaging with campus IACUC partners in the protocol approval process, Laboratory Safety is best able to provide a more proactive, comprehensive review of chemical hazards involved in animal research. IACUC research protocols evaluated this year include those with chemicals such as chemotherapeutic drugs, anabolic steroid hormones, and anesthetic gases. In addition to reviewing protocols and citing requirements for chemicals in the planning stage, Laboratory Safety began a campus-wide industrial hygiene assessment of existing IACUC protocols involving the use of anesthetic gases. ORS is evaluating laboratories to ensure potential exposures to anesthetic gases are meeting regulatory guidelines. In order to reduce or eliminate exposures to these gases, researchers make necessary modifications to the gas delivery systems and use appropriate local exhaust ventilation.

Using BioRAFT to Improve Compliance in Training

Completing Safety Training is one of the University of Maryland's Expectations for Safe Research. ORS has been hard at work trying to make it easier for laboratories to meet this

expectation. In the last year, a significant number of the research safety trainings offered by ORS have migrated to BioRAFT, an on-line research safety management system. New training features have been implemented that link researcher training requirements to specific tasks that a researcher performs in the lab. For example, when a researcher has a particular job activity selected on their profile, such as "Works with Class IIIB or IV lasers", a training class requirement will be automatically linked to that individual's profile. Required training that has not been completed will show up in the system as a notification, which ORS, the Principal Investigator and other departmental personnel can track. Using the BioRAFT metric dashboard, ORS can provide guidance, support and directed communications to labs, departments and schools who need to focus additional efforts on completing required safety training.

This year, overall compliance in training requirements has increased by over 15% for all training requirements, with some individual training classes showing improved compliance by over 30%. Demonstrating full compliance is a focus for the next year, as ORS continues to strengthen the training program within in the BioRAFT research safety management system.



BioRAFT Training Compliance Dashboard showing overall campus training compliance.

OFFICE OF RISK MANAGEMENT

The Office of Risk Management (ORM) provides support and consultation regarding the risk naturally encountered in the course of the research, service, and teaching mission of the university. ORM works to reduce the chance and severity of loss to the university's financial and reputational asset, and physical and human resources through identification of these hazards and development of controls.

Occupational Safety & Health Lends Support to Maryland Farmers

A meeting invite can go a long way in taking the first step to increase safety awareness for employees both on and off campus. The Occupational Safety & Health (OSH) unit was invited to the Farm Managers meeting in April 2019 to outline their services available to university employees. Highlights included a discussion about machine shop safety and the audit process, respiratory protection, and the online program for safety data sheets (SDS). This gave farm managers the opportunity to discuss current safety needs at their off-campus facilities, and meet OSH staff in-person. As a direct result of attending the farm manager's meeting, OSH personnel were able to assist the Keedysville Farm with building repairs and upgrades, and help fund electrical and tank protection upgrades for the Clarksville Farm.

Western Maryland Research & Education Center in Keedysville.
Photo: College of Agriculture & Natural Resources.



Workers Compensation Data Shows Continuous Improvement

The 2018 UMD workers' compensation data shows a continuous five-year decrease in the number of new First Report of Injury (FROI). The decline has occurred in correlation with an aging workforce and growth in the total number of employees over the five-year period. Additionally, there is a downward trend in the number of

Occupational Safety and Health Administration (OSHA) Recordable injury and illnesses. The OSHA Total Recordable Incident Rate (TRIR) decreased by 35.7%, from 1.4% in 2014 to 0.9% in 2018. The UMD workers' compensation program demonstrated positive results through the enhanced Return to Work Initiatives. Working with departments and units and especially the three major claim generating units, Facilities Management, Residential Facilities, and Dining Services saw increases in return to work in transitional duty positions. The safety contribution efforts from the OSH unit and our close partnership with the Injured Workers' Insurance Fund (IWIF) helped in getting employees back to work. Through these collective efforts, the return to work program saw a decrease in calendar year 2018 OSHA days away from work by 585 or 25.2%. Correspondingly, the OSHA days of job transfer/restriction increased by 732 or 45.6%.

OSH partners with Machine Shop Managers to Increase Student Safety

Sometimes, an incident leads to safety improvements. Following a minor incident, OSH staff worked with Terps Racing students and staff to support their safety training program. OSH has partnered with the engineering department to improve the safety of students who participate in competition groups in the Cypress Building, JM Patterson, and the Iribe Center. Improvements have included a dedicated shop manager on

Terps Racing students and staff prepare for a test drive.



Graduate Students Expand on Employee Exposure Monitoring

University of Maryland is no stranger to the additive manufacturing world, boasting 3D printing spaces in buildings throughout campus including Kirwan Hall, A. James Clark Hall, Parren J. Mitchell Art-Sociology, and the Technology Advancement Program building. With a few clicks in a computer-aided design (CAD) software program, you can create a 3D object from a digital file and a heated building material – typically a plastic filament. Along with this emerging technology comes emerging health and safety concerns. The



School of Public Health students and faculty collaborate with OSH staff at McKeldin Library.

OSH unit has once again partnered with graduate students in the School of Public Health's Occupational Hazards class. With the proper mentorship and supervision, graduate students conduct employee exposure monitoring during 3D printing activities. This year, the students expanded their investigations to include real-time, continuous monitoring of ultrafine particle levels, equipment sound levels, and volatile organic compound levels.

staff for engineering, and a dedicated welding station with supplemental ventilation for fumes. OSH staff consulted with Terps Racing on their chemical storage, machine shop operation, and daily operations. This has resulted in safety improvements in the student shop, and greater awareness for those who work in it.

Machine Shop and Makerspace Safety Program Development

With the expertise and insight of a committee comprised of over a dozen University of Maryland machine shop professionals, the OSH unit is finalizing the university's first machine shop safety program. The new program will address the safety of both students and employees on campus working in machines shops and makerspaces, and is being developed with the input of the committee.

Mobile Apps for Safety

The OSH unit has created a professional development course that introduces employees to safety through a series of mobile apps. The course is an hour long and introduces employees to safety-related, smart phone apps that are immediately implementable, free, and user-friendly. The apps, available for both Apple and Android platforms, cover a variety of topics including first aid, emergency response, weather forecasts, heat related stress, noise monitoring, and ergonomics. The course is updated with new apps as they are released and gives employees the opportunity to use the apps during class. The course is offered on a per request basis year-round.

Maryland Fire and Rescue Institute

The OSH unit conducted a survey at the Maryland Fire and Rescue Institute (MFR) to determine how smoke from training burns affects the adjacent office and classrooms facility. Staff worked in conjunction with MFR employees and FM HVAC personnel to isolate the building's air intake before collecting samples for particulates, total dust, and carbon monoxide. Measurements were taken inside Building 199 on a date where no burns had occurred for 24 hours. During the controlled burn date, samples were obtained both outside and throughout the building. Total dust concentrations were non-detectable. Carbon monoxide particle counts were higher inside during controlled burn sessions, and baseline measurements and a campfire-like odor suggested particles remain in the building due to a variety of conditions. OSH personnel recommended sealing doors, windows, and the HVAC during controlled burns to further limit particles entering the building. OSH also recommended purchasing carbon monoxide detectors for the building due to their proximity to the burn site.

Maryland Fire and Rescue Institute burn site sampling.



OFFICE OF SUSTAINABILITY

The Office of Sustainability (OS) supports and advances environmental performance, economic prosperity and social equality through a variety of initiatives. The staff facilitate the development and implementation of sustainable policies, practices and curricula for the campus community. OS also manages the campus Climate Action Plan goal of achieving carbon neutrality by 2050. The university has achieved a 50% reduction in carbon emissions since 2005.

Sustainability Fund Projects 2019

A record-breaking \$450,633 in University Sustainability Fund grants were issued for 2019, including \$150,000 for plastic waste reduction in Dining Services and \$50,000 to offset the climate impact of undergraduate commuters' emissions. The grants also support 14 other projects, including research efforts that may have valuable long-term benefits to the campus. Besides distributing more money than ever, this year's funding cycle also included its largest grant ever allocated, to replace 1.3 million plastic bags, utensils and straws in Dining Services cafes and shops with compostable or recyclable alternatives as part of the Ocean Friendly Campus initiative. Dining Services also aims to reduce the number of paper bags used on campus by providing one complimentary reusable bag for every student who lives on campus, paid for by the Sustainability Fund. This year's grants also marked the first time UMD students have voted to use fund money to invest in carbon offset



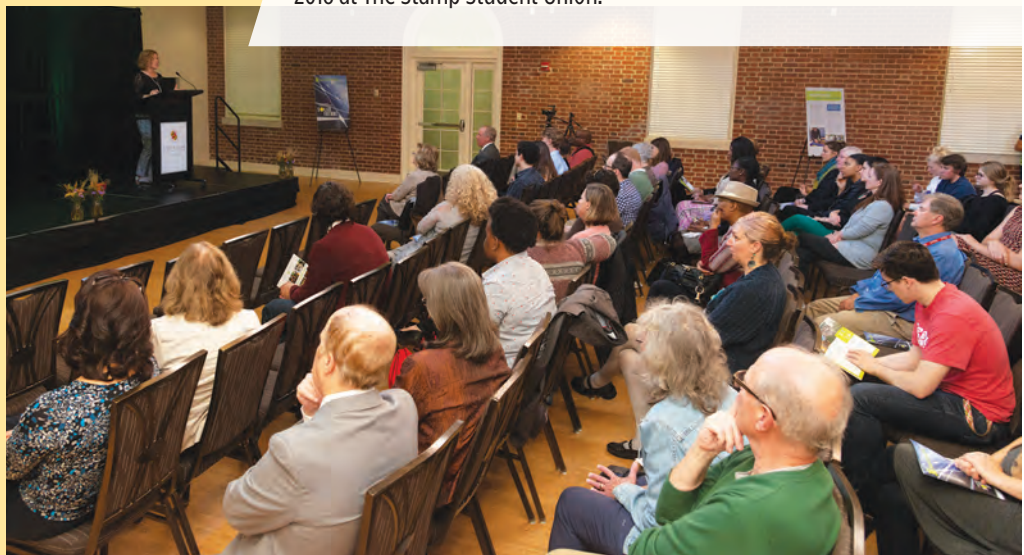
UMD students and staff celebrating 2019 Sustainability Fund project announcement at Earth Day Festival in April.

projects to neutralize greenhouse gas emissions associated with commuting. Undergraduate commuting emissions represented 7% of UMD's carbon footprint in 2017, and 100% of those emissions will be offset for 2018 and beyond.

SustainableUMD Magazine and Celebration

The Office of Sustainability collaborated with the Office of Strategic Communications and multiple campus partners for the fourth edition of the SustainableUMD Magazine. The feature story entitled, "Terps Power A Sustainable, Solar Future" highlighted the successes of the UMD Solar Decathlon Team reACT, campus solar canopies, and research at the Clark School of Engineering. Other stories in the publication featured campus compost collection, the Anytime Dining program, sustainability research, and student sustainability groups. The magazine was officially released at a celebration event in October 2018 at The Stamp Student Union featuring keynote speaker, Joanne Throwe from the Maryland Department of Natural Resources.

Keynote speaker, Joanne Throwe at the SustainableUMD Celebration in October 2018 at The Stamp Student Union.





Maryland sustainability leaders gathered for the USM Sustainability Summit in December at The Stamp.

USM Sustainability Summit

The Office of Sustainability collaborated with the University System of Maryland (USM) office to host the first ever USM Sustainability Summit in December 2018. Over 100 attendees from USM schools representing Dining Services, Operations, Sustainability, Facilities Management and more attended

the event at The Student Stamp Union. Presentations included information on carbon neutrality, energy initiatives, plastic reduction efforts, and much more.

Green Office representatives from RecWell and the Center for Young Children with their Platinum awards.



Green Offices Achieve Platinum Certification

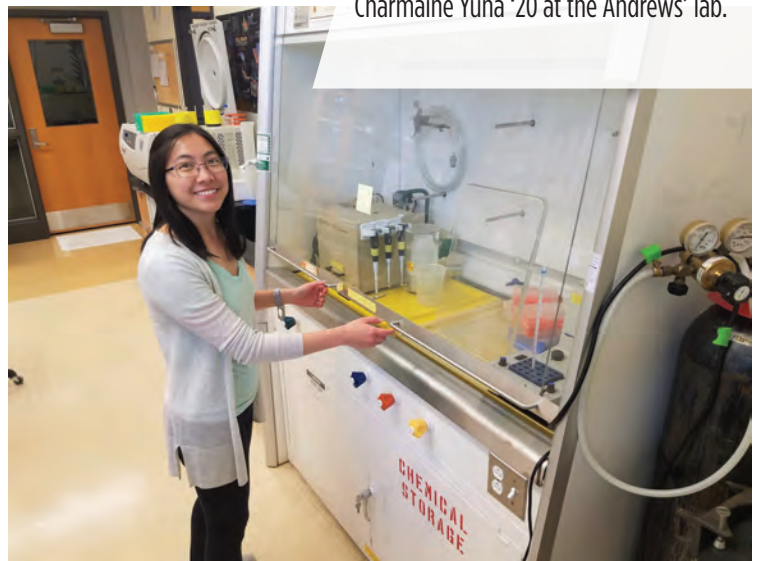
Since Platinum certification was established in fall 2018, six Green Offices achieved the new level of certification. The Center for Young Children and the University Recreation & Wellness offices were the first to achieve the Platinum level, followed shortly after by the Denton Community office, the Department of Fraternity and Sorority Life, Office of Student Conduct, and the Support Group for Dining Services. Green Offices that have been Gold-certified for at least two years and have performed actions that go above and beyond can attain Platinum status. These offices have gone out of their way to truly embed sustainability into office culture and Platinum was created to recognize these offices and their achievements. “It is most exciting to see that being a Green Office has spread way beyond our office to the children we teach, their parents, and

our student aides,” said Vera Wiest, teacher, Center for Young Children. “Our office members also take the spirit and actions home with them to their families.”

Green Labs Success Story

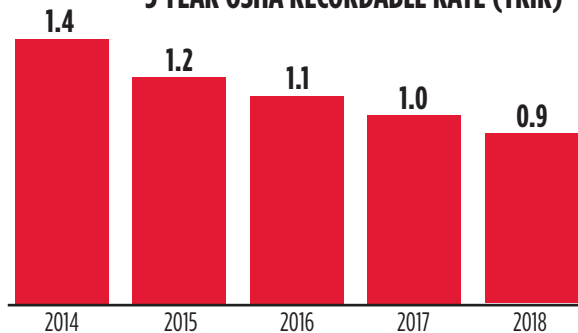
The Green Labs Program, a new collaborative effort between the Office of Sustainability and the Department of Engineering & Energy is finding ways to reap the benefits of science while reducing the environmental impacts. An early participant in the program, cell biology and molecular genetics Professor Norma Andrews, found she was able to eliminate more than 55,000 pounds of annual carbon dioxide emissions by instituting some relatively simple changes.

Charmaine Yuna '20 at the Andrews' lab.

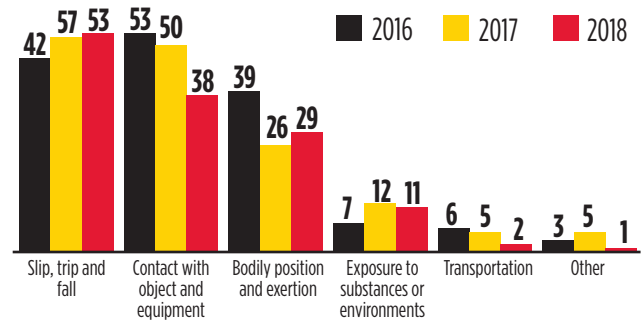


METRICS

5 YEAR OSHA RECORDABLE RATE (TRIR)



2016-2018 UMD RECORDABLE INJURIES AND ILLNESSES BY INCIDENT/EVENT



TRIR = # of injuries x 200,000 ÷ total # hours worked.
 UMD's 2018 TRIR is 0.9 continuing the downward trend. The Bureau of Labor Statistics (BLS) uses the North American Industry Classification System (NAICS) for industry comparison. The NAICS 2017 TRIR calculation (most recent) for colleges, universities, and professional schools (6113) is 1.71. UMD continues to outperform the national average.

FY19 PROPERTY CLAIMS

Type of Claim	Number of Claims	Damages (in dollars)
FLOOD	21	1,590,858.33
VEHICLE ACCIDENT	4	123,500
POWER OUTAGE	6	117,873
FIRE	3	68,980.44
OTHER	5	41,000
THEFT	2	11,000
WEATHER	1	5,791.06
TOTAL	42	1,959,002.83

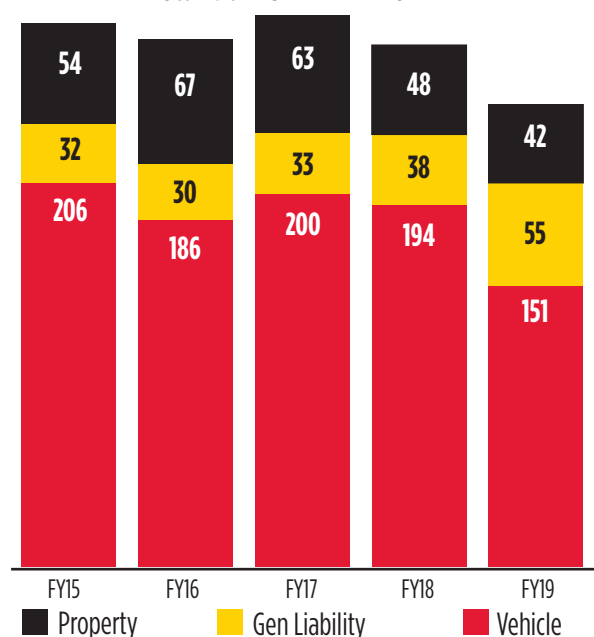
FY19 GENERAL LIABILITY

Type of Claim	Number of Claims
TORT INJURY (NON-EMPLOYEES)	34
TORT PROPERTY	18
TORT VEHICLE	3
TOTAL	55

FY19 STATE VEHICLE CLAIMS

Type of Claim	Number of Claims
REPORT ONLY	93
SIDESWIPING OTHER VEHICLES	29
REAR ENDED	12
BACKING	9
OTHER	5
FRONTAL	3
TOTAL	151

INSURANCE PROCESSING CLAIMS Total Claims: FY14-FY18



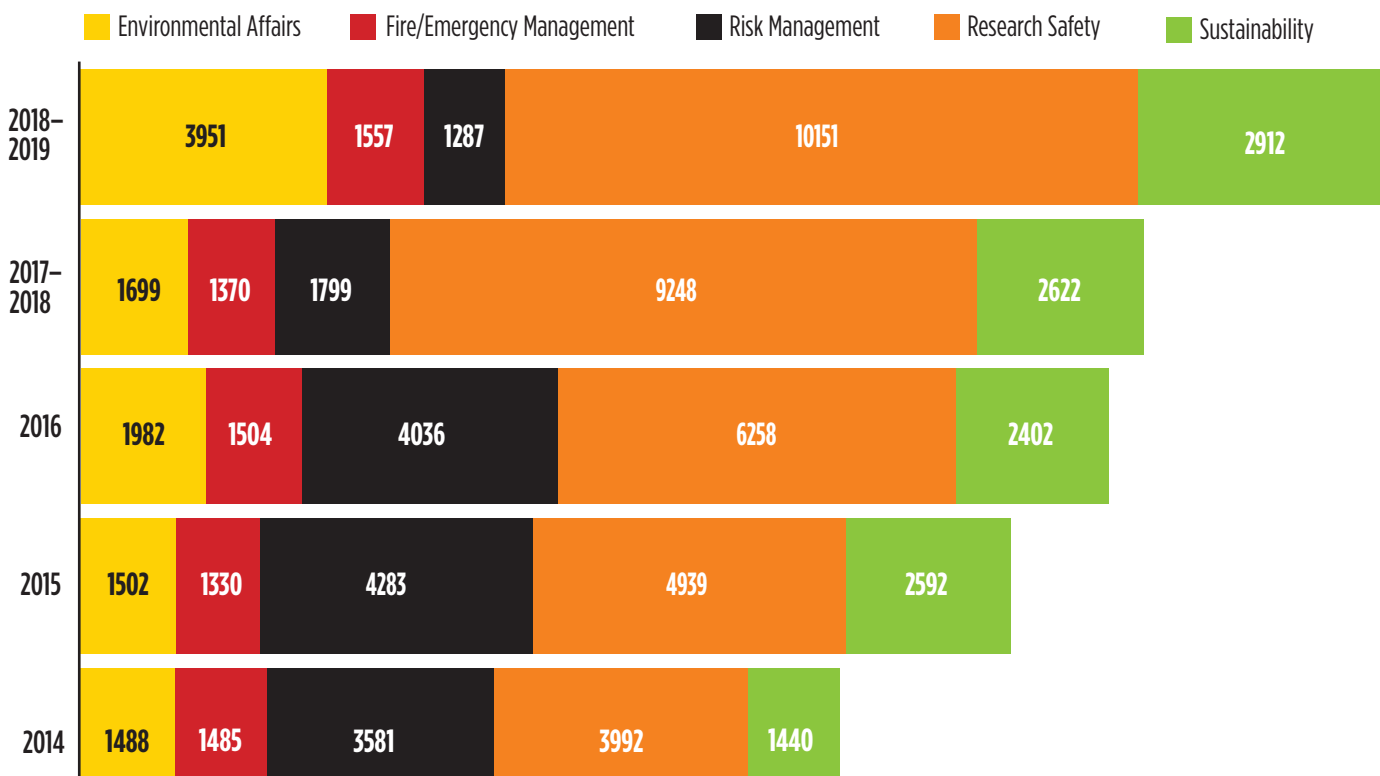
Training

Training is a fundamental part of ESSR’s mission, ensuring that the University of Maryland community has the knowledge and tools needed to protect themselves and their environment. ESSR training encompasses a wide range of topics and audiences as described below.

Training Highlights from 2018-2019

- Office of Environmental Affairs training ensures that all regulated waste generated at the University of Maryland complies with environmental regulations and is handled and disposed of safely. *3,951 employees and students received training for Hazardous, Universal, Biological, and Radioactive Waste.*
- Office of Fire Marshal training teaches the UMD community how to prevent incidents and emergencies and how to respond to emergencies if they do occur. *Office of Fire Marshal trained 245 Resident Assistants on how to manage emergencies in residence halls.*
- Office of Risk Management training covers a wide range of training topics that teach Facilities Management, Housekeeping, Residential Facilities, and other staff members to work safely. *Office of Risk Management staff trained 189 employees in Hazard Communication and 197 employees in Hearing Conservation.*
- Office of Research Safety training teaches faculty, staff, and students working in research and instructional labs how to work safely with biological, chemical, and radiological hazards they may encounter in their laboratories, and how to respond to incidents and emergencies involving these materials. *Office of Research Safety staff trained 1,011 faculty, staff, students and teaching assistants in 65 “New Laboratory Researcher Training” sessions.*
- Office of Sustainability training focuses on promoting a culture of sustainability at UMD. *Office of Sustainability staff trained 12 Sustainability Advisors (peer educators) who taught one-hour lessons to 77 sections of first-year seminar classes, reaching roughly 2,430 students.*

TOTAL TRAINING









DEPARTMENT OF
ENVIRONMENTAL SAFETY,
SUSTAINABILITY & RISK

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