

Environmental Programs Office and Environment, Health, and Safety Office

In FY2004, its fifth year, the Environmental Programs Office (EPO) is the senior administrative office at MIT that is responsible for contributing to the establishment of MIT's vision, commitment, and policies for environmental stewardship and for the health and safety of the MIT and larger community, working with and supporting presidential committees and councils, senior officers, and faculty and administration leaders. MIT's values for excellent environmental stewardship and health and safety performance exceed regulatory compliance and embody a strong commitment to being an excellent environmental citizen of the world. MIT's approach to excellence in environment, health, and safety (EHS) is distinguished by addressing the environment, health, and safety—as well as positive initiatives and compliance—in an integrated and comprehensive manner, while also facilitating and benefiting from interactions of environmental research and educational initiatives with EHS operational initiatives (e.g., recycling, food-waste composting, “green” or high-performance buildings, regular and regulated waste reduction, “green” procurement, ergonomics, and regulatory compliance). EPO and its EHS Office work closely with academic and research colleagues to both support their core work and to create an active and close link between MIT's EHS performance in operations (including those in research laboratories, facilities, and dormitories) and MIT's accomplishments in environmental research and teaching. EPO establishes the direction and strategy for its EHS Office, which delivers EHS services and supports and oversees day-to-day Institute-wide EHS performance. The EHS Office has five programs, organized by discipline, and seven functional areas. The programs are Environmental Management, Industrial Hygiene, Biosafety, Radiation Protection, and Safety

EPO reports to MIT's senior counsel, Jamie Lewis Keith, who is also MIT's managing director for environmental programs; EPO is directed by MIT's director for EHS programs, William Van Schalkwyk. The EHS Office is led by its director, Louis DiBerardinis, in collaboration with the director for EHS programs, and reports to EPO. The deputy directors of the EHS Office, who are credentialed experts in their technical fields, are Joseph Pinciario, deputy director for the environmental management program; Pamela Greenley, deputy director for the industrial hygiene program; Mitchell Galanek, deputy director for the campus radiation safety program; Frederick McWilliams, deputy director for the reactor radiation safety program; Gerald Fallon, deputy director for the Bates radiation safety program; Claudia Mickelson, deputy director for the biosafety program; and Peter Bochnak, deputy



From left to right: Louis DiBerardinis, director of the Environment, Health and Safety Office; Jamie Lewis Keith, senior counsel and managing director for environmental programs; William Van Schalkwyk, director for environmental health and safety programs.

director of the safety program. The deputy directors and other senior EHS Office staff who are responsible for the Office's functional areas are: Mitchell Galanek for Institute-wide EHS organization, Pamela Greenley for training, Gerald Fallon for inspections and audits, Laurie Veal for information services, David Barber for EHS emergency preparedness and response, Emily Ranken for EHS communications, and Peter Bochnak for laboratory design services. William Ryan, director of the EHS Office at Lincoln Laboratory, also has a reporting relationship to MIT's EHS Office.

MIT's EHS commitments directly affect MIT's core research and teaching missions and activities. Consequently, the EHS Office is integrally involved in helping faculty to offer learning opportunities for students and to develop safe and healthy research protocols that impact the environment as little as possible and comply with laws and regulations. Because many research and teaching activities cannot proceed without assistance from the EHS Office, EPO and the EHS Office worked in close partnership with senior faculty, academic, and research staff, the vice president for research, and the provost collaboratively to design and implement MIT's overall approach to—and to create tools to facilitate—excellent EHS performance.

MIT's values and approach to EHS performance, along with tools provided (e.g., such as policies, programs, and procedures to assist all members of the MIT community to meet EHS high standards) are embodied in the EHS Management System (EHS-MS). The EHS-MS is a sustainable model for academic research institutions, building on "best practices" of the faculty, respecting the independence of research and teaching, and employing automation to provide good information to each department, laboratory, and research center (DLC) and to the EHS Office on local activities across the Institute to support the delivery of services and oversight of EHS performance. An ad hoc subcommittee of MIT's presidential EHS council, cochaired by MIT's vice president for research and the managing director for environmental programs and comprising senior faculty of highly and moderately regulated DLCs as well as administrators, oversaw the design and endorsed all components of the EHS-MS from June 2001 through FY2004. A working committee of research staff, assistant deans, and EHS Office professionals developed options for consideration by the ad hoc subcommittee and is now championing and supporting implementation efforts across the Institute. Members of the EHS Office, the ad hoc subcommittee, and the working committee visited heads of approximately 40 highly or moderately regulated DLCs to seek one-on-one input and to garner consensus and a broad sense of ownership prior to completing the design of each component of the management system.

The foundations of MIT's EHS-MS are (1) MIT's EHS Policy (<http://web.mit.edu/environment/ehs/policy.shtml>), authored by the ad hoc subcommittee and adopted in 2001 by MIT's highest policy-making council, the Academic Council, and (2) a functional EHS organization in every DLC as well as in the EHS Office itself. The EHS-MS's components include training, inspections and audits, principal investigator and supervisor/space hazardous and regulated activities registration, emergency preparedness and response, and pollution prevention and waste minimization programs. MIT's EHS-MS also satisfies the requirements of MIT's 2001 consent decree with the US Environmental Protection Agency (EPA) and Justice Department, following

a May 1998 inspection of our campus. The EHS–MS exceeds EPA’s requirements by integrating MIT’s broad commitment to sustainability and environmental stewardship and by covering health and safety as well as the environment to comprehensively address these closely related areas. EPA recognized MIT’s exemplary commitment and approach in a letter with the announcement of our consent decree.

Highlights

In summarizing the highlights of FY2004, this report is organized by the program components and tools of MIT’s EHS–MS because the EHS Office is now operating under this system.

EHS–MS and the MIT–EPA–Justice Department Consent Decree

In FY2004, MIT completed its third year of design and implementation of the MIT EHS–MS and satisfaction of MIT’s consent decree with the US EPA and the Department of Justice. The consent decree is in effect until at least FY2006. During FY2004, MIT completed the design and began the implementation of all major program components of the EHS–MS. Implementation will continue throughout FY2005. A third party will evaluate implementation and effectiveness in FY2006.

The key participants in the implementation efforts are assistant deans, DLC heads, principal investigators (PIs), managers, EHS coordinators of more than 40 DLCs engaged in hazardous and highly or moderately regulated activities, and members of the EHS Office.

Institute-wide EHS Organization

MIT’s central and local EHS organizational structure under the EHS–MS was implemented in FY2004. The EHS Office appointed a lead contact and supporting expert team for each DLC with significant hazardous and regulated activities, the Department of Facilities, and the Division of Student Life to work in close and active partnership with the DLC–appointed EHS coordinator for each DLC and for Facilities and Student Life. Together, EHS coordinators and EHS Office lead contacts implemented the EHS–MS’s PI and supervisor/space registration process and training, inspection, and emergency preparedness and response programs in each DLC, Facilities, and Student Life, as well as completing the basic EHS *Administrative Procedures Manual*. All DLCs that use radiation, biological materials, and/or chemicals have appointed an EHS coordinator and 95 percent (all but one) have formed their DLC EHS committee to assist the DLC head in overseeing EHS performance in the DLC and to provide guidance to the EHS coordinator. Virtually all EHS representatives for labs have been appointed. The partnership between the DLC EHS coordinators (58) and the EHS Office lead contacts (19) was solidified through quarterly meetings of the entire group and smaller, focused workshops and field exercises on inspections and training. The coordinators are now participating in the preparation of additional EHS operating procedures that may affect their DLCs.

In addition to supporting MIT's EHS performance, the implementation of this organizational structure throughout the Institute has significantly improved our emergency preparedness and response program and has supported our efforts to work with the City of Cambridge and the Cambridge Local Emergency Planning Committee. In the future, we intend to export this system to the Facilities Operations Control Center to provide immediate access to appropriate site-specific personnel in the event of an emergency in any facility at the Institute.

PI/Space Registration

The EHS-MS calls for the registration of PIs and facility supervisors—and the laboratories and other facilities for which they are responsible—to signify the privilege of and to support services associated with working with hazardous and other regulated materials and activities at MIT. Registration identifies the core regulated materials and activities, as well as the potential hazards present in the space; the emergency contact for the space and a PI or facility supervisor; assigns an EHS representative; and confirms that each DLC, the Department of Facilities, and the Division of Student Life have implemented applicable EHS organization, training, and inspection/audit components of the EHS-MS. In FY2004 the registration process was completed for all of the highly and moderately regulated DLCs, Facilities, and Student Life. The supervisor and PI/space registration data will need to be updated as people and space utilization changes. This will be done by the DLC EHS coordinators with assistance from their EHS Office lead contacts.

Training

The EHS-MS training program offers web-based and live training resources and identifies the training that every person needs before working with hazardous or regulated materials (radiation, chemicals, or biologicals) and related activities. Training delivery options are flexible to accommodate each DLC's desired approach, whether live or web-based training and whether DLC or EHS Office delivery is preferred. A web-based training needs assessment tool was developed and implemented in FY2004. DLC EHS coordinators ask PIs, EHS representatives, and everyone who works with regulated or hazardous materials to register with the EHS-MS training system using the online assessment tool, which produces a customized training agenda for each person based on his or her DLC, materials, and activities. Implementation was under way in FY2004. Ultimately these records can be used with the PI and supervisor/space registration and the inspection data discussed in the next section to provide the Institute with necessary information to manage our people, spaces, and hazardous and regulated materials and conditions, and to assure minimal impacts on the environment, a safe and healthy environment, and compliance with EHS laws.

Web courses currently available are RCRA (Resource Conservation and Recovery Act) hazardous waste (chemicals) training, SPCC (Oil Spill Prevention), HAZCOM (Hazard Communication), Chemical Hygiene, Hydrofluoric Acid, and Nuclear Reactor Radiation Safety. Three web modules (RCRA, Chemical Hygiene, and Hydrofluoric Acid) have been customized as a separate course for Lincoln Lab. In FY2004, the EHS Office also

translated blood-borne pathogen training materials into Portuguese and Spanish to accommodate the large population that speaks these languages at the Institute. Web courses enable faculty, staff, and students to receive the regulatory-required training at their own pace and at a convenient time to minimize interference with their activities. The EHS Office also purchased and modified a web-based computer ergonomics course that will be available in the second quarter of FY2005. We plan to develop additional web-based courses in FY2005, with priority given to the areas of laser safety, blood-borne pathogens, EHS–MS inspections, and EHS–MS awareness. The baseline content of the web training modules is also available in video and slide formats for live training when preferred by DLCs.

Audit and Inspection Program

The EHS–MS Audit and Inspection Program was developed in FY2003 and was piloted and then implemented across the Institute in FY04. The program includes three levels of inspections and audits:

- *Level 1:* Short weekly individual lab/space safety and compliance inspections have been implemented in 100 percent of the registered spaces where hazardous waste is generated or stored. Conducted by the PI or EHS representative, they reinforce training and measure compliance; record keeping is optional but may be required if there are repeated safety or compliance issues.
- *Level 2:* DLC–wide compliance, safety, and EHS performance inspections were initiated for all lab and other spaces where potentially hazardous or regulated materials are stored and used. The DLC EHS coordinator and members of the DLC EHS Committee conduct these inspections twice annually; at least one such inspection is jointly conducted by the EHS Office lead contact with DLC personnel. Records of these inspections are required and are kept both locally (DLC) and centrally (EHS Office). This program is being phased in, with the highly regulated areas receiving the first priority.
- *Level 3:* Systemwide implementation and operation audit. This audit is conducted by MIT’s Audit Division and/or by an outside consultant approximately once every two years. Planning for conducting these audits in FY2006 as required by MIT’s consent decree is under way.

Positive EHS Initiatives and Collaborations

MIT’s approach to EHS integrates positive initiatives with compliance to reflect a holistic and high standard of stewardship. Numerous collaborative initiatives involving many departments and programs at MIT were undertaken over the past year to reduce MIT’s environmental impacts and to improve the safety and quality of life at MIT. These efforts benefit MIT, its neighbors, and the region. Going well beyond regulatory requirements, these initiatives are intended to develop sustainable ways to safeguard the environment and the health and safety of the MIT and larger community.

EPO’s managing director for environmental programs sponsors the multidepartmental Environmental Programs Task Force (EPTF), which champions recycling, food-waste

composting, and other campus initiatives. Participants on the EPTF include staff from the Office of the Executive Vice President, the EHS Office, the Department of Facilities, Procurement, the Campus Activities Complex, Copy Technology Centers, the Publishing Services Bureau, Dining Services, the Working Group on Recycling, and Residential Life, as well as students from Share a Vital Earth and Students for Global Sustainability. The Working Group Recycling Committee leads recycling efforts as a committee to the EPTF. The managing director for environmental programs and chief facilities officer cosponsor a campus green buildings and environmental goals task force. The Facilities Department's leadership is critical to the design and implementation of recycling and green building efforts. Major initiatives include creation of the EnviroForum series of networking events in collaboration with the Laboratory for Energy and the Environment; MIT's state-recognized program to recycle construction and demolition debris, including a 100 percent rate for the East parking garage and a 96 percent rate for Building 45; silver and mercury recovery programs; CRT recycling and other pollution prevention activities; recycling, with programs including special efforts on paper and commingles, yard-waste and food-waste composting, and even athletic shoes; and support to Facilities in seeking Leadership in Energy and Environmental Design certification to recognize MIT's green building efforts. To join the EPTF, contact billv@mit.edu.

The EHS Office also worked with the City of Cambridge to meet the goals of the Cambridge Climate Action Plan and in a grant application for biodiesel use in Institute vehicles. The office worked with the Department of Facilities to install solar panels on the roof of N52, the location of the EHS Office, in spring 2004. The panels have the capacity to generate 2,400 watts of electricity during full-sun conditions, offsetting some of the power consumed by EHS. The panels were part of the grant provided to MIT by the Massachusetts Technology Collaborative.



Solar panels installed on the roof of N52

See the Environmental Programs Task Force annual report at <http://web.mit.edu/environment/pdf/annualreport.pdf> for more information on these extensive Institute-wide activities.

Recycling Highlights

The EHS Office continued to work closely with the Department of Facilities in a partnership to improve waste management, reduce costs, and increase the Institute's recycling rates. Key successes this year include the staging of dedicated balers around campus to compress cardboard and an expansion of the food-waste composting program to additional locations. These efforts and others paid off, with MIT's trash

generation down by 1,093 tons, or 16%, in 2003 compared to 2002. This decrease reflects both waste reduction initiatives implemented this past year and better recycling performance. Total tonnage recycled in 2003 increased by 338 tons (a 25% increase from last year) for a total of 1,667 tons. The recycling rate for 2003 was 22.4%, compared to a rate of 16.2% in 2001. This is the third consecutive significant improvement in our recycling performance and attests to successful efforts from EHS and Facilities, as well as the support and efforts of the Working Group Recycling Committee and EPTF.

Support for EPA Charles River Initiatives

MIT provides a boat for water sampling and cleanup activity on the Charles River. The EHS Office and the Athletics Department also offer training to students interested in using the boat to pick up litter and trash in and around the river. The EHS Office continues to work closely with EPA Region I staff and graduate students to implement a Storm Water Design Contest, which provides an opportunity to raise awareness about the Charles River Basin in the surrounding community.

Faculty Research Oversight and Compliance Committees

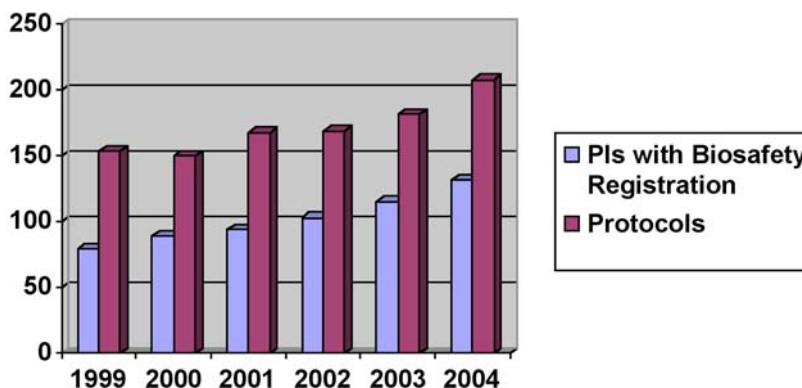
There are six faculty research oversight committees with significant EHS implications: the Committee on Use of Humans as Experimental Subjects, the Institutional Animal Care and Use Committee, the Radiation Protection Committee, the Toxic Chemical Committee, the Reactor Safeguards Committee, and the Committee on Assessment of Biohazards. These committees fulfill specific federal regulatory requirements in the areas of human subjects and research animal protections and the safe use and containment of radioactive, chemical, and biological materials at MIT. The chairs of these committees are members of the Council on EHS, which oversees MIT's EHS performance and the implementation and effectiveness of the EHS-MS. The EHS Office participates in all six faculty research oversight committees and serves as administrative support for the Radiation Protection Committee and the Committee on Assessment of Biohazards (CAB). The managing director for environmental programs, director for EHS programs, and director of the EHS Office are members of the Council on EHS.

The EHS Biosafety Program and the Lincoln Laboratory (LL) administration established an internal LL Biosafety Committee. This committee focuses on development and implementation of site-specific safety policies and procedures. All protocol reviews and approvals are the purview of the MIT CAB.

Overall, the EHS Office has direct contact with almost 50% of the faculty in the School of Science, the School of Engineering, and the interdisciplinary labs, centers, and programs that report to the vice president for research. During the past five years, the biosafety and radiation safety services have grown almost 10 times faster than the growth in faculty. This is due to the EHS Office's consistent efforts to interact with researchers to optimize services and oversight through their respective registration and research tracking programs and to the continued growth in research at MIT. For example, US Department of Health and Human Service (DHHS) funding at MIT grew by 48% during the 1999–2003 period. In the past five years, the number of PIs enrolled in the "Biological

and rDNA Research Project Registration Program” has increased by 67% and the number of research protocols reviewed by the EHS Office and approved by the committees has increased by 43%. By comparison, the number of tenured and tenure-track faculty at MIT has only increased by 5.5% and by 4.6% within the schools of Science and Engineering and the research areas.

Increase in Biological Protocols Reviewed and Principal Investigators (PIs)^a with Biosafety Registration, from Fiscal Year 1999 to Fiscal Year 2004



^a Includes principal investigators in the School of Science and the School of Engineering, and interdisciplinary centers, labs, and programs that report to the vice president for research

The Radiation Protection Program reviewed/renewed 68 applications or amendments for authorizations to use radiation-producing material under MIT’s license. The total number of authorizations currently in effect is 140, used in approximately 600 laboratories by almost 1,500 researchers. Each authorization covers one to several protocols and is required to be reviewed biennially. In FY2005, we plan to track the total number of protocols using radioactive material as a better indicator of radiation use at MIT.

Select Agent Program

The passage of the Public Health Security and Bioterrorism Preparedness and Response Act of 2002 resulted in new DHHS and US Department of Agriculture (USDA) regulations, promulgated in December of 2002. These require tighter controls on access to and the possession, use, transfer, and disposal of certain biological agents and toxins (called “select agents and toxins” in the regulation) that have been determined in regulations of the DHHS Centers for Disease Prevention and Control (CDC) and/or of the USDA Animal and Plant Health Inspector Service (APHIS) to have the potential to cause significant harm to public, animal, and/or plant health or products. This act and the new regulations have had a significant impact on a small number of MIT laboratories, including the need to register MIT as an institution, to maintain strict inventory control on certain agents and toxins, to have FBI security risk assessments done on researchers and other staff, and to have specially secured research spaces. The regulations have separate campus-wide and Lincoln-wide per PI toxin volume exemptions, and the EHS Office, with the support of a faculty-led task force, worked with Procurement to implement central purchasing through the EHS Office Biosafety

Program for all listed toxins to ensure that researchers who use these common toxins do not inadvertently exceed the volume exemptions and become subject to the regulations. All regulated agent purchases also must be made through the EHS Office's Biosafety Program deputy director or her alternate under the regulations. The EHS Office conducted several broad surveys of all laboratories potentially possessing or using these materials. We worked very closely with one faculty member to exempt his research from these regulations. This minimized the burden these regulations would have had on the researchers and saved the Institute over \$100,000 in unnecessary space renovations and security upgrades.

The Select Agent Program at Lincoln Laboratory has undergone two federal agency inspections and a DHHS Office of the Inspector General (OIG) audit this past year. Inspections were conducted by the CDC and APHIS. There were no significant findings.

Enhanced Delivery of EHS Services

In FY2004, the EHS Office focused on improving customer service in a variety of venues. One key focus was responding to email inquiries and service requests. EHS implemented an email triage process and response guidelines in FY2003 that acknowledges receipt of customer email requests received via environment@mit.edu within two days and resolves requests within two to four days. During FY2004, the EHS Office began to monitor the process, evaluate the focus of requests, and proactively manage all incoming requests via a monitored central request tracking system called Casetracker. There were approximately 900 email requests received during the year, a 50 percent increase from last year. In all cases, the customer received an automated email reply that their request was being attended to. Most customers were personally assisted by the EHS staff within two days. Turnaround time for resolving average requests was usually within two days, and more complex requests within four days.

Technology supports EHS services at MIT. Eight web-based EHS regulatory training programs are now available, twice as many as last year. Submission and review of biological protocols and radiation authorizations are now conducted online, reducing the time from submission to final approval by approximately 20 percent, minimizing excessive paper generation, and increasing the efficiency of tracking and record keeping. Occupation Safety and Health Administration (OSHA)-required injury and illness reports have been streamlined and made available online, increasing the level of compliance while reducing the burden on supervisors. The use of databases to document and perform trend analyses has been enhanced for several EHS programs, including the routine inspections of food preparation areas; the validation of autoclave effectiveness; and the tracking of the results of annual (Cambridge Building Inspectional Services) and triannual (Factory Mutual Insurance Co.) building inspections to ensure facilities are in full compliance with life safety and fire codes. The hazardous waste online request service has been expanded from chemicals to include radioactive waste.

Construction Safety Program

This is the second full year of the EHS Office's collaborative effort with Facilities to provide EHS expertise to new construction and renovation projects. The objectives of the program are to assure that EHS requirements are addressed for new construction and renovations, to protect the MIT community during construction and renovation activities on campus, and to strengthen MIT's relationship with Cambridge authorities responsible for regulating these activities. This program involves an initial review of design and construction plans; close communication with Facilities project managers, contractors, and City of Cambridge Fire Department and Inspectional Services; and ongoing inspections of the construction sites. The advantages of the program include fewer regulatory inspections, fewer time delays, and cost savings. During FY2004, nine major projects and 442 renovations were reviewed. One new building (Stata Center) and two major renovations (Dreyfus Chemistry Building and Vassar Streetscape East) were brought online. In FY2004, we initiated a "Lessons Learned" review for major projects to help minimize adverse effects on future projects.

Communications, Outreach, and Awareness

In FY2003 and FY2004, EPO and the EHS Office implemented an extensive program to engage and communicate with both the MIT community and the larger community about MIT's environmental programs and activities, educational and research efforts, and the EHS-MS. EPO and the EHS Office partnered with the Laboratory for Energy and the Environment and other academic departments conducting research and offering courses in environmental issues to increase awareness of MIT's EHS initiatives in all sectors. The cornerstone outcome of this effort is an environmental website that serves as the portal or hub through which prospective students, alumni, current students, faculty, and staff can obtain information about everything environmental at MIT, including academic and research programs, EHS-positive initiatives, and EHS services and compliance assistance. The website went live in October 2002. A full-scale navigation redesign of the website was completed in FY2004 to make it easier to access information and to more effectively communicate standards to the MIT community. After initial efforts to promote the website, MIT received about 9,000 hits per month in FY2004, a 50 percent increase from last year, with the vast majority being MIT users.

In addition, the EHS Office publishes a quarterly newsletter, *EHS News & Views*, disseminated to over 1,800 people including principal investigators and DLC staff. In addition, EHS sends monthly updates to the EHS coordinators in DLCs. The EHS staff conducted a seminar during the 2003 Independent Activities Period to promote and increase understanding of MIT's EHS-MS.

EHS Office staff delivered eight presentations at professional society meetings such as Campus Safety, the Health and Environmental Management Association, the American Industrial Hygiene Association, the College and University Environmental Management Conference, the Academy of Certified Hazardous Materials Managers Conference, the Northeast Region of the National Environmental Health Association, the Campus Consortium for Environmental Excellence, and the 14th World Conference on Disaster

Management. Additionally, in collaboration with the Laboratory for Energy and the Environment, EPO prepared and presented a paper at the Environmental Management and Sustainability for Universities Conference.

Supplemental Environmental Projects¹

As part of MIT's commitment under its June 2001 consent decree, it is undertaking three creative Supplemental Environmental Projects (SEPs). MIT's Environmental Virtual Campus SEP, a compliance and good practices web-based tool for colleges and universities, won the 2003 Environmental Business Council of New England's Award for Outstanding Environmental Education and was extremely successful in its first year of operation. Over the past 12 months, the site received more than 1 million visits from tens of thousands of visitors around the world. In all, the site has hosted visits from more than 100 countries.

The Urban Focus Collaboration on Education SEP continued successfully over the past year. One participating teacher and graduate student met throughout the year to lead the FY2004 collaboration. Activities by Cambridge public school students included an after-school club, the Chem-Busters, watershed sampling activities, and a community event focusing on student environmental after-school club activities and environmental research at MIT on June 9, 2004, at the Peabody Middle School in Cambridge.

The third SEP, the Stata Center Biofiltration Stormwater System, was completed and became operational. This innovative system detains and treats storm water using vegetation to decrease, delay, and improve the quality of runoff to the Charles River. Water from the system is also pumped back through the building (using a solar energy-powered pump) and is used to flush the toilets in the building, further saving on water usage.

Hazardous Waste Metrics

The EHS Office's Environmental Management Program established a data-tracking program for the hazardous waste collection, transportation, and disposal service that allows for the establishment and monitoring of detailed metrics for this service. For example, the program collects and stores in a database information related to the types and amounts of waste collected, the generator of the waste, and the disposal of that waste. This information allows the EHS Office to gain insight into the generator characteristics, information that may allow pollution prevention activities to be implemented. Better knowledge of the hazardous waste program may also allow cost-saving opportunities to be identified. In FY2005, the EHS Office will work with Professor Jeffrey Steinfeld and his graduate students to undertake a program funded by an EPA

¹ The projects addressed in this section were undertaken by MIT in conjunction with the settlement of an enforcement brought by the US Environmental Protection Agency and the US Department of Justice for alleged violations of the Federal Clean Water Act, the Clean Air Act, and the Resource Conservation and Recovery Act; there is no allegation of any actual harm to the environment.

grant that Professor Steinfeld secured in FY2004 to identify less toxic alternatives to frequently purchased chemicals at MIT.

Ergonomics

The EHS Office has collaborated with MIT programs and departments to reduce repetitive stress and other injuries and lost workdays. The intended outcomes are an increase in productivity, a reduction in medical and disability costs, and, most importantly, reduced pain and suffering by members of the MIT community. The Ergonomics Committee, an ad hoc collaborative effort involving the Libraries, Information Services and Technology, Human Resources, Facilities, Lincoln Laboratory, the Whitehead Institute, and MIT Medical, as well as a student representative, and led by the EHS Office, introduced a web-based “stretch break” program, which encourages computer users to take breaks and guides them through a series of stretches. More than 600 computer users at MIT downloaded the program. A web-based training program has been selected and piloted with plans to roll out in fall 2004.

DLCs with a high incidence of repetitive strain injuries collaborated with the EHS Office and Ergonomics Committee to develop programs to identify, correct, and prevent future injury. These involved detailed surveys and reviews of specific work sites and activities, the development of materials including PowerPoint presentations and videos, and the implementation of training.

Security and Emergency Preparedness Programs

EPO's director for EHS programs is one of three leaders (with the MIT police chief and director of operations for the Department of Facilities) of MIT's multidepartmental emergency preparation and response function. In FY2004, the Safety and Security Operations Team continued to develop emergency sheltering plans for the MIT community. Threat assessments of and enhanced emergency prevention and response plans for higher-risk facilities were completed. MIT's emergency website (<http://mit.edu/emergency/>) was enhanced and is now updated with current news and preparedness information for the MIT community. MIT participated in a major mock drill with the City of Cambridge and our neighbor institutions. EHS Office staff provides support for these efforts.

MIT has moved with deliberate speed to appoint emergency preparedness coordinators (EPCs) responsible for bringing Institute and DLC emergency preparedness plans up to date. To date, 140 EPCs have been named, encompassing about 50% of the 180 DLCs and about 90% of MIT building locations. All of the DLCs that are highly regulated have appointed an EPC. A small percentage of EPCs have multiple program or building assignments. The EPCs' role includes developing a building plan for evacuation and other types of preparedness, as well as continually providing training and information about the plan to faculty, staff, and students within each DLC. Both briefings and full training on preparing an emergency preparedness plan were completed in the summer of 2003, with 117 of the 140 EPCs attending. Three model templates are on the web for

use by the EPCs: (1) an emergency preparedness plan, (2) a shelter-in-place plan, and (3) a communication plan.

Support for Special Off-Campus Projects

The EHS Office provided significant support to off-campus efforts over the past year. These activities included due diligence and other support to the Senior Counsel's Office during the transfer of the genome project to MIT to create the Broad Institute; activities related to the Bates Linear Accelerator facility's decommissioning; extensive efforts in support of environmental activities for the Real Estate Office's portfolio properties; upgrading the dam on Weld Pond at Endicott House; and support related to the environmental impact statement for the Haystack Ultra-wideband Satellite Imaging Radar Upgrade Project.

Scope of EHS Office Activities

EHS Office activity metrics reflect the scope and intensity of services necessitated by both expanding research activity at MIT and a host of local, state, and federal EHS regulatory requirements that relate to this research. As MIT's research volume increased by almost 10% in FY2003, the EHS Office experienced at least a 10% or greater increase in activity. (See <http://web.mit.edu/environment/> for more details regarding EHS activities.) Many EHS activities fall into the following three major groupings:

1. Surveys (typically involving measurements) to monitor the safe use of equipment and materials: Approximately 21,000 such surveys were implemented in 2003–2004 concerning equipment and safety practices related to the use of biological and radioactive materials, chemicals, recombinant DNA technology, and infectious agents.
2. Inspections (involving detailed observations) conducted to verify the quality and compliance of EHS activity on campus and investigations initiated at the request of MIT programs and laboratories: Approximately 7,100 such inspections took place this past year, encompassing the use and storage of hazardous waste, the use of ventilation hoods, and the use of recombinant DNA technology or infectious agents.
3. Monitoring and prevention regarding a range of potential workplace hazards and exposures. This includes chemicals, asbestos, blood-borne pathogens, workplace injuries such as repetitive strain injuries, and safe practices during hot work. In FY2004, the EHS Office performed more than 3,800 lab analyses for chemical and biological materials.

Approximately 300 asbestos abatement projects were monitored and completed, a 25% decrease from FY2003 due to a reduction in renovation activities and implementation of new asbestos procedures. More than 6,000 faculty, staff, and students were trained concerning the use of biological or radiological materials, chemicals, hazardous waste, emergency response, and cutting and welding safety. The use of web-based training

more than doubled from last year. The total hazardous chemical waste disposed was 303,000 pounds compared to 340,000 pounds last year, a reduction of 11%.

Regulatory Interactions

OSHA	Two complaints were filed with OSHA. One was resolved with no citations issued. The second (at Lincoln Lab) resulted in citations and a small fine. All violations were immediately corrected.
Nuclear Regulatory Commission (NRC)	Two routine inspections of the MIT nuclear reactor were conducted by the NRC. No notices of violations were issued. One inspection was conducted on our use of special nuclear material. No violations were noted.
Federal Aviation Agency (FAA)	Inspections were conducted by a team of FAA inspectors on Department of Transportation and FAA hazardous shipping regulations. No violations were found. EHS participated in a radiation safety training seminar for FAA inspectors at Logan Airport Headquarters as part of their "Operation Hazstrike," the inspection of local universities and hospitals that package and ship radioactive and biological samples by air.
CDC, USDA, DHHS, OIG	Each of these agencies separately inspected our select agent laboratories. All inspections were satisfactory and in some cases commendations were made.
Cambridge Fire Department	Training for the Cambridge Fire Department Hazardous Materials Response Team was conducted for radiation safety, chemical and biological hazards, and air sampling techniques. Members of the EHS Office worked with the Fire Department on emergency planning procedures. Designated EHS staff were trained for confined space and high-angle rescue.
Cambridge Local Emergency Planning Committee (LEPC)	Several members of the EHS Office participated as members of the Cambridge LEPC. The Institute participated in two disaster drills with the City.

Massachusetts Department of Public Health An unannounced inspection of MIT’s broad-scope radioactive materials licensee was conducted in August 2003. No items of noncompliance were found.

The EHS Office collaborated with the Broad Institute and the Whitehead Institute to amend each radiation license to reflect the transfer of Broad Institute to MIT.

Massachusetts Department of Environmental Protection (DEP)

The EHS Office interacted with the Massachusetts DEP regarding many of MIT’s 83 Massachusetts Contingency Plan sites (urban materials contaminated sites), many of which result from the location of our campus on urban fill.

Massachusetts Water Resources Authority

The EHS Office collaborated with the Broad Institute and the Whitehead Institute to transfer the wastewater discharge permit for the Broad facility to MIT.

Jamie Lewis Keith, Managing Director for Environmental Programs and Risk Management/Senior Counsel

William Van Schalkwyk, Director, Environmental Health and Safety Programs

Lou DiBerardinis, Director, Environment, Health and Safety Office

More information about the Environmental Programs Office and the Environment, Health, and Safety Office can be found on the web at <http://web.mit.edu/environment/>.