

CASE
Safety Services Program

Annual Report
Fiscal Year

2004-2005

12/1/2005

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INTRODUCTION

This report is submitted to the President and appropriate members of the senior administration of Case Western Reserve University (CASE), as required by the Laboratory Safety Committee (LSC) Operating Guidelines. It summarizes the activities of the Safety Services branch of the Department of Occupational & Environmental Safety (DOES) at the University. Its contents cover the period from July 1, 2004 through June 30, 2005.

LICENSES/ REGISTRATIONS

Case maintains certificates of registration through:

- ◆ US EPA (Ohio EPA) RCRA- 6 sites
- ◆ The Department of Transportation (DOT)
- ◆ The Ohio EPA for Hazardous and Infectious Waste
- ◆ The United States Department of Agriculture (USDA)
- ◆ The Center for Disease Control (CDC)
- ◆ The Department of Commerce.

CERTIFICATE OF REGISTRATION	EXPIRATION DATE	PURPOSE
US DOT Research & Special Programs	Expires – 6/30/2006	Hazardous Waste Transport
OEPA Generator of Infectious Waste	Expires – 12/4/2006	Infectious Waste
EPA & OEPA RCRA Hazardous Waste Management	Expires – 12/4/2006	Hazardous Waste
USDA High Consequence Agent Program and CDC Select Agent Program	Expires – 11/18/2007	Animals/ Plants and Humans/ Bovine Spongiform Encephalopathy (Prospective)
Ohio Department of Commerce	Expires - 6/30/2006	Underground Storage Tanks

USE AND STORAGE LOCATIONS

The following facilities are registered for use and storage of chemical, biological, and etiological agents:

- Main campus of 10900 Euclid Avenue, Cleveland, OH
- University Hospitals (UH), 2065 Adelbert Road, Cleveland, OH
- University Circle Research Center II (UCRC II), 11001 Cedar Avenue, Cleveland, OH
- Wolstein Research Building, 2103 Cornell Road, Cleveland, OH
- Louis Stokes Cleveland Veterans Affairs Medical Center, 10701 Wade Park Blvd., Cleveland, OH
- MetroHealth Medical Center, 2500 MetroHealth Dr., Cleveland, OH
- Cleveland Clinic Foundation, 9500 Euclid Ave., Cleveland, OH

The following premises are registered as generators of infectious waste: DeGrace (Biology), Millis, Morley, AW Smith, Rockefeller, Bingham, Glennan, Olin, White, Wickenden, Med East (Robbins), Pathology, Nursing, Dentistry, Health Services, Biomedical Research Building (BRB) and Wolstein Research Building. The following premises are registered as generators of hazardous

waste: DOA990, Morley, Millis, University West, Cedar Service Center, Wolstein Research Building, and West Campus (formerly Mt. Sinai).

EPA/ RCRA INSPECTION

There were no EPA/ RCRA inspections of the University during the fiscal year. On June 17, 2003, the Ohio Environmental Protection Agency (OEPA) Hazardous Waste Division inspected the facilities and found no violations.

OSHA COMPLAINTS

The following OSHA complaint was administratively addressed in 2004/2005.

2/2/2005 – COMPLAINT # 308-564-160

Notice of safety and health hazards complaint: The complaint alleged Asbestos Fiber Release. This complaint was investigated with no findings or citations requiring program adjustment or special response. The matter was closed on 2/9/2005.

SAFETY SERVICES PROGRAM: RESPONSIBLE PARTIES

MANAGEMENT

Safety Services provides support for the safe use of chemical and biological agents. The Department reviews procedures, responds to incidents involving chemicals and biologicals, and assesses the laboratory infrastructure that affects safe experimentation. The Department also monitors regulatory compliance through its inspection and audit activities. Departmental audits, Laboratory Safety Committee audits and external agency audits (insurance and regulatory bodies) are used to promote compliance with Federal, State and local regulatory programs.

LABORATORY SAFETY COMMITTEE (LSC) PURPOSE

The Case Laboratory Safety Committee (LSC) serves as an advisory committee to the Department of Occupational and Environmental Safety (DOES). The LSC is comprised of faculty and staff appointed by the President to guide University programs in the safe use of chemical & biological materials. The LSC recommends policies on laboratory safety to ensure compliance with all pertinent regulatory bodies [OSHA, EPA (Federal, State, Medical Waste), DOT, ODH, FDA, CDC, & USDA].

LSC RESPONSIBILITIES

The Laboratory Safety Committee is responsible for:

- Reviewing and recommending laboratory safety programs to comply with regulatory requirements and sound risk management practices.
- Consulting with faculty on safety issues related to chemicals, pathogens, and carcinogens; and in cooperation with the University's Biological Safety Committee, Recombinant DNA.
- Assigning its members or appropriately qualified non-members to serve as advisors in specific chemical and biological safety areas.
- Amending DOES chemical & biological safety programs as required.
- Conducting audits designed to assess the effectiveness of DOES laboratory safety programs and procedures.
- Reviewing laboratory activities that may be of concern to the public.

SUBCOMMITTEES

The Laboratory Safety Committee oversees or audits four subcommittees:

- Institutional Biological Safety Committee (Recombinant DNA)
- IACUC Committee (Pathogen Safety in Animals)
- Carcinogen Use Committee (Carcinogen Safety in Animals)
- Select Agent Use Committee (Etiological/ Animal/ Plants/ Humans)

These subcommittees review chemical/biological protocols (IACUC for Carcinogens, ICARU for Biological Materials, or Animal) for safety content, as well as to ensure that specific guidelines are met.

SAFETY SERVICE OFFICE (SSOF) AND PRINCIPAL INVESTIGATORS (PIs)

Laboratory safety is a shared responsibility between the Safety Services office and Principal Investigators. The SSOF is responsible for implementing safety programs in accordance with Federal, State, and Local regulations and sound risk management principles. Principal Investigators are responsible for monitoring safety during experiments in accordance with these established programs. Laboratories are inspected annually by SSOF for compliance.

LSC MEMBERSHIP

The 2004-2005 LSC membership is listed below. The President of the University appoints the voting members to this Committee. The committee is also aided by input from ex-officio (non-voting) and visiting members (non-voting).

VOTING MEMBERS

Morris Burke, PhD. Professor Dept. of Biology Biology Bldg. Terms Expires: 9/9/2007	Yu-Chung Yang, PhD. Professor Dept. of Pharmacology HG Wood 348 Term Expires: 9/9/2007	John Durfee, DVM Asst. Professor and Director Dept. of Veterinary Research Services Animal Resource Center Term Expires: 9/9/2007
Paul Holter Engineer Dept. of CMNP Bingham Bldg. 107 Term Expires: 9/9/2007	Lawrence Sayre, PhD. Professor Dept. of Chemistry Millis Science Ctr. 414SA Term Expires: 9/9/2005	David Samols, PhD. Professor & Chairman of CASE Biosafety Committee Dept. of Biochemistry HG Wood 475 Term Expired: 9/9/2007
Morton Litt, PhD. Professor Dept. of Macromolecular Science KHS Bldg. 314 Term Expires: 9/9/2007	Clive Hamlin, PhD. Professor & Chairman Dept. of Pathology Pathology 204 Term Expires: 9/9/2007 Chairperson: 9/9/2007	David Sedwick, PhD. Professor Dept. of Medicine Director of DOES Service Building, 1 st Floor
Anna-Liisa Niemenen, PhD. Professor Dept. of Anatomy Wolstein 3404 Term Expires: 9/1/2007	Christina Hirsch, PhD. Asst. Professor Dept. of Infectious Disease BRB 401 Term Expires: 9/1/2007	

EX-OFFICIO MEMBERS

Kenneth Basch VP of Campus Planning & Operations Adelbert 325	Richard Dell Assoc. Director of Safety Services. Service Building, 1 st Floor	Marc Rubin Engineer - DOES Service Building, 1 st Floor
George Cadwallader Director of Construction Renovation & Planning Nord 310	Richard Jamieson VP of Campus Services Crawford Tower 215	Kenneth Klika, PhD. Director of Facilities Management & Case School of Arts & Sciences Crawford 718
Kimberly Volarcik Director of Case IBC/ HRP Program Research Compliance Sears Building 657	Carol Dietz Director of Facilities Management & Case School of Engineering Nord 3 rd Floor	Felice T. Porter Q/A Specialist – DOES Service Building, 1 st Floor

GUESTS

Carol Grove Director of UH Safety Dept. UH Lowman Hall 321
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SUPPORT STAFF

Shirley Mele Office Supervisor - DOES Service Building, 1 st Floor	Virginia LaGuardia Department Asst. - DOES Service Building, 1 st Floor
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During the fiscal year covered by this report, the Committee met on three occasions. Major topics considered by the LSC included:

- ◆ Infectious Animal Transport Issues
- ◆ LSC Audits for 2004-2005
- ◆ Chemical and Infectious Agent Order Compliance Process
- ◆ DOT/ IATA Issues on Campus
- ◆ BSL-3 Report
- ◆ Laboratory Infrastructure Issues
- ◆ MSDS Update/ Demonstration
- ◆ Integrated Case Management System
- ◆ Challenges for IBC's

AUDITS

The Laboratory Safety Committee conducts audits of Safety Services' activities throughout the year. Seven areas were subject to audit. These included:

- Bloodborne Pathogens
- Chemical Hygiene/ Exposure Control/ Hazard Communication Plans
- DOT/IATA shipping
- Hood Safety
- Indoor Air Quality
- Respirator Program
- Training

Major findings are summarized below.

BLOODBORNE PATHOGEN

LSC AUDIT COMMENT:

Bloodborne Pathogen training was given to 380 new hires and retraining to 390 individuals. Hepatitis B vaccination is given by Health Services, with no feedback to DOES on completed vaccination series or declinations for vaccination. It is recommended that a vaccination-status database be established.

SSOF RESPONSE:

Declinations are received at the time of Bloodborne Pathogen presentation. The remaining individuals are to be vaccinated and it is their responsibility to see that this is accomplished. The committee's recommendation will be implemented.

CHEMICAL HYGIENE/ HAZARD COMMUNICATION/ EXPOSURE CONTROL PLANS

LSC AUDIT COMMENT:

DOES monitors programs of 666 principal investigators, of which 512 have turned-in a Chemical Hygiene Plan. Random inspection of various plans on record revealed many examples of non-current plans, as well as the cases where principal investigators (PI's) needing plans have not yet complied. These include new PI's and PI's moving between CCF and Case. It is recommended that the present databases be combined and configured to produce monthly reports.

SSOF RESPONSE:

As recommended, the databases have been combined. Monthly reports will be produced. New program requirements for yearly updates instituted two years ago are maturing and compliance is more than 80%.

DOT/ IATA SHIPPING

LSC AUDIT COMMENT:

At the time of the audit (August 2005) forms retained for record-keeping were not consistent from shipment to shipment, the SOP is out-of-date, and only 4 of the 10 personnel, who signed Bills of Lading, were actually trained to ship these types of hazardous goods. The DOES will conduct up-to-date seminars to train all involved personnel, with completion expected by January 2006.

SSOF RESPONSE:

Sites involved with shipping, with DOES providing information resources, have run this program. Consistency in recordkeeping is now improving as DOES centrally assumes control of the DOT program. The Standard Operating Procedures for this program are being revised to reflect increased DOES involvement. Revision of the DOT presentation for more comprehensive use is in progress.

HOOD SAFETY

LSC AUDIT COMMENT:

The Hood Safety program was found to be well organized, with complete records. The only issue noted was that the Chemical Hood SOP needed up dating.

SSOF RESPONSE:

The Standard Operating Procedures for this program will be revised during the coming fiscal year.

INDOOR AIR QUALITY

LSC AUDIT COMMENT:

156 incidents were addressed this year up until June 2005. This program was well run, with records and equipment calibration up-to-date.

RESPIRATOR PROGRAM

LSC AUDIT COMMENT:

The audit performed in May 2005 found the management of this program to be excellent, with appropriate training and retraining. During the past year, 74 individuals have been trained and are authorized to use respirators. Some individuals have been slow taking the required physical.

TRAINING

LSC AUDIT COMMENT:

Training was given to 4444 individuals, in-class 2181, and the remainder on-line. Of 10 personnel files audited, required training or retraining in 8 separate areas showed a 23% delinquency (Laboratory Safety, Right-to-Know, Bloodborne, Regulated Chemical). Lab Safety and DOT/IATA Shipping were the areas of greatest deficiency at 30% and 80% respectively.

SSOF RESPONSE:

Training deficiencies are presently being addressed. Revision of DOT/ IATA presentations and documentation is in process and will be completed in 2005.

SUMMARY

LSC AUDIT COMMENT:

Overall, DOES oversees an extensive program covering large employee and student populations. Increased use of databases, with monthly reporting capabilities, will improve the overall efficiency of the Department.

SSOF RESPONSE:

The Safety Services Office thanks the Laboratory Safety Committee for its time and helpful findings.

DOES INTERNAL AUDITS

In addition to audits conducted by the Laboratory Safety Committee, the Department's Quality Assurance Specialist reviews all programs and records on

a periodic basis, and assists with resolving compliance issues in the Safety Services Office.

Internal audits are conducted to support program effectiveness and efficient operation. These audits have resulted in several program enhancements.

INTERNAL AUDITS

Chemical Hygiene Plans	Exposure Control Plans
Training	Chemical Hoods
Biohoods	Bloodborne Pathogens
Hazard Communication Plan	Industrial Hygiene
Indoor Air Quality	Respirators
Clearances	Regulated Chemicals
Hazardous Waste	Incidents
Website Accuracy	Inspection Reports
Research Protocols	Infectious Material Shipment
DOT Shipments	Laboratory/ Waste Facility
Select Agents	License/ Registration
Liaison Program	Physical Safety Programs
Plant Safety Programs	SOP Reviews

This year, in response to internal audit findings, Safety Services continues to improve its procedures and programs.

- Extensive review and final revision of the Laboratory Safety Manual is in progress and will be completed by October 2005.
- Notice was sent to employees whose training was more than one year overdue. Upon receiving notice of delinquency, the compliance results increased by more than 60%.
- Notice was sent to researchers that had Chemical Hygiene and/ or Exposure Control Plans that were past due or non-existent. The response by researchers continues to improve due to comprehensive inspections and communication with Department Administrators.

SAFETY SERVICES OFFICE (SSOF)

STAFFING

The SSOF operates with the following staffing:

Director (1)	Associate Director (1)
Engineer (1)	Loss Prevention Specialist (1)
Specialist Positions (6)	2 nd shift Specialist (1)
Department Assistant (1)	Student (1)
Plant Safety Specialist (2)	Part time Position (1)

Safety Services continues to recruit individuals to Specialist positions to improve the Department's expertise and provide for more flexible response to emergencies and other issues. The SSOF Staff is qualified to support and maintain the Safety Services Program. Three Specialist positions joined Safety Services during the past year. Both Stephanie Kutsko and Romulo Deza have Environmental & Occupational Health backgrounds. William DePetro, Plant Safety Specialist, has a construction safety background. Also, a part time position was created for data entry filled by Patricia Pitingolo.

The Safety Services Engineer is responsible for construction and contractor safety. The Technical Specialist maintains the Departmental Homepage and databases. Safety Service operations are carefully monitored by the Quality Assurance Specialist. This individual also administers the DOES Liaison Program and the Laundry Program.

Richard Dell has successfully managed the Safety Services division of DOES for 18 years. The continued growth of the new and existing programs have impacted the university and community through his effective leadership. Richard Dell will retire at the end of September 2005. Marc Rubin has worked under the tutelage of Richard Dell for 15 years and will continue to effectively lead Safety Services upon Richard Dell's retirement.

Richard Harley has administered the Physical Safety Programs in Safety Services for 18 years. His extensive knowledge of the regulations concerning fire, ergonomics, and environmental remediation has aided in the effectiveness of the department. These programs will continue to be administered through the Safety Services division upon his retirement at the end of August 2005.

TRAINING AND PROFESSIONAL DEVELOPMENT

All Specialists receive job specific training under the auspices of experienced personnel. Specialists also attend training programs offered by outside experts that provide required certification for a number of areas covered by our programs.

Training and conferences attended in 2004-2005 included: 24 hour Basic Hazardous Materials Technician Training, Mold Prevention, Assessment, and Elimination Seminar, Asbestos Management Planner, First Responder Operations Training, Hazardous Materials Customer DOT Training Seminar, and the NASA Ventilation Seminar.

All staff members received an 8-hour RCRA Hazardous Materials Manager Refresher Certification, 8 hour National Incident Management System & IMS Practical Drills, and 16-hour Incident Command Certification. Moreover, selected staff members received training in Domestic Preparedness, and Homeland Security.

Also, five years of ASHRAE 110 Tracer Gas and ANSI-1992 Face Velocity Test results were analyzed and compiled as a presentation at the AIHA Conference Poster Session in May 2005. Mahdi Fahim, in the "Best Poster at Engineering Control" Category, received an award for this presentation.

Cross training is an important element of DOES programs that provides our responders with a broad range of capabilities for handling routine and emergency incidents. Cross training has also allowed the Radiation Safety Staff to become involved in non-radiation laboratory inspections; thus bringing a different perspective to the Safety Services program.

Training and education are central to our Departmental philosophy of developing diverse skills to respond to safety incidents and regulatory mandates. To this end, several of the SSOF Staff have received certifications in:

- NOCHPS – National Ohio Chapter Health Physics Society
- NEOAIHA – Northeastern Ohio American Industrial Hygiene Association
- NOCAWMA – Northern Ohio Chapter Air and Waste Managers Association
- ACFEI – American College of Forensic Examiners institute
- CHS – Certified Homeland Security Preparation and Response Team (Team Leader)
- NFPA – National Fire Protection Agency
- AIHA – American Industrial Hygiene Association, ASHRAE
- CHMM - Certified Hazardous Materials Manager

To encourage staff participation in these training initiatives, an internal program of setting goals for employees was established. This new program involves establishing goals and the steps required to complete the goal, obstacles and resources needed, measurable milestones based on key driver issues, and

agreed upon timetables that include periodic review of professional development plans within the context of work responsibilities.

SAFETY LIAISON PROGRAM

As part of the Safety Liaison Program, staff members visit all University buildings to increase awareness of departmental services and foster stronger relationships between staff members and the research community. This program includes quarterly visits to all buildings. Effective communication and a better understanding of issues that require attention throughout the University community is vital to the success of DOES programs.

LAUNDRY PROGRAM

To ensure that laboratory coats and uniforms are laundered regularly using the appropriate temperatures for disinfection, the Laundry Program was developed. Laboratory coats and uniforms are laundered by Merchants Towel Services, a private dry cleaning contractor. This service provides an alternative to domestic and public laundry cleaning. It is strongly recommended that researchers and their personnel use the service on a monthly basis. Currently, 80 researchers utilize the service monthly, cleaning an average of five pieces each month.

DOES EMAIL

The DOES Email hotline (does@case.edu) has become a frequently used safety resource. Since implementing the hotline, the number of inquiries and safety concerns reported from CASE personnel continues at an average of eleven emails per day. This increase in email communication has resulted in improved follow-up of issues reported.

DOES WEB SITE

The DOES home web site (<http://does.case.edu>) provides integrated web-based access to department services. Information on training and retraining classes, as well as DOES safety manuals are available on-line. The DOES web site is updated regularly. Over the past year, through this resource, DOES has provided researchers with the following new services:

- An updated template for the DOES web site
- Evacuation Plan for each CASE building
- Biological and Chemical training record look up
- An updated Biohood service request form
- Hazard Communication Online Retraining

- BSL3 Online Retraining for Select Agent use

DOES NEWSLETTER

The DOES newsletter is designed to keep the campus community informed of safety issues and concerns. It covers the latest government regulations and addendums, issues found during laboratory inspections, as well as answers to questions frequently asked by laboratory personnel. Safety Services related articles published in the newsletter included:

- Keep D.O.E.S. Informed if you Work with Select Agents
- Minors and Volunteers in the Labs
- Mercury Thermometers; Radiation News
- Closed Door Policy: Three Reasons to Keep Your Lab Door Closed
- Moving Out: Research Laboratory Relocation and Termination Procedures for Chemical Inventory
- The Danger of Wearing Contact Lenses around Hazardous Chemicals
- Putting Trash in Its Place: Some Key Reminders for Proper Laboratory Waste Disposal
- Construction Safety: A Necessary Precaution
- Shaping up Your Shipping: Following DOT Rules
- Safety Clearance for Equipment Repair
- Proper Fire Alarm Response
- Controlling Laboratory Ergonomic Risk Factors

The Newsletter is available to all campus faculty, staff, and students on-line and is distributed as a hardcopy to all principal investigators and new employees at orientation.

EMPLOYEE COMPLIANCE COMMITTEE

The Employee Compliance Committee, comprised of representatives from departments responsible for hiring laboratory personnel (Human Resources, Student Employment, Spherion Temporary Employment, Health Services, and Medical School), was formed to improve tracking of University employees for training and safety in general. Working with Human Resources (HR), the Committee assisted in drafting policies for volunteers, minors, and new hires at the university. The DOES met with Department Administrators to inform them of new or revised Safety policies concerning employees. Also inroads with Program Administrators was made ensuring that all students that were involved in Summer Programs attended training during their orientation.

The Medical, Environmental, and Training Subcommittee was formed to conduct risk assessments of campus facilities. As a result of the committee's efforts, the

New Hire Exposure Form was written and distributed to Human Resources, Student Employment, Spherion (Part time employer), and the Deans of each University division, for implementation.

ORIENTATION PROGRAM

The Orientation Program developed with Human Resources ensures that new Case employees have a general awareness of services provided by DOES. This program establishes job duty related safety-training classes that employees must attend. The goal of this program is to emphasize the importance of safety on campus from the start of employment at Case and to encourage new faculty and staff to advocate safe working practices. During the year, fifty Staff Orientation sessions were conducted for 750 new employees. Fifty-six Case faculty were contacted on an individual basis and were provided with information concerning safety.

TRAINING

A major emphasis has been placed on expanding and refining SSOF training programs. Over the past year, the SSOF has made excellent progress contacting individuals requiring new worker training and annual retraining.

Training is offered in the Laboratory Standard and a number of specific chemical standards including Formaldehyde, Methylene Chloride, Vinyl Chloride, and Benzene. This training is Internet and lecture-based using PowerPoint presentations available in the SSOF or at various campus locations.

Both initial and retraining classes are offered on a weekly basis. During the past year, the SSOF held classes in the following major areas: Laboratory Safety, Right-to-Know, Plant, Respirator, Department of Transportation (DOT), and Bloodborne Pathogen. More than 3804 individuals were trained in various safety areas over the year. Most retraining was accomplished over the Internet. More than 1845 individuals or 48% of all training was conducted online, training in Bloodborne Pathogens (BBP), Regulated Chemical, Laboratory Safety, and Respirator Safety. The SSOF also presented State Medical Waste classes for one employee, and Contractor Right-To-Know classes for 26 employees.

SPECIFIC TRAINING PROGRAMS

HAZARD COMMUNICATION TRAINING (HAZCOM)

The Hazard Communication Training, previously called Right-To-Know, addresses specific safety concerns of the target audience. The presentation materials, handouts, and tests were updated this year. The largest groups provided HAZCOM training included Housekeeping, Dental, Nursing, Grounds, ARC, Facilities, Security, and Shipping/Mailroom. A total of 104 employees in these groups were trained over the past year. Groups receiving this training may only occasionally enter research areas, but none-the-less may encounter hazardous situations or hazardous materials exposures if not properly alerted. Fifty-two Facilities personnel and 33 Grounds workers received HAZCOM training. Case's temporary worker service, Spherion, trained a total of 87 temporary employees using SSOF training documents in Laboratory Safety and Bloodborne Pathogens. A total of 118 contractor personnel were trained.

CHEMICAL SAFETY AWARENESS TRAINING

Several general awareness classes for target groups such as the Animal Resource Center (ARC) and Housekeeping were conducted. These groups may enter specialized laboratories on a daily basis and thus require specifically tailored safety training.

LABORATORY SAFETY TRAINING

Laboratory Standard Classes were given to 1754 employees. Several specialized Laboratory Safety classes for specific target groups included presentations for 142 medical and dental students, Macromolecular Science and Chemical Engineering personnel, and the NYSP, SPUR, SURP, Upward Bound, and Equinox Summer Programs (65 students).

BLOODBORNE PATHOGEN TRAINING (BBP)

Materials containing and/or likely to contain Bloodborne Pathogens are widely used in Case laboratories. BBP training of 1001 employees included compliance awareness and implementation of required vaccination and health monitoring programs.

BSL3 TRAINING

Extensive training and record keeping is required for Select Agents used on Case's campus. A training course was created for individuals who enter the

BSL3 facility to use these agents. Thirty-nine employees received BSL3 Safety Training.

DOT/IATA SHIPPING TRAINING

Training of personnel planning to ship materials is required every 3 years for each specific type of material. Twenty-six employees were trained in the shipping of DOT/IATA infectious substances during 2004-2005. Training in non-flammable gases, and aviation-regulated materials has also been conducted.

RESPIRATOR TRAINING

Special training sessions for Facilities Services, Animal Resource Center (ARC), and BSL3 Facility employees were conducted. 42 Plant workers, 14 BSL3 users, and 12 Laboratory workers completed their medical evaluation, were respirator trained, and then fitted for respirators. Contractors that were required to enter the BSL3 and ABSL3 facilities were trained and fit-tested prior to entry.

VEHICLE SAFETY TRAINING

Vehicle Safety Training is presented on an as needed basis. About 18 sessions covering approximately 128 employees/ students were presented.

FIRE EXTINGUISHER TRAINING

Hands-on Fire extinguisher training using a live contained fire was provided for 72 members of the Housing and Residence Life Staff.

FACILITIES SAFETY TRAINING

Training for Facilities Service personnel is conducted on a scheduled basis. Topics include:

- Slips, Trips, and Falls/ Ladder Safety
- Personal Protective Equipment
- Confined Space Entry
- Radiation Safety
- Lockout/ Tag out

- Workplace Cleanliness
- Hot Work

These sessions are scheduled so that all shifts can be accommodated. Three training sessions were developed and offered for Plant personnel every month, training an average of 70 personnel.

FACILITIES AND EQUIPMENT

CASE administration and the LSC ensure that all facilities, equipment, and personnel are available and adequate for the safe operation, storage, and disposal of hazardous material. The SSOF is also responsible for reviewing regulated safety infrastructure and inspection of all facilities and equipment, where chemical and biological materials are used.

Facilities that are available at Case for the use of hazardous materials include:

AW Smith	Bingham	BRB
Bishop	Bolwell	DeGrace
Glennan	Hanna Pavilion	HG Wood
Kent Hale Smith	Med East	Millis
Olin	Pathology	RBC
Rockefeller	Service	Wearn
White	Wickenden	UCRC II
VA Hospital	MetroHealth	CCF- Walker
Wood Research Tower (RT)	Wolstein Research Building (WRB)	

LABORATORIES

Approximately 1200 laboratories were monitored, either partially or fully, by Case safety service programs. These laboratories are located in four hospitals, the Case Quad and the Medical and Dental School facilities. All laboratories are equipped to use hazardous material and specialized equipment. Laboratories typically include chemical hoods, meters, analytical detection and measurement equipment, waste receptacles, and decontamination supplies.

SAFETY SERVICES OFFICE

Safety Service's facilities and equipment are located in the Service Building (1st Floor), Medical School (DOA990), Millis Science Center (G35) and the Wolstein Building (1103).

PROGRAM OFFICE:Service Building (1st Floor)-Program offices & Conference Room:

State-of-the-art computer hardware and software are crucial to handle the amount of data required to ensure efficient and quick access to records in the SSOF. To this end, we have purchased three laptops, as well as, two Macintosh and five PC computers. Four Palm Pilots were purchased to use when conducting inspections. The Palm Pilots facilitate reproducible inspection coverage and on-site availability of location-specific inventory storage information during the inspections. The Smart Board System augments the in-house training program, which allows our trainers to directly demonstrate the use of the on-line database and training materials and provides direct access to library services and campus maps during staff meetings and emergency responses.

Chemical Laboratory:Service Building (1st Floor):

The SSOF is located in the Service Building on the 1st Floor at 2220 Circle Drive. Safety Services operates a laboratory equipped with industrial hygiene equipment, chemical-hood sampling equipment and cylinders, mercury vacuum equipment, respirator fit-test equipment, and spill and emergency response supplies. Currently 10 chemical hoods can be ASHRAE tested using one gas cylinder. Equipment is also available for quantification of contaminants in air samples for odor responses, EPA audits, and identification of unknown chemicals.

HAZARDOUS WASTE FACILITIES:

Facilities are located in the 1st floor parking area of the CASE School of Medicine, 1st floor of the Wolstein Research Building and the ground floor of the Millis building. All facilities contain a processing area and a storage area.

MEDICAL SCHOOL WASTE FACILITY (DOA990)

This facility has a separate office and process/storage room for chemical material and disposal activities. This room has a filtered air exhaust system. It also has a chemical and walk-in hood, air monitoring equipment, and emergency response equipment.

MILLIS WASTE FACILITY

This waste facility is located on the ground floor in Millis G35. It is directly across the hall from the Fisher Scientific Chemical Stock Room. The waste facility has an office, a processing area, and a storage area. The waste storage area has shelving and flammable storage cabinets. The processing area has a walk in hood, chemical hood, and emergency response equipment. The office also has an emergency phone.

WOLSTEIN WASTE FACILITY

This facility has an office and process/ storage area for material and disposal activities. This area maintains negative pressure relative to the adjacent hallway. This room contains spill supplies and a computer. Available equipment allows access to web-based databases in the event of a chemical or biological spill. The area also contains a chemical hood, walk-in hood, and meters for environmental monitoring.

ANIMAL RESOURCE CENTERS (ARC)

Animal care facilities are located in the Med East, Bolwell and Wolstein Research buildings. Conventional animal care facilities are available in the Animal Resource Centers and are used by researchers to conduct animal studies with radioactive materials. A variety of animals (mice, rats, hamsters, rabbits, ferrets & large animals such as sheep, dogs, pigs) are housed in one facility. The Bolwell and Wolstein Facilities predominantly house mice. Contaminated items are stored in the ARC freezer until disposal. The ARC contains an ABSL-3 laboratory that is used for prion research with Select Agents and the Wolstein Building also contains an ASBL-3 facility.

INSTRUMENT CALIBRATIONS

Properly calibrated instruments are necessary for Industrial Hygiene (IH) and hood certifications. Annual factory calibrations of 35 industrial hygiene, respirator, ventilation, noise, and lighting instruments are maintained.

Instrument	Model	Serial #	Frequency	Next Due
High flow impactor pump	10-709	1298-2617	Annually	11/15/2005
Mini-Buck Calibrator	M-30	M-5648B	Annually	11/11/2005
Mercury Vapor Analyzer (Jerome)	431-X	1835	Annually	8/10/2006

PhD Ultra Atmosphere Monitor (Combustible Gas Meters)	02-30102N	10406	Annually	11/17/2004
PhD Ultra Atmosphere Monitor (CGM)	02-30102N	10389	Annually	7/6/2006
CMS-Analyzer Unit	640-5050	ARKH-0164	Annually	12/11/2005
Accuro (Hand Pump)		ARSE-FO23	Annually	Out of Service
Accuro (Automatic Pump)	2000		Annually	Out of Service
HCHO 7000 Series	7162	811647	Every 2 years	Out of Service
Airchek Sampler	224-PCXR7	523142	Annually	Out of Service
Airchek Sampler	224-PCXR7	523121	Annually	Out of Service
Airchek 2000	210-2002	00529	Annually	Out of Service
Airchek 2000	210-2002	00820	Annually	Out of Service
Airchek 2000	210-2002	00870	Annually	4/28/2006
Airchek 2000	210-2002	00503	Annually	4/28/2006
Airchek 2000	210-2002	00868	Annually	Out of Service
Pocket Pump	210-1002	07413	Annually	4/28/2006
Miran Sapphire (ASHRAE)	205B	205B-67068-357	Annually	12/9/2005
Miran Sapphire (UV Analyzer)	205B	205B-79375-398	Annually	3/28/2006
Shortridge Instrument (Velocity Meter)	ADM-870C	M04132	Annually	3/8/2005 – Out of Service
Extech (Light Meter)	407026	Q102498	Annually	4/25/2005 – Out of Service
Quest Technologies (Noise Meter)	OB-100	CDD0-10048	Annually	4/26/2006
VelociCalc Plus	8360	40110	Annually	2/22/2006
VelociCalc Plus	8360	603016	Annually	3/9/2006
FitTester 3000 Quantitative Respirator Leak Rate Analyzer		0189	Annually	1/14/2006
MultiRae Personal Multigas Monitor	PGM50-5P	095-512273	Annually	8/2005
Rotameter	MMA-25		Annually	7/17/2005
Pulse Check Pump Module	710466	G1-5713-F99	Annually	12/2004 – Out of Service
Pulse Check Pump Module	710466	G1-5712-F99	Annually	12/2004 – Out of Service
Pulse Check Pump Module	710466	G8-15922-L01	Annually	12/2004 – Out of Service
Pulse Check Pump Module	710466	G1-5709-F99	Annually	12/2004 – Out of Service
Pulse Check Pump Module	710466	G1-5710-F99	Annually	12/2004 – Out of Service
Sound Level Meter	2900	CDD010048	Annually	3/24/2006
Sound Calibrator	QC-10	QID020090	Annually	3/24/2006
Octave Band Filter	OB-100	HWD020018	Annually	3/24/2006

SAFETY SERVICES PROGRAMS

GENERAL COMMITMENTS AND SERVICES

The SSOF is meeting its commitments to conduct programs in compliance with local, state, and federal regulatory programs. Regulatory compliance areas managed include DOT and IATA for transport of goods, all EPA RCRA programs for environmental chemical releases and waste disposal, all OSHA programs for employee safety, and NFPA fire code audit, and program development. Program compliance has varying requirements at the local, state, and federal levels. Faculty responsibilities are aided by training in Chemical Hygiene and Exposure Control Plan development for their laboratories.

INSPECTIONS

Inspections are conducted annually to address chemical and biological concerns and to measure the progress and depth of compliance in the University laboratories. Each researcher is contacted at the time of inspection. Concerns and violations are summarized on the inspection report and mailed to the researcher. Researchers are asked to address and correct their safety issues by a specified date. Some issues represent repeated items from the previous year.

Non-compliance in laboratory settings is dropping significantly. Corrections in most cases were achieved due to staff perseverance with the investigators to work out reasonable methods to eliminate deficiencies.

CASE has more than 677 Principal Investigators (PIs) authorized to use chemical and biological materials in 1158 laboratories. Inspections include physical inspections, verification of training records, verification of correction of previous violations, and follow-up. Audits are more frequent if there are particular concerns in a laboratory.

Inspections were conducted at UH, Metro Health, and Veterans Administration (VA) Hospitals. Squire Valleevue Farm, a University owned property, was also inspected. These outlying sites were inspected because CASE personnel are working in these areas. The Inspection Program for Chemical Safety compliance also investigates and resolves biological safety compliance and hazards. As noted, cross training of the Radiation Safety specialists has complemented and aided the Safety Services laboratory inspection program.

Responses to the majority of inspections are received within 30 days of the inspection. Outstanding inspections are sent to the department chairperson for follow up. Repeated issues that are not addressed by the investigator or chairperson are passed on to the Deans or Provost for further action.

Building	Rooms Inspected
Bingham	92
BRB	493
DeGrace (Biology)	22
Bolwell	1
Clark	0
Dental	588
Glennan	268
Hanna Pavilion	47
Health	43
KHS	206
Wearn	76
White	180
Wickenden	144
Wood	352
UCRC II	57
MacDonald	24
Mather	0
Med East	592
MetroHeath Hospital	70
Millis	237
Morley	23
Nursing (Bolton)	288
Olin	0
Pathology	189
Rad Waste	11
RBC	52
Research Tower	90
Rockefeller	182
Sears Tower	6
Squire Valleevue Farm	2
Strosacker	0
AW Smith	230
VA Hospital	17
Lowman	4
Wolstein	547
Walker	0
Total	4502

In the table, "Rooms Inspected" includes laboratories, closets, mechanical room, offices, classrooms, dark rooms, cold rooms tissue culture facilities, and animal

rooms. All areas are inspected to ensure proper storage and maintenance as well as to document changes in use of a room.

SPECIFIC SAFETY PROGRAMS

OSHA LABORATORY PERFORMANCE STANDARD

The OSHA Laboratory Performance Standard requires compliance with a number of specific programs and procedures.

MATERIAL SAFETY DATA SHEET (MSDS) PROGRAM

The MSDS program is available through Chemwatch at the DOES Website. Communication methods were evaluated with regards to Right-to-Know issues related to construction. To this end, DOES has developed an electronic posting board on the DOES website for MSDS sheets for each construction project as required by OSHA. This fiscal year, 2182 pages of Dental School MSDSs were scanned and a database was created with alphabetized bookmarks to upload onto the Dental website. Two additional binders were made for both the Dental School and DOES.

CHEMICAL HYGIENE PLANS/ EXPOSURE CONTROL PLANS

All laboratories working with chemicals and/or Bloodborne pathogens are required to generate, educate, and make available to their personnel the contents of their Chemical Hygiene (CHP) and Exposure Control Plans (ECP). Example forms and instructions are currently on-line at the DOES website.

PREGNANT WORKER PROGRAM

Any worker who is pregnant or thinks she may be pregnant may complete a Declaration of Pregnancy Form at the DOES. Services such as monitoring of hoods, calibration of equipment, inspections of workspace, and MSDS information can be provided. Three workers completed the Declaration of Pregnancy Form this fiscal year. A total of 18 samples were taken in one project for formaldehyde, ethanol, and xylene. No exposures above the standards were observed.

REGULATED CHEMICALS

Initiation of the assessment technique for regulated chemicals consists of a questionnaire attached to a quiz for new training programs. All new employees must attend initial Regulated Chemical Training and any employee using a regulated chemical must take the annual online retrain. Also the regulated

chemical questionnaire was revised and sent to more than 1000 PIs. Of the 1000 questionnaires, 233 were returned. A follow-up questionnaire will be sent.

Acrylonitrile	1
Benzene	17
Cadmium	5
Ethylene Oxide	1
Formaldehyde	87
Inorganic Arsenic	2
Lead	6
Methyl Chloromethyl	1
Methylene Chloride	17
Total	137

A new database was designed to evaluate exposure risk and prioritize sampling for regulated chemical users based on frequency, volume, concentration, and condition of use. Findings will be used to develop sampling strategies.

Completion of a sampling plan for anatomy laboratories included 87 formaldehyde vapor samples. This plan reduces the sampling frequency to less than three sessions per semester. A total of 87 formaldehyde samples were taken and analyzed for the four anatomy laboratories and two other projects. Sampling results found a deficiency in the Anatomy laboratory ventilation system. The system was repaired and additional monitoring confirmed that the system was functioning properly. This plan is in place for the medical, dental, biology, and nursing anatomy laboratories. The results of formaldehyde sampling were summarized and distributed to the facility coordinators of the involved departments.

INDUSTRIAL HYGIENE

INDOOR AIR QUALITY (IAQ) MONITORING

The IAQ monitoring protocol ensures that concerns are addressed in a timely manner using the appropriate techniques. Air monitoring is done when necessary and an assessment is carried out through sampling and analysis. Follow-up is executed when the analyses is complete. A report is written assessing the results and given to the complainant and the immediate supervisor.

Six IAQ complaints were investigated in the Adelbert, Law School, and Sears buildings. Follow-up included assessment of questionnaires, performance monitoring, contracting for in-depth monitoring, analysis of EA Group results, and presentation of summary reports.

Of the three IAQ complaints, two were discontinued due to no response from the original complainant. One area required further action that included correction of the HVAC system resulting in IAQ improvement. All of these measures were coordinated with Plant Services and Customer Services.

ENVIRONMENTAL SAMPLING

One complaint of dust exposure was analyzed and reports were sent to the concerned parties. A total of 3 respirable dust samples were collected. No exposures above standards were observed.

ASBESTOS MONITORING

The Asbestos program was updated due to regulatory changes. The inventory of Asbestos areas was evaluated for follow up sampling and converted to a searchable electronic format. This inventory was released to Plant Services. Training of all Plant, Custodial, Security, and other administrative groups to the Awareness Level will take place upon completion of the electronic inventory and subsequent sampling.

Asbestos monitoring is addressed on a per case basis. EA Group sampled 22 asbestos projects (83 asbestos samples) and analyzed them. Reports were written assessing the results and sent to the concerned parties. For all projects positive for asbestos, a request was submitted to Customer Service or arrangements were made by DOES to have the area remediated by an approved asbestos contractor.

BIOAEROSOL MONITORING

The Semi-Annual Bioaerosol Monitoring Project was completed in October 2004 and May 2005. A new sampling strategy was developed and implemented which divided the University buildings into fall and spring sampling groups. Buildings that were sampled during the spring will be switched to fall for the coming year. Historical bioaerosol sampling results were analyzed to study changes in the patterns of bacterial and fungal growth in different seasons of the year. A total of 65 semi-annual bioaerosol samples were obtained by EA Group within 17 buildings around the campus. This strategy decreased the bioaerosol monitoring costs from \$17,000 to \$6,500 for the year. These sampling strategies and consultation with the construction teams about abatement and mold remediation have resolved ongoing mold grout problems in the Law School. A total of 16 bioaerosol samples were taken in 2 projects. For all projects positive for mold growth, a request was submitted to Customer Service or arrangements were made by DOES to have the area remediated by an approved contractor.

LEAD MONITORING

The inventory of Lead areas is presently being evaluated for follow up sampling and conversion to a searchable electronic format. This inventory was released to Plant Services. Training of all Plant, Custodial, Security, and other administrative groups to the Awareness Level will take place upon completion of the electronic inventory and subsequent sampling.

Lead monitoring is addressed on a per case basis. The DOES sampled one lead-based paint project (for a total of two lead-based paint samples). No samples contained lead above the EPA regulations, but both samples did contain lead. For all projects positive for lead-based paint above EPA regulations, a request will be submitted to Customer Service or arrangements will be made by DOES to have the area remediated by an approved contractor.

RESPIRATOR PROGRAM

The Respiratory Program was reviewed and revised to include slides, tests, and both qualitative and quantitative fit testing. This program was administered to 78 personnel, which is a gain of 2% over 2003-2004. An inventory of respiratory protection equipment was carried out including cartridges, filters, face pieces, wipes, and valves. Approximately six cartridges and four face pieces were used monthly. There are currently four Self-Contained Breathing Apparatus (SCBAs) in inventory, two are new and two will be recycled.

Implementation of PAPR use in the ARC BSL3 facility was instituted in lieu of the full-face respirator due to the length of time individuals are required to work the facility. PAPR's, though expensive, are much more comfortable than respirators and provide a higher degree of protection from inhalation hazards. ARC staff supervisors have assumed the responsibility of respirator training, arranging medical evaluations, and fit-testing personnel within the facility. No fit testing is required for PAPR use.

An assessment of Respiratory Hazards was carried out for the campus community. The assessment included employment of written methodology, assessment forms and questionnaires, employee interviews and evaluations, and exposure estimate calculations.

The Respirator Protection Plan includes:

- Physical Evaluations
- Respirator Training
- Fit-Testing

- Annual Questionnaire

HOOD CERTIFICATION PROGRAM

Following the release of the latest ANSI/ AIH Standard for laboratory ventilation, ventilation test methods and procedures for the chemical hood testing were updated. Based on this new procedure the ASHRAE test is performed on each chemical hood once every four-years and velocity testing is carried out every year to ensure mechanical operation of the hoods is not compromised. A decrease in average face velocity below 90% or an increase in average face velocity above 120% of the benchmark velocity results in additional ASHRAE follow up to assess hood performance.

As a newly developed procedure, the safety department has conducted several on site ASHRAE tests for new chemical hoods before they are purchased for new projects. This procedure has been developed to ensure that all new hoods will meet the requirements of the latest standards and guidelines of the University.

The chemical hood approval methodology was evaluated and the standard operating procedure for evaluating new hoods was implemented. Existing low flow chemical hood testing procedures were evaluated and recommended face velocity levels were adjusted from a minimum face velocity of 60 fpm to 70 fpm based on ASHRAE tests of 500 chemical hoods.

Hood testing was carried out in all laboratories that were occupied or used by CASE personnel. The response of Plant Services in repairing hoods failing the fume hood certification has been good. Each year our target will be to test 25% of the chemical hoods using ASHRAE 110 testing methods and 75% using face-velocity testing only.

During fiscal year of 2004-2005, a total of 363 hoods were tested, among which 70 hoods were tested using the ASHRAE 110 method and more than 293 hoods were tested using face velocity method. One hundred ninety eight chemical hoods passed the ventilation test, 95 passed at a restricted sash height of 15 inches. For those hoods that were tested using the ASHRAE 110 method, 51 chemical hoods passed and 19 passed at a restricted sash height of 15 inches.

BIOSAFETY CABINETS AND LAMINAR FLOW HOODS

Biosafety cabinets and Laminar Flow hoods were certified through a contracted company, Laboratory Certification Services (LCS). The laminar flow hoods are recertified at a cost of \$95/ hood and the biohoods at a cost of \$110/hood. Annually PIs are notified through inspection and department notification to re-certify their hoods. An online database on the DOES website allows the

researcher to sign up for re-certification or repair of the hoods. Last year, 158 Biosafety cabinets and Laminar Flow hoods were recertified or repaired.

CLEARANCE/ RELOCATION PROGRAM

DOES coordinates safety clearance of equipment that needs repair or belongs to researchers that are relocating or terminating a laboratory. The disinfection and decontamination process for equipment and Biosafety cabinets, chemical and biological waste disposal, and communication with professional movers and researchers is done efficiently and effectively by DOES staff to ensure safe transition of materials and equipment to the new location as well as proper maintenance of the existing location.

The implementation of the Clearance Program centralizes the process of equipment and maintenance surveys. Revision of Laboratory Relocation and Termination Procedures was completed and used for moves, departure from Case, and Safety Clearances. More than 2500 pieces of equipment were cleared and posted for relocation, repair, or disposal in 2004/ 2005. More than 108 PIs relocated or terminated laboratory space during the year.

DOT/ IATA SHIPPING PROGRAM

The SSOF facilitates and expedites the shipping of Hazardous Packages for Departments. The DOT/IATA Shipping Program was established to provide employees with instruction in the shipping of hazardous materials according to DOT, ICAO, and IATA requirements. The Department of Transportation (DOT), through regulations found in the Code of Federal Regulations (CFR) 49, The International Civil Air Organization Regulations (ICAO), International Air Transportation Association Regulations (IATA), specific carrier restrictions, and regulations specific to countries involved with international shipments, governs the shipment of regulated hazardous materials. The regulations are very precise as to how such materials must be packed, labeled and transported and, therefore required specific training reinforcement for involved employees. The University Security Plan for hazardous material shipments under HM 232 was revised. ChemTrek was maintained as the emergency responder for shipments originating at the University.

AFTER-HOURS SECURITY CHECKS

Security checks are carried out during the evenings and weekends. Special sweeps are done during orange and red alert periods. All buildings, BSL3 facilities, and irradiators are inspected to ensure that they are secured. After-Hours Security Checks of 15 buildings on the campus are conducted every

month. A total of 180 security checks were carried out during this fiscal year. Violations were documented and reported to the researcher to prevent occurrences in the future. Security compliance was generally excellent during the past year.

INCIDENT/ INQUIRY PROGRAM

The Incident/ Inquiry Program was established to ensure that all incidents and inquiries were handled in a timely manner and appropriately documented. This included all incidents involving Emergency Response, Indoor Air Quality, and other types of non-standard assignments. There were a total of 306 incidents reported.

Injury Investigation and reporting has been reestablished. Formal interviews are conducted along with follow up. Preventative measures are documented and the record is sent to the Risk Management department.

The SSOF responded to two major incidents, 107 odor complaints. There were also 44 incidents involving spills and 18 incidents involving mold/ fungus in campus buildings excluding the West Quad. The complete spectrum of incidents is listed below:

• Indoor Air Quality	2
• Odor Complaints	107
• Asbestos	15
• Mold/ Fungus	18
• Water Sampling	14
• Noise	1
• Spills	44
• Fire	4
• Injury	10
• Waste	12
• Lead	2
• Formaldehyde	3
• Gas	25
• <u>Other</u>	<u>49</u>
• TOTAL	306

FIRE IN LABORATORY – 5/23/2005 AT 9:45 PM

A fire occurred in a laboratory involving a refrigerator that held materials, which burned, emitting smoke to the room. A sprinkler head nearby was activated dumping water into the space flooding the second floor. The Cleveland Fire Department was dispatched to investigate the fire alarm. Upon arrival smoke and water were found in the hallway. The fire officers entered the building and found the refrigerator near the door on fire. The fire was put out with dry

chemical fire extinguishers. The water was removed using flood abatement equipment and discharged to the sanitary sewer. Based on further investigation after the clean up, it was determined that the cause of the fire was the failure of the refrigerator, which allowed the materials to warm and burn.

CUSTODIAL SERVICES INJURY – 5/12/2005 AT 4:45 PM

A custodial services employee was injured while placing trash in the trash compactor behind a university building. The employee was in the process of placing trash in the side compartment when a gust of wind blew the door closed, striking him on the head and causing a laceration. The employee was treated at University Hospitals. Upon further investigation it was determined that the door was unable to be secured and the electrical safety interlocks on the door were disconnected. The unit has been repaired and is in safe operating condition.

EMERGENCY RESPONSE PROGRAM

Following the 911 tragedy in 2001, the Federal government put into place a National Security Alert System that codes the level of security required on a daily basis. When the level is raised from red to orange, the DOES staff increases its on-call schedule to 24-hour status. The DOES Conference Room has been designated as the emergency headquarters should the need arise. If the DOES site is compromised, a reciprocal arrangement for housing emergency services has been established with General Electric in Nela Park.

Currently the Emergency Response Specialist is certified in Homeland Security-Level 5, Emergency Planning for Schools, and Bioterrorism for Responders. Collaboration with Cleveland Fire and Hazmat as well as Summit County Hazmat in live scenario trainings has improved communication and allowed the units to become familiar with the University campus. DOES has coordinated its response with the Risk Management Department to reduce the FM Global Insurance recommendations concerning the safety of the University. Follow up of specific safety concerns were completed and documented.

During the Vice Presidential Debate on October 5, 2004, DOES assisted Federal, State, and Local officials to ensure the emergency preparedness of the University. The Emergency Response Specialist along with several members of the DOES staff coordinated with Cleveland Fire and Hazmat, Center for Disease Control, Ohio 52nd National Guard Unit, and the United States Secret Service Liaisons for Case Western Reserve University. They assisted in inventory and removal of high hazard chemicals and gases in selected buildings. Coordinated pre and post sweeps of many campus buildings for decontamination procedures, emergency response, site survey, and air monitoring by the Secret Service were also needed. There were no incidents or injuries documented and compliance was excellent.

EMERGENCY RESPONSE PLAN

The DOES Emergency Response Plan was reviewed and revised to integrate with the Campus Incident/Emergency Management Plan. This DOES plan was distributed to University staff, Cleveland Fire Department, Cleveland Police Department, and Hospitals. With the heightened security levels of post 911 and the events that have taken place at CASE, the need for full-scale emergency response compatibility is mandatory. A committee has been assembled to plan exercises leading to an emergency scenario involving Case personnel and its City and regional partners in Police and Fire Departments, and Emergency Services. Working with Protective Services, DOES has begun to assemble a collaborative network with Cleveland Fire, Cleveland Police, University Heights Police, University Hospitals, and the County Emergency Medical Association (EMA).

RESPONSE EQUIPMENT

All emergency response vehicles and response equipment are checked and maintained regularly. One additional vehicle was purchased in 2004/2005. An action plan for maintaining proper readiness was developed using equipment as follows:

- ◆ 400-500 pairs of thin Nitrile gloves
- ◆ 35-40pairs of other glove types over 12 mils
- ◆ 70-80 Tyvek suits
- ◆ 10-15 Tyvek QC suits
- ◆ 24 pairs Tyvek polycoated booties
- ◆ 3 lbs. Mercury absorbent and kit
- ◆ 100 lbs. of various other absorbent for solvents, formaldehyde, acids, etc.
- ◆ 40-50 spill filter strips

Other forms of response equipment have been incorporated into the inventory such as tack cloth for powder clean up and mercury thermometer containment tubes. Personal Protective Equipment (PPE) has also been evaluated for adequacy and the types of materials kept on hand were augmented to increase response capabilities. Equipment on hand includes:

- ◆ North Silvershield glove liners
- ◆ Butyl, Viton, Polyvinyl Acetate (PVA), Kevlar, and Neoprene gloves
- ◆ Saranex suits
- ◆ Hazmat boots
- ◆ Drum leak kit
- ◆ Mercury Vacuum
- ◆ Spill-X Guns

BIOLOGICAL SAFETY

BSL-3 FACILITIES

In the aftermath of September 11, 2001, the Patriot Act was enacted to protect against bio-terrorism. Two federal agencies are under its auspices, the Center for Disease Control (CDC) and the US Department of Agriculture (USDA). The Departments of Health and Human Services (HHS) and the USDA have promulgated rules in the Federal Register governing facilities that possess, use, or transfer select biological agents or toxins that became effective on February 7, 2003.

SELECT AGENT PROGRAM

Currently there are two Biological Safety Level-3 (BSL-3) facilities for prion research (one for molecular and biochemical research, and one for animal research); a specifically equipped BSL-2 facility for prion research, as well as one BSL-3 facility for other potentially dangerous agents including HIV and Mycobacterium Tuberculosis. Biannual Select Agent Questionnaires were received from twelve PIs that use a select agent in a regulated quantity.

With the introduction of the variant prion (Bovine Spongiform Encephalopathy agent, BSE), a specific Biosafety Committee was formed as an oversight committee. The Responsible Official (RO) is the Vice President of Campus Planning and Operations at the University. In its infancy, the Operational Alternate Responsible Official is the Associate Director of DOES. In September 2005, however, the title and duties of the Operational Alternate Responsible Official will fall under the purview of the Assistant Biosafety Officer.

The one select agent to be used on campus, BSE, has been registered with the CDC and USDA. Thirty-seven individuals who are involved in this program underwent background checks and fingerprinting carried out by the Federal government. The BSL-3 laboratories, in which BSE will be used, are in the Institute of Pathology and the ARC (BSL-3) facilities. There are three levels of security controlling select agent access in these facilities:

1. Card swipe entry security at the entrance of the laboratory
2. A second card swipe system for the isolation laboratory
3. A third locked location for storage of BSE materials within the laboratory.

BSE material is stored only in the Pathology BSL3 Facility and only small amounts of BSE required for injection of the animals are transported to the ARC Facility when required.

SELECT AGENT COMMITTEE

The Select Agent Committee is comprised of Select Agent Users, the Case Biosafety Officer, the Operational Assistant RO from the DOES, the Director of Animal Facilities, and the ARC Veterinarian. This Committee is charged with the responsibility of maintaining regulatory compliance with regard to use, handling, and disposal of Select Agents within the University and associated facilities. This committee reviews applications, develops procedures, and guides researchers in use and disposal of Select Agents.

An initial inspection of both facilities was conducted in April 2004 and correction of the violations was completed in July 2004. The SSOF was on track for execution and approval of initial experiments for the Select Agent Samples of BSE and BASE in July 2004. Conversations with APHIS were initiated concerning clarification of program procedures. These programmatic issues were resolved, and the program was approved.

SSOF Staff designed the procedures. Required procedural support included forms for registration, forms for inventory of select agents, guidelines for provision of necessary equipment and supplies, and procedures for decontamination/ destruction and security in handling of select agents. The general BSL3 safety-training program was designed and implemented as a Powerpoint presentation and as an online training document. Manuals for both facilities were completed with final edits performed by the SSOF.

PHYSICAL SAFETY

PHYSICAL SAFETY MANUAL

The Physical Safety Manual is available online. Distribution of the manual is carried out through direct contact with investigators during inspections, publication of the DOES website, and by promotion in the DOES Newsletter. Laboratories that do not have an emphasis on chemical use can find many applicable safety recommendations in the Physical Safety Manual.

FIRE INSPECTION PROGRAM

Fire evacuation drills were conducted in all University-owned residence halls and Greek houses twice this fiscal year (once each semester). Eighteen Emergency Evacuation Plans have been updated and placed on the DOES Website.

Adelbert Hall
School of Dentistry
Dively Building

Allen Memorial Medical Library
Case Quad West/Center/East
Mather Quad

MSASS Building
Physical Education and Athletics
Thwing Center
School of Law
University Health Services
Veale Recreation Center

School of Medicine
Peter B. Lewis Building
School of Nursing
Bookstores/Barnes & Noble (Located in Thwing Center)
University West
Wolstein Building Underground

Inspections of University owned buildings, residence halls, houses, and areas that need fire extinguisher installation or recertification are documented and the proper department is notified. The building monitor reports were sent quarterly to the facility managers of each building. During the Annual Fire Extinguisher Training for the housing group, 75 students and supervisors were trained.

FACILITY INSPECTIONS

The DOES participates in the scheduled building walkthroughs each week. Under this program, each building, excluding residence halls is inspected twice a year. The DOES focuses on possible safety/ building code violations as well as life safety (means of egress) and fire protection/ prevention issues. Ninety buildings were inspected this year. Inspections were carried out on an on-call basis before execution of any maintenance procedures that could result in hazardous exposures.

The DOES in cooperation with Property Management inspects University-owned rental properties annually. The DOES inspects Underground Storage Tanks (UST) that may be found on properties owned by the University. No property assessments were completed this year. One UST on the West Quad (formerly Mt. Sinai) will be completed by October 2005 and the issue will be closed as an environmental problem. These inspections address potential code violations as well as fire/ life safety hazards and general liability issues. Recommendations for correction/ improvements are made as necessary and response is timely.

REMEDIAL SERVICES

The Physical Safety Specialist incorporates on-site problem solving in all areas of physical safety. The DOES received many calls for help in solving on-site problems such as means of egress issues, ergonomics, noise problems, and lighting problems. These issues are addressed as needed.

ERGONOMIC EVALUATIONS

Ergonomic issues are addressed as identified. There were 12 evaluations made, all relating to computer-based workstations. Once the evaluation is completed the employees are advised on implementation of good ergonomic work practices

and given information to help them understand these practices. Many times new furniture is purchased because existing arrangements do not allow good ergonomic practices.

NOISE LEVEL MONITORING

In a new attempt to identify and resolve possible noise hazards on campus, sound level monitoring is addressed on a per case basis. The DOES sampled two areas for noise level. One project exceeded OSHA's regulatory limits for noise and one did not. For the project that exceeded regulatory levels, pipe insulation was recommended to reduce the noise level to acceptable levels.

The Hearing Conservation Audiometric Testing and Training Program was formerly established this year. The services of the Cleveland Clinic and a Licensed Audiometric Specialist have been enlisted for this program. It is estimated that approximately 150 employees will be included in an annual testing program.

This full-scale noise management program includes training, managing audiometric tests for employees, PPE selection consulting and PPE use training, OSHA compliance, and provision of engineering control methods to reduce noise levels. To improve the quality of noise measurements, a new Sound-Pressure Level Meter (Quest) with noise analyzer was purchased. Standard Operating Procedures will be developed for sound level meter use during field monitoring.

LIGHTING

The Safety department, on an as needed basis, is able to conduct primary lighting measurements to evaluate adequate lighting quantity in work environments. Measurements are compared to the OSHA/ ANSI Standards. Recommendations are made to improve lighting quantity and quality. No lighting assessments were conducted this year.

PLANT SAFETY

A solid relationship, between Safety and Plant, to help accomplish safety services goals has been established. Productive monthly meetings have resulted in safe conditions for transport of biological hazards and refuse. Timely disinfection of mold and address of various other issues has resulted from this relationship. Two DOES Plant Safety Specialists meet bi-monthly with each zone and monthly with all of Plant Services. These meetings address unusual problems and individual problems and concerns. They also help identify areas in which personnel need additional training and/ or require specialized safety

equipment. Several pieces of safety equipment are distributed to plant personnel as needed. For example, a protective shoe vendor has been identified and utilized to provide significant discounts on safety shoes for Case employees. More up-to-date training materials also have been purchased.

Both Plant Safety Specialists are fully accessible to Plant personnel during all hours of the day or night. Means of communication include pagers, cellular phones, and radios. Mutual Training with the Cleveland Fire HAZMAT Unit has also enhanced knowledge of fire department procedures and protocols.

PLANT SAFETY MANUAL

A Plant Safety Manual has been compiled, published, and distributed by DOES. This manual includes safety considerations pertinent situations and topics regularly faced by plant maintenance workers. This manual will also be available on-line.

PROGRAMS

The Job Safety Checklist allows the Plant skilled tradesmen to be more efficient and safety oriented. DOES is currently developing Standard Operating Procedures for each relevant plant safety area. In this regard, formal written procedures were recently developed to cover Lockout/ Tagout and Ladder Safety.

PLANT SAFETY INFRACTIONS

Plant Safety Infractions are now documented in the incident database for such actions as lack of personal protective equipment and horseplay during task execution. Accident investigations are conducted and documented following an accident and proper reporting procedures are followed.

HOT WORK PERMITS

OSHA requires hot work permits for soldering, welding, and any type of heating operation. The DOES administers this program for Plant personnel and the Contractors. The permit is attained from the SSOF, after an inspection of the site, to check for adequacy, and a fire watch is established on the site. The permit is required to be posted near the site. The permit is issued for a certain time period, which is normally no more than one week.

The Hot Work and Hot Work Permitting Programs were reviewed and revised this year. The programs now include site and equipment inspections, along with

training. One hundred and sixty short-term permits were issued. Twenty-one long-term permits that extend over one month were issued that required weekly inspections.

CONTRACTOR OVERSIGHT

Both Plant Safety Specialists carried out on-site inspections and monitoring of contractor safety practices and programs. Contractors completed more than 181 projects with oversight by a DOES representative. Contractors utilized by the University for large projects include the Movers, Painters, Carpenters, Plumbers, Packers, Apprentices, Helpers, Drivers, Electricians, Pipe fitters, and Roofers. Case Plant personnel respond to small projects and maintenance issues. The interface between Plant, Construction Administration, Technical Assurance, and outside contractors on safety related issues has aided in the efficient, and safe conclusion of projects.

Contractor Safety Awareness training was reviewed and revised to include all types of contractors and personnel that carry out construction on Case Western Reserve University property. Two hundred seventy three contractors were trained in this program.

EXHAUST FAN MAINTENANCE

There were 28 shutdowns of the fan exhaust in Medical School, BRB, RT, and WRB. All exhaust fans were monitored by the SSOF 2nd shift Specialist to ensure safe air quality for Plant personnel before maintenance and filter replacements. This operation occurred after work hours on a quarterly basis. No regulatory exposure levels were exceeded.

CONFINED SPACE PROGRAM

The Confined Space program was reviewed and revised this year including permitting, signage, and training. Thirty-two permits for entry were issued this year.

EPA AND WASTE DISPOSAL PROGRAM

ENVIRONMENTAL RELEASES

The Northeast Ohio Regional Sewer District (NEORS) requires semi-annual reports as part of Best Management Practices (BMP) for minimization of mercury discharge from dental offices to the Cleveland sewer system to a regulatory level

of 25 parts per trillion. CASE's sewer releases were in compliance with both federal and state regulations. In the past fiscal year, the report for January through December 2004 was filed on February 2005.

Semi-annual water testing for nitrates and nitrites were performed in the dormitories on the southern half of the campus. The assessment included collection of 76 samples, summary of results, and distribution of reports to the facility coordinator for the dormitories. No regulatory exposure levels were exceeded.

Overall, waste Collection at CASE continued to increase during the 2004-2005 fiscal year. The ability of the Chemical Analytics contractor to perform de-activation of Peroxides, Picric acid, and Perchloric acid reduces the intrinsic cost of disposing of this material and represents a significant cost savings. Most importantly, reduction in hazard through on-site performance of waste handling complies with OSHA requirements.

A database assigns tracking numbers and facilitates accurate tracking of expenditures for hazardous waste disposal. The database also facilitates evaluation of cost effectiveness of waste disposal. In addition, a regular audit of all manifests is routinely carried out to ensure all manifest records are complete before the 42-day time limit impact by EPA regulations.

Approximately 826 Hazardous Waste Forms from 2000 to present were scanned into the database and organized into folders on the server. The scanned forms were then verified against the Hazardous Waste Log Book for discrepancies. Six boxes of Archived Hazardous waste forms from 1988 to present were packed and labeled for off-site storage at Andrews Storage (a division of Cintas). All Waste Manifests from 1988 to present were labeled in boxes and retained in the DOES Archive Room.

STATE MEDICAL WASTE

All Regulated Medical Waste was incinerated by the waste disposer, Stericycle (formerly BFI), through Regulated Medical Waste Treatment Disposal Shipping. This waste included dead animals, syringes, needles, and potentially infectious materials.

TREATED INFECTIOUS WASTE

Hazardous waste at Case is treated by autoclaving before landfill disposal. Autoclave Certification was first completed for disposal of biohazardous waste in November of 2003. Elements of this disposal program include ongoing Validation Testing and Quality Assurance Testing of the autoclave. These tests

involve running a test pack through the autoclave. The samples are then incubated for 24 hours, 48 hours, and one week. Growth in any of the samples indicates failure of the decontamination process. In such cases, the autoclave is taken out of service for diagnosis and repair. Records of autoclave certification are kept both in hard copy and an electronic database on the DOES Server.

Quality Assurance Testing is carried out once a month to ensure the autoclave unit is functioning properly. Validation is also carried out to verify that certified out of service units have been repaired. Validation testing is also being carried out at any time upon request of the Ohio EPA. Autoclaves that do not apply an approved testing program are not considered sterilizers under state law. All materials treated in an uncertified autoclave are still considered to be infectious materials for disposal purposes.

In the past year, Safety compliance and equipment inspections were carried out and resolved for the University's bio-hazardous waste autoclaves. All infectious waste treated in the SaniPak Autoclave was transported by Waste Management Industries (WMI) to the American Landfill. The volume of this waste is approximately 2% of the total hazardous waste generated at Case. The rest of the waste is sent out for incineration by Stericycle.

RECYCLING PROGRAM

The Recycling Program for chemical solvents was terminated in October 2001; however, recycling of a number of materials continues to be carried out successfully for materials collected from the West Quad (Mount Sinai) and the main campus Complex. Currently the following waste streams are recycled on the campus:

- Lead
- Paint
- Batteries
- Computer monitors (weigh up to 30 pounds and contains 8 pounds of lead)
- Computer
- Equipment
- Fluorescent Bulbs

Ninety-nine Bills of Lading were collected for recycled material. Environmental Recycling collected the University's Fluorescent Bulbs.

WASTE FACILITIES

Case Waste Facilities are used to segregate and prepare waste for disposal. The different waste streams include aqueous waste and dry solid waste. Reducing the volume of waste to be disposed remains a continuing aim of the waste program promoted by the SSO. As part of the Waste Minimization Program, researchers are encouraged and instructed in how to reduce the volume of waste generated in the laboratory.

WASTE DISPOSAL

Hazardous waste rooms are used as central collection points for what the EPA defines as a site. Case presently has six sites. These are located at the Cedar Avenue Service Center (CASC), DOA990 (Medical School), Millis Science Center (Formerly Morley Hall 105), The Greenhouse, University West (UCRC I), and the WRB. Case also operates 90-day waste accumulation areas that are inspected on a weekly basis. The accumulation areas are located at DOA990, Millis G35, and WRB 1103.

The hazardous waste disposer was Chemical Analytics for Hazardous Waste, PCB material, Batteries, Non-PCB Ballasts, Mercury, and RQ Solutions (Polychlorinated). The disposer for Hazardous Solid Waste such as Lead and chrome was Michigan Disposal Waste Treatment Plant. Metallic Resources was the disposer for Computer Monitors and Office Equipment, while Heritage Waste Management Services collected hazardous materials associated with moves from one on-site facility to another.

DISPOSAL SITE WASTE DISTRIBUTION

WASTE TYPE	DOA 990	MILLIS	GREEN HOUSE	NUTRI-TION	WOL-STEIN	UCRC	CASC	MISTLE-TOE	MED EAST B50
Bottles <1 gal (gal)	6495	1300		39	43	403	169		632
Bottles>1 gal (gal)	70	100		2		2	22		2
Unknowns (bottles)	240	235							1
Direct Incineration (bottles)	203	32		10	1	9			
Special (#)		950							
Cylinders (large)	2	3					1		
55-gal Drum	13	12	5						
Batteries (#)							3603		
Pails (5 gal)	34	27							
Pail (10 gal)									1
Asbestos (bags)		6							
Flammable Liquids (gal)								30	
Corrosive Liquids (gal)								4	
Non Hazardous Liquids (gal)								20	
Poisons (#)								2	

RECYCLING

WASTE TYPE	DOA 990	CASC	MILLIS	WOL-STEIN	MISTLE-TOE
Ballasts (PCB) (#)		2322			40
Ballasts (Non-PCB) (#)	367	3394			
Mercury (#)	1		244		6
Mercury Vapor (#)				1	
Lamp 4 ft (tubes)	7031	24940			
Lamp 8 ft (tubes)	645	403			
Lamp U (tubes)	686	2710			
Lamp Other (tubes)	663	424			
Lamp HID (#)	1940	976			

MANAGEMENT CENTER WASTE DISTRIBUTION

Waste Type	Arts/ Science	Engineering	Dental School	Medical School
Total Cost	\$41,746	\$64,292	\$4,238	\$471,374

SUMMARY

DEPARTMENTAL STRENGTHS

We have a staff with broad and diverse backgrounds that can address and resolve a wide range of issues faced in Chemical and Biological Safety at Case Western Reserve University. We have developed programs that meet or exceed regulatory requirements in most safety areas and proactively anticipate new safety requirements as new programs are promulgated. We also have excellent administrative support.

DEPARTMENTAL OPPORTUNITIES

Our programs continue to mature. We continue to enjoy an excellent interaction with other departments that are developing safety-related initiatives and outside agencies that are dedicated to improving the environmental quality in our facilities.

ACCOMPLISHMENTS FOR 2004-2005

Notable new accomplishments included:

- ◆ Increased emphasis on posting of waste leakage logs in laboratories
- ◆ Enhancement of safety programs concerning Plant Services.
- ◆ Revision of Infectious Substance Training materials to reflect regulatory changes.
- ◆ Implementation of new Security Plan Training for Select Agent and DOT programs.
- ◆ Implementation of test questions for documentation of security plan awareness and general awareness after each DOT/IATA training.
- ◆ Enhancement of emergency response capabilities.
- ◆ Further collaborative interaction with our partners inside the University and in our surrounding community to augment the SSOF Safety programs.
- ◆ Implementation of cross training with the Radiation Safety Group to enhance the breadth of SSOF laboratory inspection and emergency response capacities.

GOALS FOR 2005-2006

Alignment with the educational and research goals of the University through training and training development continues to be the SSOF primary goal. Educational and programmatic interaction with local emergency responders continues to increase the SSOF impact in the community. Specific efforts will address:

- ◆ Departmental reorganization to promote a smooth transition of Safety Services programs and services with the retirement of two of its veterans, Richard Dell (Associate Director) and Richard Harley (Physical Safety Specialist).
- ◆ Promotion of community benevolence through complimentary services and materials
- ◆ Increased involvement of all Safety Services team members in emergency response to keep skills and knowledge current and to provide back up during outside agency responses.
- ◆ Development of an IAQ Manual for CASE.
- ◆ Encouragement of the staff toward completion of national certification to facilitate career development and productive participation in community safety training initiatives.
- ◆ Enhancement of training materials for all SSOF programs.
- ◆ Increased emphasis on enhancement of critical chemical and biological inventory information.
- ◆ Development of Standard Operating Procedures for all Plant Safety programs.

Prepared by Felice Thornton-Porter on 9/20/2005.

APPENDIX