

Environment, Health, and Safety

The EHS Office is an institutional compliance office as well as a service and operations department. It supports the Institute's environment, health, and safety mission associated with education, research, and the operation of MIT's endeavors in Cambridge, MA, as well as off-campus locations: Lincoln Laboratory, Bates, Haystack Observatory, Endicott House, and worldwide.

EHS is responsible for:

- Overseeing operational EHS management at MIT
- Providing EHS services to departments, laboratories, and centers (DLCs)
- Supporting MIT's commitment to EHS performance beyond compliance
- Delivering services that demonstrate MIT's commitment to EHS stewardship

EHS services address a wide range of areas – from environmental sustainability and occupational safety to chemical, radiological, and biological controls – and support the Institute's accountability to excellent EHS performance as well as for legal compliance. EHS provides a safe working area for students, staff, the general public, and the environment, while facilitating creative and breakthrough research to continue.

This report includes highlights of operational and Program-specific accomplishments, projects, and initiatives.

Key Highlights

Organizational Changes

In the past year, EHS has undergone a transformative journey to achieve greater efficiency and effectiveness. EHS leadership updated the office organizational structure, aiming to streamline operations and optimize resource utilization.

By analyzing workflows and processes, EHS leadership identified areas that required optimization. This assessment led us to implement a more agile and cross-functional approach, breaking down silos and promoting collaboration among programs. The newly designed organization chart reflects a flatter hierarchy, facilitating faster decision-making and improved communication channels.

Enhancing Programs

In the spirit of continuous improvement and adherence to the highest standards, EHS has worked diligently to close audit findings. Throughout the year, we worked closely with the MIT Audit Division to address several findings from separate audits of the EHS Training Program and the Lock-out-Tag-out (LOTO) Program. These audits were instrumental in identifying areas for enhancement and ensuring compliance with industry regulations and safety protocols. EHS Office has since made training for EHS Representatives (Reps) mandatory and developed comprehensive support tools for LOTO.

Additionally, EHS is an integral part of MIT's Climate Action Plan for the Decade. This year, we have been a part of many sustainability projects currently underway across campus. Staff work closely with Campus Construction, Facilities, Procurement, and the Office of Sustainability. As part of MIT's Climate Action Plan, EHS helps labs become sustainable labs, and we consult on various energy-saving strategies. One such strategy is our "Shut the Sash" initiative to reduce the energy used by ventilation hoods.

Commencement and Inauguration Support

Inauguration and Commencement took place within 4 weeks of each other, requiring large planning efforts from multiple departments. EHS worked as an integral team member for both events, providing review, enforcement, and leadership for safety. The Occupational & Construction Safety Program (OCSP) represented EHS in the planning and onsite safety watch for Inauguration and Commencement events and ceremonies. EHS staff:

- Participated in the Inauguration and Commencement planning meetings.
- Conducted safety checks of areas during construction and supported the Department of Facilities (DOF).
- Conducted training for staff volunteers from all the programs in EHS.

By the Numbers

The operational and service support provided by EHS can be captured, in part, by looking to the following numbers. In FY23, EHS supported and/or facilitated:

- 549 Principal Investigators (PIs)/Supervisors
- 4,063 Registered Spaces (rooms)
- 34,249 learning experiences (training seats)
- 2,536 service tickets
- 879 research registrations/authorizations
- 16,200 lbs. lab plastics recycled
- 36 lab cleanouts
- 102 construction/design support requests
- 26 non-employee incidents
- 35 Small Unmanned Aircraft Systems (sUAS) flight reviews and approvals for MIT campus

Biosafety Program (BSP)

The BSP ensures the safe and responsible conduct of life sciences research and participates in and supports the MIT Committee on Assessment of Biohazards and Embryonic Stem Cell Research Oversight (CAB/ESCRO), Committee on Animal Care (CAC), and Committee on the Use of Humans as Experimental Subjects (COUHES).

CAB/ESCRO ensures the safe and responsible conduct of biological research at MIT. Its scope has changed over time to provide a more consistent and cohesive oversight process for a range of biological research and new technologies.

The Review and Approval Process for research is based on the completion and submission of the Biological Research Registration (BRR) form to BSP. The committee reviewed 364 BRR. These BRRs included:

- 68 Rewrites
- 127 Amendments
- 151 Renewals
- 18 Teaching Labs

Environmental Management Program (EMP)

The EMP provides environmental oversight, advice, consultation, training, and direct operational services for permitting, data reporting, and responses to air, water and hazardous waste discharge policies and procedures required by regulatory agencies such as: the United States Environmental Protection Agency (EPA), Massachusetts Department of Environmental Protection (MassDEP), and Massachusetts Water Resources Authority (MWRA). Routine requirements and permit renewals are outlined in the Appendix: MIT EHS Regulatory Compliance Calendar and highlights are listed below.

A major accomplishment was launching the identification process to assess all MIT properties for all environmental program elements to ensure compliance. This reduces risks of fines, damaged reputation, and damage to the environment. This is part of the EMP multi-year improvement plan. EMP has continued to make improvements in the Program and meet all regulatory deadlines for ongoing compliance activities and projects with focus on storm-water voluntary monitoring, materials management, refrigerant management, chemical management and other related compliance programs and scheduled activities.

EMP planned and prepared for an anticipated MassDEP multi-media environmental inspection, which occurred in April. The team gathered targeted documents for inspection and prepared a communication plan for DOF and the laboratory regulated community in advance of the inspection. The inspection yielded findings, and a plan will be implemented to address issues.

Hazardous Waste Program

US EPA and MassDEP regulated chemical wastes are generated during research and academic activities, throughout facility operations, and during construction and demolition. These wastes carry risks and liabilities from the point of generation through final disposal.

- Program Development and Improvement: New, plumbed showers and eyewashes were installed in all Main Accumulation Areas (MAAs) in buildings 18, 76, and 46. This project required EMP to plan and execute the closure and decontamination of each room according to the construction schedule.
- Noteworthy Chemical Cleanouts: Large, building-wide cleanouts, to reduce risks, were performed for building 13 and building 31 during the past year.

- Training and Guidance: The new EHS Rep Training Course was rolled out with new hazardous waste demonstrations.

Air Permitting Program: MassDEP Air Quality Operating Permit - Title V Permit for the MIT Cambridge Campus

The current Title V Permit renewal application has been under review by MassDEP since 2012. EMP coordinates and tracks new projects, equipment additions and emission units added across campus to the Title V permit and communicates with MassDEP.

- Title V Annual Air Reporting: Tracked emissions from 148 Cambridge campus air emission sources.
- Emergency Generator Regulatory Management: Worked with DOF Campus Construction to meet regulatory design and construction requirements.
- CUP Air Support: Provided support to the CUP with air permitting compliance following the departure of the Plant Engineer in April.
- Refrigerant Management Program Support: Worked closely with R&M and the DOF EHS Manager to finalize the Refrigerant Management Plan for main campus.

MassDEP Permitted Underground Storage Tanks (USTs):

The CUP had 3 USTs for the storage of #2 ultra-low sulfur diesel oil subject to MassDEP UST Program that regulates the registration, installation, operation, maintenance, inspection, and closure of petroleum fuel and hazardous substance UST systems. The third-party inspection was completed for all 3 USTs.

Water Program: Massachusetts Water Resources Authority (MWRA) Main Campus and CUP permits

The MWRA issues permits to MIT for industrial wastewater discharge principally covering Main Campus labs and the CUP. These permits establish specific conditions under which wastewater can be discharged. MWRA requires monthly, quarterly, and semi-annual sampling of wastewater. There were 145 regulatory submissions for MWRA requirements, analytical, flow/pH monitoring, and deviations.

- MWRA CUP Wastewater Permit Compliance Project: EMP worked with the CUP to meet wastewater regulations. The work included an investigation to verify the locations where new drains were to be added and the determination made to remove or replace impacted drains. The project execution included the extensive cleaning for wastewater treatment system tanks.
- Inspections: 4 MWRA inspections for 12 systems, covering 36 buildings

Water Program / Haystack Drinking Water Project Regulatory Oversight:

MIT Haystack Observatory and Lincoln Lab/Millstone facilities provide drinking water to the occupants and are classified as public water systems by MassDEP. EMP assists in regulatory compliance and advises on project drinking water system improvements.

Annual Chemical Reporting:

The EHS Office coordinated and communicated the chemical reporting regulatory requirements, aggregated data, performed QA/QC and submitted the 2022 chemical inventory reports for Cambridge campus, Haystack, Bates, and Endicott House. EMP performed regulatory review throughout the process and submitted the final report to local, state and federal agencies. In total, 704 roomsets across 57 DLCs submitted their chemical reports which resulted in reporting 29 specific chemicals to local fire departments to support potential emergency response under SARA Tier II chemical reporting requirements.

Spill Countermeasure and Control Plan (SPCC) Plan:

USEPA Oil Pollution Prevention Regulations require that any facility that meets certain oil storage thresholds have a SPCC Plan. 284 oil tanks or storage containers were monitored/inspected.

- MIT - Haystack and Millstone SPCC Plan: A full review and recertification of the Haystack and Millstone SPCC Plan was completed for approximately 41,000 gallons of oil capacity in 49 tanks.

MassDEP Massachusetts Contingency Plan (MCP) and Environmental Permitting Program:

DOF development construction projects that remove and dispose of soils are required to test and manage regulated materials under the MassDEP MCP. Major examples of the 16 MCP related projects which EMP advised and that are subject to the MCP regulatory requirements include:

- Haystack Diesel Fuel Release Remediation and Construction: Remediation completion was conducted the summer of 2022 with landscaping installed fall 2022 and spring 2023.
- Building 55 addition to 54/EAPS: Worked with the project team on multiple status report submissions to MassDEP.

Special Projects:

- EMP Smartsheet Expansion: Expanded and improved the detailed tracking for environmental documents and multi-department responsibilities in Smartsheet to ensure MWRA and air regulatory compliance status and reporting.
- EMP WaterTrax Database: Specified, procured, and has begun implementation of the database for Wastewater and Drinking water permit required analytical test data.
- Endicott House Weld Pond Dam: Worked with and assisted in management of the 2-year Weld Pond Dam safety inspection and report.
- Haystack Westford Hazardous Material Storage Permit Inspection: The town of Westford inspected and found no deficiencies and gave a glowing review of the documentation and storage practices.

- MIT Medical Hazardous Waste Compliance: Assessed the US EPA Pharmaceutical Hazardous Waste regulatory requirements for Medical. Provided hazardous waste SAA point of generation locations for every medical room.

Industrial Hygiene Program (IHP)

The IHP anticipates, recognizes, evaluates, and controls workplace conditions by limiting exposures to chemicals and addressing the control of other potential stressors such as noise, heat, repetitive motion, and indoor air quality. IHP accomplishes this through hazard assessments to identify the severity of the risk and to implement appropriate controls, including engineering, administrative, and PPE. Specific IHP initiatives and collaborations are outlined below.

- Asbestos Laboratory: IHP has made the decision to discontinue analytical asbestos operations. Asbestos analysis services are now provided by an external 3rd party vendor, freeing up IHP staff time for other services. This transition involved several logistical challenges that had the potential to disrupt campus renovation and repair operations, but, through the efforts of the staff, it was seamless.
- Chemical Inventory: ~53% of labs with chemicals have adopted the EHS Office-provided central inventory system. This year, 17 new labs adopted and implemented the central system.
- CAC Protocol Review Processes: The CAC requires researchers to submit protocols that involve the use of potentially hazardous chemicals for use in animal models. The review process was updated to increase effectiveness and efficiency. Changes to the review process include clearly defining goals and procedures, moving to an online platform and a refined method of determining hazards, and developing a distilled list of hazards.
- Drinking Water: Since the voluntary Drinking Water Sampling Program started in 2016, about 80% of buildings on campus have been completed.
- Fume Hood Program: This program has seen an extensive review to ensure accurate and consistent testing of over 1,200 fume hoods. Staff that perform testing received thorough re-training that incorporated new procedures. The internal database which tracks testing has been updated to promote ease of use and strengthen data collection/analysis.
- MIT Medical: The close partnership with MIT Medical's Occupational Health Services has allowed EHS to advance and provide clarification on existing services provided to the MIT Community:
 - Hearing Conservation Program: Collaborated to implement a major shift in the way audiometric testing (establishing baseline ability to hear and annually evaluating against that baseline to look for changes) is conducted.
 - Division of Student Life (DSL): Worked with DSL to address concerns expressed by students and residents about asbestos, containing materials, lead, and indoor air quality.

- **Emergency Response:** Clarified the role of Urgent Care in response to chemical emergencies, especially chemical exposures.
- **Medical Surveillance:** Updated guidance on when medical surveillance for hazardous materials exposure (e.g., lead and other heavy metals) may be warranted.
- **Reproductive Health:** Identified and clarified roles and responsibilities to address concerns for MIT researchers who have questions regarding one's reproductive health when working with or near hazardous materials.
- **Respiratory Protection:** Provided orientation to the MIT Respiratory Protection Program and worked to update guidance on medical clearance for respirator use.
- **Pest Management:** Developed a standard operating procedure (SOP) for pest management that was accepted by Leadership in Energy and Design (LEED). Facilities will use this SOP to assist with LEED certification going forward.

Occupational & Construction Safety Program (OCSP)

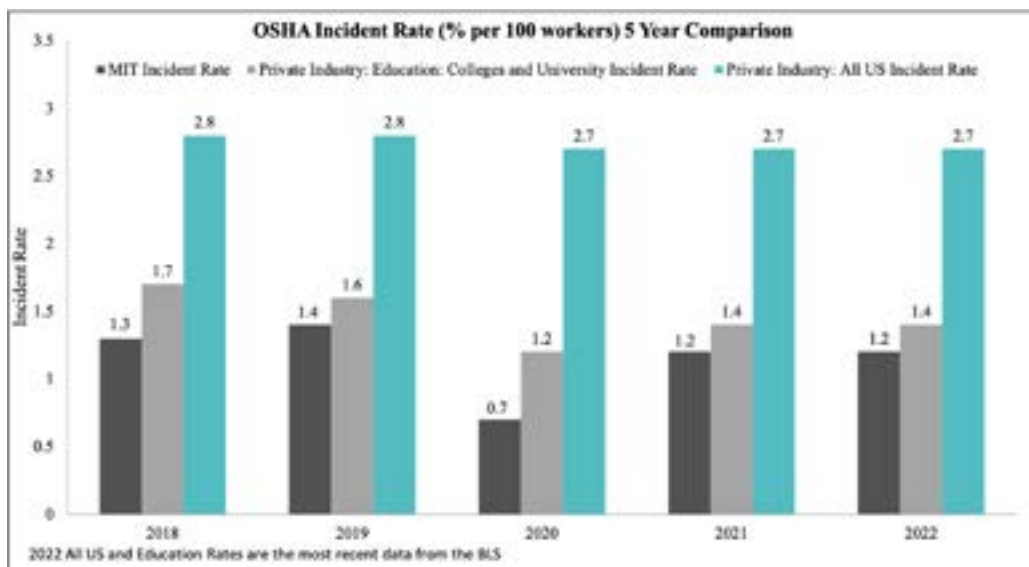
The OCSP's primary responsibility is to provide oversight of programs for general safety, fire prevention/protection, and construction safety, while complying with all relevant regulations. OCSP provides regular updates to the MIT Safety Committee on relevant projects and incident/injury data and provides support for projects and classes that involve minors on campus. The team works with the MIT pK-12 Action Group, as well as other groups, to assess health and safety issues and recommend best practices.

- **Cranes and Hoists Program:** 62 individuals are completing the MIT specific hoisting licenses program over 9 live sessions. BATES Research & Engineering Center has been approved by the state to run their own in-house program and OCSP is assisting with training.
- **Fire and Life Safety Program Review:** Worked with stakeholder groups, including DSL and DOF, to update and strengthen the program.
 - EHS chairs the Safety Systems Subcommittee of the Capital Renewal Committee in DOF.
 - Training provided for Campus Construction Program Managers on utilizing NFPA 241 plans.
 - Updates made to the MIT Hot Work Program.
- **Flammable and Combustible Materials Permits (FCMPs) and Licenses and Certificates of Inspection (COI):** Cambridge Fire Department (CFD) and the Inspectional Services Department (ISD) have instituted new application procedures for FCMPs, Licenses, and COIs. The applications require comprehensive and detailed information. EHS continues to work diligently with ISD to implement the update and streamline the process. Over the past year, OCSP has performed 238 inspections for 2022-23 applications. 28 FCMPs and 10 Licenses have been issued.

- Hot Work (HW) Program: MIT now has a Massachusetts Department of Fire Services accredited training program and has started to train new personnel and provide updates to existing staff. OCSP has worked with DOF to ensure a smooth transition for this revised training program. 28 people completed training: 22 are now certified and 6 took the course for refresher training. There are 37 active HW areas inspected and permitted on campus.
- Collaboration with MIT Emergency Management (EM): OCSP collaborates during monthly meetings with EM on emergency preparedness and other issues. Areas where the two departments worked together are listed below:
 - After reviewing recent incidents involving injuries on campus, there was a gap noted in the understanding of what actions should be taken. EHS and EM worked to develop new language on medical emergencies.
 - Supported work on a new reimbursement policy for expenses not covered by insurance for non-MIT employees.
- Collaboration with DOF: Weekly meetings are held between OCSP staff, the DOF EHS Manager, and other groups as needed. Highlights include:
 - Responding to the MIT LOTO audit findings and implementing program enhancements and training.
 - Facilitating in-person annual EHS training for DOF personnel.
 - Assisting with follow-up and review of 107 injuries to DOF employees.

Incident Investigation and Reporting

MIT's OSHA incident rate of total recordable injury and illness cases (1.2) for calendar year 2022 is shown below (Figure 1), along with the data for the previous four years. (Please note this is a lagging key risk indicator.) MIT's rate is below those of colleges and universities and well below industry.



OSHA Recordable Incident Rates of Injuries and Illnesses

Note: 2022 All US and Education Rates are the most recent data from the BLS (2021).

- Enhancements to the Supervisor Injury Report: Collaborated with EHS IT to enhance the Institute's Supervisor Injury Report. The Supervisor Report is the Institute's reporting tool for employee work-related injuries. Enhancements included:
 - Clarifying report instructions.
 - Adding text for collecting information about work schedules.
 - Launching a new auto-generated email to the injured employee.
- Incident Documentation and Review Program: Incidents are actively reviewed and investigated, providing actionable information. There were 509 incidents; 359 were injury cases and 150 were other incidents. In addition to providing data, EHS:
 - Reviewed the third-party review conducted last FY, and developed a task sheet.
 - Met with EHS Programs to review suggested changes.
 - Developed presentations on system and process enhancements.
- Implemented various enhancements to the incident reporting/investigation application. Non-Employee Incident Report: Provides information on incidents and potential safety issues that may have previously gone underreported and has filled a void for reporting non-employee/student incidents. There were 26 reports submitted.

Campus Design and Construction Support (CDCS)

CDCS provides mitigation, design review, and assistance to the DOF Project Managers (PMs) for construction and renovation projects on MIT Campus. Design work and construction were steady, and EHS staff reviewed contractor site safety and logistics plans and provided advice on unique challenges.

CDCS actively participated in design and/or construction of 107 projects, including:

- 43 lab renovation projects
- 32 projects renovating offices, classrooms, lounges, and corridors
- 12 projects upgrading and renewing infrastructure
- 20 Capital Construction projects

In addition to projects run by DOF Campus Construction, staff also provide support to MITIMCO and DLC Managed Projects. This may include staff from other Programs within EHS who assist during different parts of the design and construction phases.

- EHS supported MITIMCO construction and the subsequent move of lab and office space for an expanding research group.
- Began using the eBuilder system for DLC Managed Projects. Staff are asked for guidance from EHS Coordinators on projects that have significant EHS and/or lab scope.

- MET Warehouse Renovation: Construction is underway for the new home to the School of Architecture & Planning, Project Manus Makerspace, and the Morningside Academy for Design. Due to this major renovation, many staff from all EHS Programs have provided support. Staff have had to tackle multiple critical issues, including asbestos, lead paint, and polychlorinated biphenyl (PCBs) abatement. The complexity of this undertaking demanded meticulous attention to detail, stringent adherence to regulatory guidelines, and effective collaboration.

Radiation Protection Program (RPP)

The RPP ensures compliance with the regulations set forth by Massachusetts Department of Public Health (MDPH), Radiation Control Program (MRCP), and MIT policy.

As in previous years, RPP continues to see growth in experimental reviews involving class 3b and class 4 lasers both on campus and Lincoln Lab, researcher use of irradiator facilities, new projects at Plasma Science and Fusion Center, (PSFC), dismantling of the Alcator-C-Mod accelerator, and RF work at the Millstone/Haystack Hill complex. Table 1 below provides a summary of 2022-2023 data reflecting the uses of radiation sources at MIT and its off-campus sites which require magnetic resonance cholangiopancreatography registration and approval.

List of Registrations and Devices Monitored by RPP

Program	Registrations	Amount
Radioactive Material	96	n/a
X-ray	30	60 machines
Po-210 Alpha Ionizer	27	230 ionizers
Accelerator	10	10 machines
Class 3B/4 Laser	302	1689 lasers
Irradiator	37	2 facilities
Radiofrequency (RF)	n/a	75 systems
Superconducting Magnet	10	50 magnets

RPP by the Numbers - Managing, supporting and monitoring activities

- Reviewed 39 applications/amendments for use of radioactive materials and presented them to the Radiation Protection Committee.
- Received, monitored, and delivered approximately 132 radioactive samples. This includes auditing the security of radioactive stock material during each laboratory delivery of new radioactive material.
- Monitored approximately 218 workers for external radiation exposures on a quarterly frequency.
- Distributed and collected approximately 150 area monitoring dosimeters on a monthly/quarterly frequency. 94 in vivo whole body, thyroid, and urine burden measurements were also performed.
- Performed approximately 7,500 regulatory required operational and decommissioning radiation surveys.

- Processed over 17,700 surface, air and water samples with instrumentation that is calibrated with NIST certified standards.
- Analyzed 6 radon concentration analyses for members of the community.
- The Radiation Survey Instrument Calibration Program performed approximately 220 calibrations.
- Inventoried approximately 225 sealed radioactive sources that are required to be physically inventoried every six months. Approximately 25% of these sources also require leak testing.

The following are some non-routine accomplishments from the past year:

- Developed and presented a semester-long course titled “Radiation and Life,” course 22.015 for the Department of Nuclear Science and Engineering.
- Removed/disposed of the cesium-137 based gamma irradiator from campus in August 2023. This completed our commitment to the Cesium Irradiator Replacement Program (CIRP), allowing MIT to receive their reimbursement for the new x-ray-based system.
- Successfully received 22K curies of Cobalt-60 activity in August 2023 to re-source the Gammacell 220 irradiator.
- Successfully resourced of the Gammacell-200 irradiator in December 2022.
- Continued evaluation of the laboratory physical requirements and processing/handling procedures to manage and store FLiBe salts for future experiments with molten salts.
- Developed GPS-based data reporting for the RF surveys completed at Millstone Hill Radar (MHR). Data reported to MHR leadership allowed for the formation of a working group to develop RF radiation mitigation strategies and the development of a “mission matrix” to ensure public doses to RF radiation are kept within regulatory limits.
- Participated in the radioactivity analysis lab cross-check program with independent third-party assessments.
- Worked with Bates leadership team to assist in the establishment of the molten Sn battery project.
- Provided Reactor Radiation Protection Program radiological support for significant outage due to system repairs, requiring de-fueling of the Reactor and access to areas needed to be evaluated and that have not been measured in decades. Collected radiation dose and contamination measurement data to document in the Reactor Historical Site Assessment (HSA).
- Delivered 5 live emergency response training courses for radiological emergencies to the CFD and CPD.
- Supported an increase in demand for RPP services at Draper due to the departure of their Radiation Safety Officer.

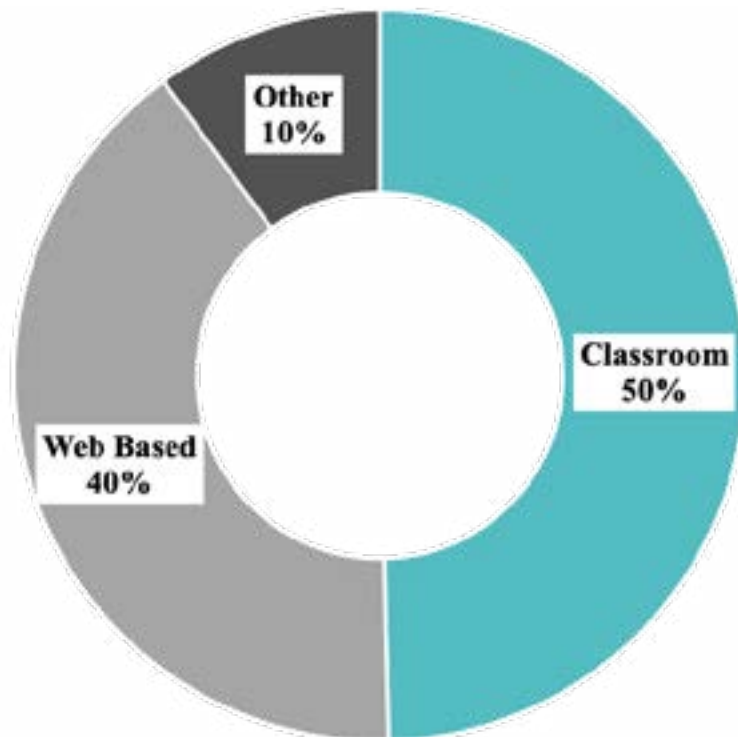
- Successfully completed the Nuclear Regulatory Commission (NRC) inspection: The NRC conducted an inspection of the activities performed under the MIT Special Nuclear Materials license (SNM-986) in November 2022. No violations were identified during the inspection.
- MRCP inspections: There were two (2) inspections conducted by the MRCP; one inspection was of the activities utilizing radioactive materials and the implementation of the associated radiation protection programs. The second inspection was of the implementation of the security system and emergency response programs associated with our irradiator facilities. The inspections covered Cambridge, Lexington (LL), and Middleton (Bates) campuses. There were no violations identified during the inspections.

EHS Integrative Programming

Together, the five EHS Programs above oversee a wide variety of initiatives, services, and programs. EHS Service Teams, whose members are both EHS staff and EHS Coordinators, also contribute to these initiatives and services. This fiscal year, the Service Team Leads began meeting on a quarterly basis to reconnect and share about various initiatives and projects, the teams are undertaking. Below are key metrics the teams oversee and highlights of their accomplishments:

- **Communication Service Team (CST):** The team continued to deliver just-in-time communication needs to support EHS programs and initiatives. This year, the Campus Safety, Health, and Environmental Management Association (CSHEMA) launched a Lab Safety Awareness campaign which was a week-long campaign to bring awareness to laboratory safety. The team developed content for the website, toolkits for DLCs, a “Safety Spotlight” where individuals could recognize individuals and/or labs that demonstrate a strong lab safety culture, and a quiz related to inspection findings.
 - The EHS website continues to be the primary resource for sharing information; there was roughly a 54% increase in average monthly users compared to the previous year. In total, there were over 175,786 page views and 83,759 visitors.
- **Emergency Preparedness and Response Team (EPRST):** Staff responded to 38 after-hour calls and 108 daytime calls.
- **Hazardous Shipping Service Team:** There were a total 945 research material shipments consisting of 890 regulated and 223 non-regulated shipments.
- **Regulated Waste Service Team:** RPP continued the management of the Regulated Medical Waste (RMW) management system with the program extending to all DLCs generating biologically contaminated waste. With the expansion of biological research in DLCs, there is an ever-increasing generation rate. EHS technicians collected and managed more than 17,336 containers of RMW. RPP also managed the sharps disposal for the MIT Flu Clinic. Additional waste pickup includes:
 - 60 requests for radioactive waste collection. RPP collected and recycled lead shielding from labs. There were two (2) low level radioactive waste shipments from campus and one (1) waste shipment from the Reactor during the year.

- 5,557 hazardous waste pickups encompassing more than 7,912 containers managed by EMP.
- **Inspection Service Team:** Level II Inspections are conducted twice per year for research lab spaces and annually for facility-type spaces with the purpose of assessing performance, correcting problems, and prioritizing areas for improvement. Calendar year 2022 had a total of 1,964 findings from 737 submitted reports. The Inspection Service Team revised the Level I Checklist as well as corresponding guidance documents provided to Coordinators and Reps. The team updated and launched the Level II inspection checklist with 15 new findings and 36 revised findings. The team facilitated EHS Level II Inspection Training.
- **Training Service Team:** The team provides oversight for all EHS training needs, assists in the development and maintenance of EHS training courses, and compiles training-related metrics as needed. In FY 2023, 34,249 learning experiences were delivered, and Figure 2 below shows the methods of delivery. “Other” in the chart below encompasses medical and signature forms. In total, 8,504 unique individuals completed an EHS training, which is a slight decrease compared to last year due to the lifting of COVID training restrictions and requirements across campus.



Delivery Methods for EHS Courses

- 2 new courses were developed and 2 existing courses were updated/revisions:
 - Hazardous Materials Shipping
 - Materials of Trade
 - Radiation Safety – Reactor
 - Hydrofluoric Acid

- The team also relaunched EHS Lunch and Learn, sessions to share information about EHS Program activities, EHS-related topics, and DLC research with the greater MIT EHS community in an informal setting. Since its relaunch in early 2023, five sessions have been held with the first sessions dedicated to an overview of the EHS-Management System and each of the Programs.
- The team has also reviewed and developed program management resources:
 - A process to address the backlog of training course pre-bookings.
 - Roster forms used to document training outside of the EHS Office.
 - Guidance on accessibility requirements for web-based courses.
- Safe and Sustainable Labs (S2L): The team has developed a comprehensive program that will meet the demands and goals of the Institute’s Climate Action Plan while continuing to deliver existing programming.
 - Human Centered Design Pilot Project: S2L Certification Program: Evaluated user information and interests in two participating labs. Respondents were interested but knew little of the program, so the team began the development of a comprehensive training and communication program.
 - Engaging the Labs: Launched a pilot project called “Engaging the Labs” and sought feedback from up to 10 participating labs about S2L.
 - Freezer Challenge 2023: 19 labs participated with an estimated savings of 339.6 kWh/day.
 - Lab Ventilation: Developed a process for requesting, reviewing, and approving hood hibernation and introduced “Shut the Sash” stickers to reduce energy use.
 - Pipette Tip Box Recycling: The program was expanded and 16,200 pounds of plastic were recycled from labs, representing ~800 collections.
 - Chemical Inventory: There were ~4,000 intradepartmental searches for needed chemicals within EHS Assistant. This will reduce chemical waste and save costs.

Recognition & Awards

MIT Excellence Awards + Collier Medal

The Tip Box Recycling Team (John R. Collins, Michael A. DeBerio, Normand J. Desrochers III, Mitchell S. Galanek, David M. Pavone, Ryan Samz, Rosario Silvestri, and Lu Zhong) were recipients of one of the highest awards for staff at the Institute for Sustaining MIT: Meeting the Needs of the Present and Future.

EHS Infinite Mile Awards

The Infinite Mile Awards are given to individuals or teams in recognition of their exceptional contributions to health, safety, and environmental stewardship at the Institute. The recipients for the 2023 awards are below.

Distinguished Service Award

- Steve Younis

Service Team Award

- Andy Kalil, Joe MacLeod, Todd Numan, and Matt Ory
- Carolyn Colonero and Jeff Goupil
- Kim Broberg, Alec Casavant, Kyle Eads, and Steve Monstur
- Pat O'Donnell and Michal Sharoni
- Suzanne Adams and Mike Dunn

Positive Attitude Award

- Kim Broberg

DLC Excellence Awards

The EHS Office recognizes DLCs for their excellent performance in EHS Training and Level II Inspection metrics annually with its EHS Excellence Awards.

2022 Recipients

- Department of Biological Engineering
- Picower Institute for Learning and Memory
- Department of Mathematics

Sustainability Awards

The following individuals and teams were recipients of an award presented by the MIT Office of Sustainability:

- Sustainability Impact Award: Safe & Sustainability Service Team
- Circular Economy Award: EHS RPP Officer, Ryan Samz, and EHS Technicians, John Collins, Michael DeBerio, Normand Desrocher and Dave Pavone received this award for their efforts with the Lab Plastics Recycling Program - Pipette Box Tip Recycling.
- Campus as a Test Bed Award: Chemistry's Undergraduate Teaching Lab (UGTL) Fume Hood Hibernation Project. This project was a collaborative partnership between Jim Doughty, EHS IHP Associate Director, the Department of Chemistry (specifically John Dolhun, UGTL Director), and the DOF's Systems Performance and Turnover Team.
- Institute for Sustainable Laboratories (I2SL) Sustainability Award: The UGTL Fume Hood Hibernation received an award at the I2SL annual conference.

Organization & Professional Development

EHS hired 7 staff members to continue to provide excellent service to the MIT community, and the Training Program Manager position was converted to a permanent position. Staff attended a total of 42 external professional development conferences and/or meetings related to professional associations as presenters or as general attendees to learn about best practices.

The following articles and/or journals were published during the past year:

- [MIT engineers develop sensors for face masks that help gauge fit](#), MIT News
- [A conformable sensory face mask for decoding biological and environmental signals](#), Nature Electronics
- [Recycling plastics from research labs](#), MIT News

MIT EHS Regulatory Compliance Calendar FY2023

July 2022

- MassDEP / EPA Quarterly Excess Emissions and Monitoring Performance Report
- MassDEP Title V Semi-Annual Compliance Certifications
- MWRA CUP Wastewater Testing & pH/Flow Report
- MWRA Main Campus Quarterly Wastewater Testing & pH/Flow Log Reports (7 locations)
- MWRA Main Campus Semiannual Wastewater Testing & pH/Flow Log Report (4 locations)

August 2022

- Accelerator Registrations renewal
- Analytical X-Ray Registration renewal
- CAB/ESCRO meeting
- LLRW Renewal
- MRCP License renewal
- MWRA CUP Wastewater Testing & pH/Flow Report
- Safety Committee Meeting

September 2022

- Bacterial Testing at MIT Pools
- CAB/ESCRO Meeting
- City of Cambridge Inspectional Services – Certificates of Occupancy Inspection
- CPHD Ice Skating Ink Certificate
- Functionality testing of accelerator and irradiator interlock/security systems
- MWRA CUP Wastewater Testing & pH/Flow Report
- MassDEP CUP UST Financial Responsibility Statement
- Radiation Protection Committee Meeting

October 2022

- MassDEP / EPA Quarterly Excess Emissions and Monitoring Performance Report
- MassDEP CUP UST: Third Party Inspection Report; Overfill Protection System Test; Line Monitoring System Test
- MWRA CUP Wastewater Testing & pH/Flow Report
- MWRA Main Campus Quarterly Wastewater Testing & pH/Flow Log Reports (7 locations)

November 2022

- ATF Explosives User Certificate
- CAB/ESCRO Meeting
- CTC Meeting
- MWRA CUP Wastewater Testing & pH/Flow Report
- MassDEP Rideshare Commuter Survey
- NMSS Reconciliation Report for SNM receipt/transfer

December 2022

- Accelerator Registration Renewal
- Analytical X-Ray Registration Renewal
- Bacterial Testing at MIT Pools
- CAB/ESCRO Meeting
- Functionality testing of accelerator and irradiator interlock/security systems
- ICEHS Meeting
- MassDEP Rideshare Submittal
- MWRA CUP Wastewater Testing & pH/Flow Report
- NRC Inspections
- Radiation Protection Committee Meeting
- Reactor Safeguards Committee Meeting
- Safety Committee Meeting
- SARA Tier II Chemical Inventory
- Site Accelerator Registration Renewal
- US EPA Westgate Monitoring Report

January 2023

- CAB/ESCRO meeting
- Human embryonic stem cell research report to MDPH
- MassDEP / EPA Quarterly Excess Emissions and Monitoring Performance Report
- MWRA Photo Processing Report
- MassDEP Title V Annual and Semi-Annual Compliance Certifications

- MWRA CUP Wastewater Testing & pH/Flow Report
- MWRA Main Campus Quarterly Wastewater Testing & pH/Flow Log Reports (7 locations)
- MWRA Main Campus Semiannual Wastewater Testing & pH/Flow Log Report (4 locations)
- MWRA CUP Oil Water Separator Report
- Review of MIT Security Plan for irradiator facilities
- Review of MOA with Cambridge Police/Fire for irradiator emergency response plans

February 2023

- Cambridge Biosafety Permit renewal
- FM Global Insurance Inspection
- LLRW Report
- MRCP Inspection of “Increased Control” Security Program
- MWRA CUP Wastewater Testing & pH/Flow Report
- OSHA 300 and 300A Log
- Report from the CAB/ESCRO to the City of Cambridge

March 2023

- Bacterial Testing at MIT Pools
- Bates RPP Audit
- CAB/ESCRO Meeting
- Cambridge Stormwater Inspection Report
- EPA Biennial Hazardous Waste Report
- EPA Greenhouse Gas Report
- Flammable Liquid Permits/Licenses Renewals
- Functionality testing of accelerator and irradiator interlock/security systems.
- Laser Inventory
- MWRA CUP Wastewater Testing & pH/Flow Report
- NRC – CY Report & Review of RRP Programs
- Radiation Protection Committee Meeting
- Safety Committee Meeting
- SARA Tier II Chemical Report

April 2023

- CAB/ESCRO meeting
- LLRW Report

- MassDEP Source Registration for Haystack Observatory (every 3 years)
- MassDEP / EPA Quarterly Excess Emissions and Monitoring Performance Report
- MWRA CUP Wastewater Testing & pH/Flow Report
- MWRA Main Campus Quarterly Wastewater Testing & pH/Flow Log Reports (7 locations)
- NRC Inspections
- RPP Program Audit

May 2023

- Audit of MIT/WIBR radiation protection programs
- CTC Meeting
- ICEHS Meeting
- MWRA CUP Wastewater Testing & pH/Flow Report
- MassDEP Source Registration/Emission Statements and Greenhouse Gas Report for Main Campus

June 2023

- Bacterial Testing at MIT Pools
- CAB/ESCRO meeting
- DOT Hazmat registration
- Functionality testing of accelerator and irradiator interlock/security systems
- MassDEP UST Compliance Certification
- NIH Office of Science Policy Report
- Radiation Protection Committee Meeting
- MWRA CUP Wastewater Testing & pH/Flow Report

Intermittent

- ATF Explosives Inspection (every 3 years; expected Jan. 2025)
- Air Permits MACT Oil-fired boiler periodic tune-up and certification (every 5 years)
- MassDCR Office of Dam Safety – Endicott House Weld Pond Dam Phase 1 Safety Inspection and Report (every 2 years: August 2023)
- MassDEP CUP UST Third Party Inspection Report (every 3 years)
- MassDEP CUP UST Compliance (Self) Certification (every 3 years: November 2024)
- MassDEP Air Operating Permit (Every 5 years)
- MDPH hESC research permit renewal (every 3 years, expected Nov. 2023)
- MRCP Inspection of Irradiator Security Program (every 2 years)
- MRCP Inspection of Broad Scope license activities (every 3 years: expected 2025)

- MWRA Main Campus Permit (every 2 years: July 2023)
- MWRA CUP Permit (every 2 years: September 2023)
- MWRA Sea Grant Low Flow / Low Pollutant Permit (every 5 years: 2026)
- NRC Special Nuclear Materials Inspection (every 5 years: expected 2027)
- NRC Special Nuclear Materials License Renewal: SNM-986 (every 10 years; expected 2027)
- RCRA Biennial Report (February 2024)

Acronyms list

ATF: Bureau of Alcohol, Tobacco, Firearms and Explosives

BMPOM: Best Management Practice Operation & Maintenance

CPHD: Cambridge Public Health Department

DCR: Massachusetts Department of Conservation and Recreation

DMR: Discharge Monitoring Report

DOT: US Department of Transportation

EPA: US Environmental Protection Agency

FM: Factual Mutual

hESC: human embryonic stem cell

ICEHS: Institute Council on Environmental, Health, & Safety

LLRW: Low Level Radioactive Waste

MACT: maximum-achievable control technology

MassDEP: Massachusetts Department of Environmental Protection

MDPH: Massachusetts Department of Public Health

MOA: Memorandum of Agreement

MRCP: Massachusetts Radiation Control Program

NIH: National Institutes of Health

NMMS: Nuclear Materials Management and Safeguards Systems

NRC: Nuclear Regulatory Commission

OSHA: Occupational Safety and Health Administration

RCRA: Resource Conservation and Recovery Act

SARA: Superfund Amendments and Reauthorization Act

SNM: Special Nuclear Material

WIBR: Whitehead Institute for Biomedical Research

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