

**CASE WESTERN RESERVE UNIVERSITY  
DEPARTMENT OF OCCUPATIONAL &  
ENVIRONMENTAL SAFETY (DOES)  
SAFETY SERVICE OPERATIONS  
ANNUAL REPORT 2009-2010**

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## **INTRODUCTION**

This report is submitted to the President and designated members of the senior administration of Case Western Reserve University, as required by the Laboratory Safety Committee (LSC) Operating Guidelines. The report summarizes the activities of the Safety Services division of the Department of Occupational & Environmental Safety (DOES) at the University. Its contents cover the period from July 1, 2009 through June 30, 2010.

## **SUMMARY**

### **DEPARTMENTAL STRENGTHS**

The Safety Services Office (SSOF) operations requires a staff with broad and diverse backgrounds that can address and resolve a wide range of issues faced in Chemical, Biological, Construction, and Physical Safety at the University. DOES has developed programs that meet or exceed regulatory requirements in all critical safety areas and proactively anticipates new safety regulations.

### **DEPARTMENTAL OPPORTUNITIES**

Established DOES programs continually evolve to meet requirements of governmentally mandated safety initiatives. The DOES also continues to enjoy an excellent cooperative interaction with other University departments that are developing safety-related initiatives. Furthermore, DOES's relationships with outside agencies have augmented the quality of its environmental programs.

### **ACCOMPLISHMENTS FOR 2009-2010**

Notable new accomplishments included:

- Goal: DOES will continue to strive to improve both safety awareness and safety performance for the University as a whole. Success in these programs will be measured in terms of reduced numbers of accidents and violations found during safety inspections throughout the University.
  - Completed major SOP and manuals rewrites.
  - Launched inspection system for BSL3 laboratories.
  - Streamlined lab inspection process.
  - Integrated biological waste program and aligned with non hazardous waste.
- Goal: DOES provides a large number of training opportunities for University students, staff, volunteers and faculty involved in laboratory research. An effort will be made during this year to evaluate the effectiveness of these training programs through questionnaires following the training sessions, on-line presentations and examination of training effectiveness at the program level as indicated by the laboratory inspection program.
  - Conducted training evaluations for the DOES classes for the first quarter of 2010. Responses were scored from 1 to a highest score of 5 and most respondents gave our instructors scores of 4 or 5. There were a few negative comments about the DOES small classroom, class times and requirements for attending a class rather than an on-line version. Some comments on the contrast between print and background on slides have been corrected in our new Blood borne pathogen training.
  - Completed Database Training module implementation.
  - Updated online training programs.

- Entered general training data into HP Assist.
  - Began utilizing training notices through HP Assist.
- Goal: The Safety Services Office will continue its efforts to work with responding agencies like fire, police, and health departments off campus to ensure coordination of our safety efforts. Enhancement of National Incident Management Training for our Employees will support this effort. The University has enjoyed good relationships in its safety efforts with Case University Hospitals. The Case Western Reserve University Safety programs will continue their stewardship of these programs to ensure that safety efforts with our neighboring and collaborating institutions continue to thrive.
  - Conducted emergency response drill with City of Cleveland and National Guard around a Ricin laboratory incident.
  - Completed Half-day Emergency Response Tabletop Scenarios 11/2009 & 1/2010 for University Administrators.
- Updated IACUC Supplement B forms.
- Streamlined IACUC and IBC protocol review system.
- Implemented hazardous compressed gas tracking program.
- The DOES passed inspections by EPA, ODH, and APHIS.
- Renewed Select Agent Program License – 11/2009
- Commissioned and brought on line new ABSL3 for Select Agents program.
- Designed and implemented novel anesthetic gas scavenging system and performed exposure testing.
- Filled Industrial Hygiene position.
- A new Executive Director for DOES was hired (4/2010) and resigned (6/2010).
- Implemented non hazardous animal waste program.
- Rebid hazardous waste and biowaste program contractors.
- Completed OSHA 30 Hour Online Outreach Training – Staff (10)

## GOALS FOR 2010-2011

The SSOF will approach the following goals in 2010-2011.

- Complete CSHEMA benchmarking to determine how DOES measures up relative to other peer institutions on standard EHS benchmarks.
- Define strategic partner needs more clearly and look for ways to improve service.
  - Integration of Occupational Health programs across campus with DOES.
- Rebrand and rename department to Environmental Health and Safety effective 7/1/2010, define total new image along with new logo for new rebranding.
- Formalize working relationship with Facilities to improve project flow and efficiency. Implement EHS project checklist and provide input on safety features for possible University design standards.
- Complete reorganization of department by function while retaining cross training initiatives.
- Complete strategic plan for department and implement Professional Development Plans (PDP) for staff in alignment with department goals.
- Complete integration of HP ASSIST and launch web kiosk for services and training, share database with key partners to increase transparency of department and accuracy of data.
- Work with Human Resources to better share information and define training needs of new employees.
- Integrate universal CHP/ECP and implement PI training specific to the PI's needs for developing lab specific plans that integrate with universal plan.
- DOES is limited by space for conducting training activities, holding staff meetings and other University-wide safety committee meetings where everyone can equally participate and be heard. Plans are being discussed to provide additional space for training and meeting on the third floor of the Services building which would alleviate this concern.
- Implement a more effective committee structure to move initiatives forward with stakeholder input would facilitate better program development for DOES.

## LICENSES/ REGISTRATIONS

Case Western Reserve University maintains certificates of registration through:

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

REGISTRATION #	CERTIFICATE OF REGISTRATION	EXPIRATION DATE	PURPOSE
052907-551-092P	US DOT Research & Special Programs	6/30/2011	Hazardous Waste Transport
18-G-00351	OEPA Generator of Infectious Waste	12/4/2012	Infectious Waste
A20041118-0009	USDA High Consequence Agent Program and CDC Select Agent Program	2/17/2013	Animals/ Plants and Humans/ Bovine Spongiform Enchemlopathy (Prospective)
1801-0969-R00007	Ohio Department of Commerce	6/30/2011	Underground Storage Tanks

- ◆ EPA & OEPA RCRA Hazardous Waste Management - 8 sites

REGISTRATION #	LOCATION	EFFECTIVE DATE
OHD987033669	DOA 990	12/9/2006
OHD000812230	Millis G35	12/9/2006
OHR000112482	Art Studio (Greenhouse)	12/9/2006
OHG00061689	Bioenterprise (UCRC I)	12/9/2006
OHR000120147	Wolstein (WRB)	12/9/2006
OHD077757425	West Quad (Mt. Sinai)	12/9/2006
OHR000129148	Squire Valleevue & Valley Ridge Farms	12/9/2006
OHD004174660	Cedar Avenue Service Center (CASC)	12/9/2006

## **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
- Cleveland Center for Structural Biology (CCSB) Wright Fuel Cell, 1819 E. 101 St., 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
CCSB	Wolstein Research Building (WRB)	Biomedical Research Building (BRB)

The following premises are registered as generators of hazardous waste:

DOA990  
University West  
Wolstein Research Building (WRB)

Morley  
CCSB

Millis  
Cedar Avenue Service Center  
West Campus (formerly Mt. Sinai)

## **SAFETY SERVICES PROGRAM: RESPONSIBLE PARTIES**

### **MANAGEMENT**

Safety Services provides support for the safe use of chemical, biological agents, physical, and construction concerns. The Department reviews procedures, responds to incidents involving chemicals and biological materials, and assesses the laboratory infrastructure to mitigate hazards to employees. 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 Western Reserve University LSC serves as an advisory committee to the 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 advises 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.
- Conducting audits to assess the effectiveness of DOES laboratory safety programs and procedures.
- Approving DOES chemical & biological safety programs as required that are amended following audit recommendations.
- Reviewing laboratory activities that may be of concern to the public.

### **SUBCOMMITTEES**

The Laboratory Safety Committee reviews activities of five subcommittees:

- Institutional Review Board for Human Studies
- Institutional Biological Safety Committee (Recombinant DNA)
- Institute of Animal Care & Use Committee (IACUC) (Pathogen Safety in Animals)
- Carcinogen Use Committee (Carcinogen Safety in Animals)
- Select Agent Use Committee (Etiological/ Animal/ Plants/ Humans)

These subcommittees review chemical, biological and exogenous substance administration protocols for safety content, as well as to ensure that specific guidelines are met.

<b>PROTOCOLS</b>	<b>09/10</b>	<b>08/09</b>	<b>07/08</b>	<b>06/07</b>	<b>05/06</b>
Chemical Carcinogen Use in Animals – Supplement B	25	26	24	23	32
Pathogen Use in Animals – Supplement C	31	45	19	29	49

Exogenous Substance (including Biohazardous Materials and Volatile Anesthetics) Administration - Attachment H	3	25	0	0	0
TOTAL	59	96	43	52	81

## LSC MEMBERSHIP

The 2009-2010 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

Clive Hamlin, PhD. Associate Professor Dept. of Pathology Pathology 204 Term Expires: 10/1/2010 Chairperson: 10/1/2010	Thomas Gray, PhD. Asst. Professor Dept. of Chemistry Millis 418C Term Expires: 10/1/2011	David Samols, PhD. Professor & Chairman of CASEBiosafety Committee Dept. of Biochemistry HG Wood 475 Term Expires: 10/1/2010
Fady Faddoul Associate Professor AEGD Dental School 1 <sup>st</sup> Floor Term Expires: 10/1/2010	William Durfee, DVM Asst. Professor & Director Dept. of Veterinary Research Services Animal Resource Center Term Expires: 10/1/2010	Gregory Tochtrop Assistant Professor Chemistry Millis Term Expires: 10/1/2010
W. David Sedwick, PhD. Professor, Dept. of Medicine & Director of DOES Service Building, 1 <sup>st</sup> Floor Permanent member	Christina Hirsch, PhD Associate Professor Dept. of Infectious Disease BRB 1024 Term Expires: 10/1/2010	Andrea Romani, PhD. Asst. Professor Dept. of Physiology/ Biophysics Med East 547 Term Expires: 10/1/2011

Comment [DS1]: corner.

### EX-OFFICIO MEMBERS

Richard Jamieson Vice President of Plant Security Adelbert Hall 205	Carol Grove Director of UH Safety Dept. UH Lowman Hall 321	Kenneth Klika, PhD Asst. Dean & Director of Facilities Management & CASE School of Arts & Sciences Crawford 718
Marc Rubin Assistant Director & Chemical Safety Officer of DOES Safety Services Service Building 1 <sup>st</sup> Floor	Laurie Dudik Manager of Facilities & Technical Support RC Electronic Design Center Bingham 112	Kimberly Volarcik Director of Research Administration Sears Library
Felice Porter Asst. Director/Asst. Radiation Safety Officer DOES Quality Assurance Specialist Service Building 1 <sup>st</sup> Floor		

### SUPPORT STAFF

Shirley Mele Office Supervisor - DOES Service Building, 1 <sup>st</sup> Floor	Jason May Department Asst. - DOES Service Building, 1 <sup>st</sup> Floor
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During the 2009/2010 fiscal year covered by this report, the Committee met on one occasion. Major topics considered by the LSC included:

- ◆ Review of Previous Meeting Minutes
- ◆ Presentation of DOES Safety Services Annual Report
- ◆ 2009/2010 LSC Audits
- ◆ Critical Needs Assessment
- ◆ Laboratory Safety Manual Review
- ◆ Sample of Combined Chemical Hygiene & Exposure Control Plans
- ◆ Call for volunteers to join the Carcinogen Use Committee for IACUC
- ◆ Fady Faddoul now sits on Pathogen Committee
- ◆ Update of HP Assist Database
- ◆ MFL Improper Disposal of pH Waste to the Drain
- ◆ Machine Guarding Inventory complete for Engineering, Next Arts/Science
- ◆ LSC meeting will decrease from 3 times per year to 2 times per year

## **SAFETY SERVICES OFFICE (SSOF)**

### **STAFFING**

The SSOF operates with the following staffing:

Director (1)	Asst. Director/Asst. RSO/Quality Assurance Specialist (1)
Department Assistant (1)	Specialist Positions (5)
Department Administrator (1)	2 <sup>nd</sup> shift Specialist (1)
Student (1)	Construction & Plant Safety Specialist (1)
Executive Director (1)	

The new Executive Director position was filled by Robin Elliott in April 2010. Due to personal reasons, she resigned the position in June 2010.

Safety Services continues 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.

### **DOES EMAIL**

The DOES Email ([does@case.edu](mailto:does@case.edu)) has become a frequently used safety resource. Since its inception, the number of inquiries and safety concerns reported from Case Western Reserve University personnel averages 11 emails per day. This email communication has resulted in improved follow-up of issues reported.

Concerns of unethical behavior can be reported by employees to the Integrity Hotline anonymously. They may call 866-483-9367 or go to <https://www.caseintegrityhotline.com>. They are encouraged to provide the date, time, location, and any other pertinent information concerning the incident.

### **DOES WEB SITE**

The DOES home website (<https://www.case.edu/finadmin/does/>) 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. Table 3 of the Appendix illustrates updates made to the Website in 2009-2010 and Table 4 of the Appendix enumerates services provided on-line by DOES.

### **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:

- Chemical Spill Response
- Fall Preparations: Is Your Lab Ready for the Fall Semester?

- Lab Safety during Pregnancy
- Where is DOES?
- Proper Disposal of Your Empty Chemical Bottles
- Modification to the Process of Collecting Animal Carcasses
- Why Wear a Laboratory Coat?
- H1N1 Reminders—Staying Educated and Taking Necessary Precautions
- Safety Goggles and Glasses: Keeping Them Clean
- State of Ohio Waste Log Requirement Reminder
- Make Your Own Material Safety Data Sheet (MSDS)
- Biological Safety Cabinet (BSC): Certification Reminders
- “For the Want of a Nail... the Kingdom Was Lost” —Taking Care of Your Fume Hood
- Holiday Decorations: Play It Safe
- Laboratory Plastics—Creating a Sustainable Environment
- Controlling Laboratory Ergonomic Risk
- Research Laboratory Decommissioning Procedure Checklist—Reminders
- Eating Food in the Lab: An Illegal Habit
- Safe Alternatives to Ethidium Bromide
- Revisiting UCLA: What We Can Learn from Their Mistakes
- Summer Safety Reminder: Proper Attire in the Laboratory
- Fume Hood Safety: A Quick Refresher Tutorial
- Proper Chemical Labeling: The Essentials
- 12 Safety Tips for Using an Autoclave

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. The Newsletter is included on the DOES Website in digital format. The digital format helps DOES to comply with the ongoing campus green initiative and helps DOES to save money.

### **EMPLOYEE COMPLIANCE COMMITTEE**

The Employee Compliance Committee (ECC) is comprised of representatives from departments responsible for hiring laboratory personnel (Human Resources, Kelly Temporary Services, Nursing, Dental, Engineering, Arts/Sciences, Health Services, and Medical School), The Committee was formed to improve tracking of University employees to ensure that training and safety programs were comprehensively implemented for all members of the University community. Table 5 of the Appendix illustrates compliance Issues addressed by this Committee.

### **ORIENTATION PROGRAM**

The Orientation Program developed with Human Resources ensures that new University employees have a general awareness of services provided by DOES. This program establishes job exposure-related safety-training classes that employees are required to attend. The goal of this program is to emphasize the importance of safety on campus and to encourage new faculty and staff to advocate safe working practices. Weekly Staff Orientation sessions are conducted for new employees. As part of this program, the Case faculty members were contacted on an individual basis and were provided with information concerning safety.

<b>ORIENTATION</b>	<b>09/10</b>	<b>08/09</b>	<b>07/08</b>	<b>06/07</b>	<b>05/06</b>	<b>04/05</b>	<b>03/04</b>	<b>02/03</b>
New Employees	474	483	557	380	561	750	715	565
New Faculty	70	46	99	85	63	56	32	20

MONTH	NEW EMPLOYEES
7/2009	39
8/2009	61
9/2009	40
10/2009	24
11/2009	59
12/2009	19
1/2010	38
2/2010	49
3/2010	45
4/2010	40
5/2010	16
6/2010	44
TOTAL	474

## TRAINING

A major emphasis has been placed on expanding and refining SSOF training programs. Over the past year, the SSOF has made significant progress in contacting individuals requiring new worker training and annual retraining. This training is Web or lecture-based using PowerPoint, video and demonstrations at the DOES training center and various campus locations as requested by the group being trained. Both initial and retraining classes are offered on a weekly basis for most programs. Historical Training trends are illustrated in Table 6 of the Appendix.

There were several documents, manuals, and modules that were created and updated this year including:

- New Bloodborne Pathogen Online Training
- New BSL3 Select Agent Online Training
- New N95 Respirator Training (Online and In-Person)
- New H1N1 Online Training for Custodial, Protective Services, & Contractors
- Updated Safety Training modules for Custodial, Protective Services, & Contractors
- New Waste Management Training module for Bioenterprise
- Updated Select Agent Facility Procedures, Emergency Response, & Security Manuals
- New University Biological Safety Manual

## SPECIFIC TRAINING PROGRAMS

### HAZARD COMMUNICATION TRAINING (HAZCOM)

The Hazard Communication training, which includes required University employee-specific Right-To-Know training, addresses specific safety concerns of the target audiences. The largest groups provided HAZCOM training included Housekeeping, Dental, Nursing, Grounds, ARC, Facilities, Security, and Shipping/Mailroom. 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.

## 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 training specifically tailored to their work.

## LABORATORY SAFETY TRAINING

Laboratory Safety Training is given to all personnel who work in laboratories. Several specialized Laboratory Safety classes for specific target groups included medical and dental students, Macromolecular Science and Chemical Engineering personnel, and the National Youth Sports Program (NYSP), Summer Program in Undergraduate Research (SPUR), Summer Undergraduate Research Program (SURP), Upward Bound, Center for Layered Polymeric Systems (CLIPS), and Equinox Summer Programs.

The University's temporary worker service, Kelly Services, trains temporary employees using SSOF training documents in Laboratory Safety and Bloodborne Pathogens as part of this program.

## BLOODBORNE PATHOGEN TRAINING (BBP)

Materials containing and/or likely to contain Bloodborne Pathogens (HIV, Hep B) are widely used in the University laboratories. BBP training includes compliance awareness and implementation of required vaccination and health monitoring programs.

## BIOLOGICAL SAFETY LEVEL 3 (BSL3) TRAINING

Extensive training is required for Select Agents used on the University's campus. A training course was created for individuals who enter the BSL3 facility to use these agents.

## DOT/IATA SHIPPING TRAINING

Personnel who prepare materials for shipment regulated by the Department of Transportation's Pipeline and Hazardous Safety Administration (PHMSA) or the International Air Transport Association (IATA) are trained every two years as mandated by these agencies using training materials prepared by DOES. These shipments are principally Biologicals and include IATA-defined Infectious Substances.

## RESPIRATOR TRAINING

Special training sessions for Facilities Services, Animal Resource Center (ARC), and BSL3 Facility employees were conducted. This training was augmented, as required by OSHA, with medical evaluations and respirator fit testing. Contractors were required to be trained by their employers before entering the BSL3 and ABSL3 facilities.

## VEHICLE SAFETY TRAINING

Vehicle Safety Training is presented on an as needed basis. DOES conducted 28 Drivers Safety Training classes for Case employees and the summer help staff, training a total of 90 people.

## 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 Permits
- Powered Industrial Pallet Jacks
- Powered Industrial Lift Truck
- Hearing Conservation Training & Testing

These sessions are scheduled to accommodate all Plant Services shifts. Three training sessions were developed and offered for Plant personnel every month.

## CONTRACTOR TRAINING

To ensure that University Community members and Laboratory personnel are not exposed to hazardous conditions on the campus during construction and repair activities, a variety of training programs support construction work on the campus. Specific training includes confined space, hot work, tow motor, and ladder safety.

## FACILITIES AND EQUIPMENT

The University 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 the University for activities involving 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 Building	Wearn
White	Wickenden	UCRC II
VA Hospital	MetroHealth	NASA
CCF- Walker	Wood Research Tower (RT)	CCSB
Wolstein Research Building (WRB)	UCRC I (Bioenterprise)	

## LABORATORIES

The University Safety Service programs monitored approximately 1300 laboratories in 38 laboratory buildings on campus. These laboratories are located in four hospitals, the Case Western Reserve University Quad and the Medical, Nursing, and Dental School facilities, as well as offsite locations.

Case Western Reserve University's laboratories are equipped for research programs requiring use of hazardous material and specialized equipment. Protective engineering devices in laboratories typically include chemical hoods and Biosafety cabinets, eye wash stations, and safety showers (where needed). Air handling systems are generally designed to provide 8-15 changes of air per hour and to preclude recirculation of air in research laboratories. Laboratories are generally constructed to at least Level II containment specifications. Laboratories are required to stock needed decontamination supplies and personal protective equipment (PPE) such as gloves, laboratory coats, eye protection and job-specific respiratory protective equipment.

## SAFETY SERVICES OFFICE

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

## PROGRAM OFFICE:

### Service Building (1<sup>st</sup> Floor)-Program offices & Conference Room:

Up-to-date hardware is crucial to ensure efficient and quick access to records in the SSOF. A Smart Board System augments the in-house training program, and allows our trainers to directly demonstrate the use of on-line database and training materials. It also provides direct access to library services and campus maps during staff meetings, and emergency incident exercises or responses. This room also houses the campus Emergency Operations Center (EOP).

The University no longer offers the Legato backup service. All DOES personal computers (PCs) are being backed up onto a terabyte array. The Carbonite backup service is currently used for two DOES Servers (does, onsite-server). The web server (Aurora) itself is backed up, and additionally the files are copied locally on magnetic storage and periodically backed up onto optical storage discs.

The following maintenance was accomplished this fiscal year:

### Hardware Maintenance

- Repaired about 40 workstation hardware problems
- Purchased and set up 9 new computers (7 workstations, 2 netbooks)
- Set up 1 existing computer

## Software Maintenance

- Repaired about 500 workstation software problems
- Released updated DOES website
- Work toward Onsite web module

The Department of Occupational and Environmental Safety has transitioned to the use of Employee ID number in lieu of Social Security Numbers in its training program since 2008.

## Chemical Laboratory:

### Service Building (1<sup>st</sup> Floor):

The SSOF is located in the Service Building on the 1<sup>st</sup> Floor at 2220 Circle Drive. The Safety Services division of DOES 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. 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 1<sup>st</sup> floor parking area of the CASE School of Medicine, 1<sup>st</sup> 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 hazardous material and disposal activities. This area is maintained at negative pressure relative to the adjacent hallway. The waste facility 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 Med East (Robbins), Wearn, and Wolstein Research buildings. Conventional animal care facilities are available in each of the Animal Resource Centers and are used by researchers to conduct animal studies with radioactive, chemical, and biological materials. A variety of animals (mice, rats, hamsters, rabbits, ferrets and large animals such as sheep, dogs, and pigs) are housed in one facility. The Wearn and Wolstein Facilities predominantly house mice. Contaminated items are stored in the ARC freezer until disposal. The University also maintains ABSL-3 laboratories for Select Agent research and ABSL-3 facilities for safe handling of infectious agents in both laboratory and animal research applications.

#### INSTRUMENT CALIBRATIONS

Properly calibrated instruments are necessary for Industrial Hygiene (IH) and hood certifications. Annual factory calibrations of 24 industrial hygiene, respirator, ventilation, noise, and lighting instruments are maintained. Table 7 of the Appendix lists instruments maintained for the Safety Service Program.

Sixty one (61) in-house air monitor calibrations were performed during July 2009 to June 2010. Approximately 49% more calibrations were performed during the night shift this year.

## **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, and all OSHA programs for employee safety.

### **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 (PI) are responsible for monitoring safety during experiments in accordance with these established programs. Laboratories inspections carried out by DOES aid in laboratory safety program compliance.

### **INSPECTIONS**

Laboratory Inspections are conducted to address chemical, biological, and physical concerns and to measure the progress and depth of compliance in the University laboratories. 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.

CASE has more than 424 PIs authorized to use chemical and biological materials in 3851 laboratories, rooms, and facilities. 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.

Case Western Reserve University interacts directly with the Safety groups monitoring safety in associated Institutions that are under independent management but may provide research locations occupied by University personnel. Such research laboratories are located at Case University Hospitals, The Cleveland Clinic Foundation, Metro Hospitals, and the Cleveland VA Hospital. Where regulatory interfaces are impacted, letters of Agreement between the institutions supports these activities.

Inspections of outlying sites are carried out at University Hospitals (UH), Metro Health, Cleveland Clinic Foundation (CCF), and Veterans Administration (VA) Hospitals through cooperation of the safety offices at these institutions. Squire Valleevue Farm and Valley Ridge Farm, University owned property, are also inspected or audited. The Inspection Program for Chemical Safety compliance also investigates and resolves biological safety compliance and hazards.

Cross training of Radiation Safety specialists at DOES 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. Programmatically, repeated issues that are not addressed by the investigator or chairperson can be referred to the Deans or Provost for further action, but these measures are rarely required. Inspection statistics for 2009/2010 are presented in Table 8 of the Appendix.

Safety problems found during the 2009 inspections were followed-up and audited to increase compliance. In 2010, inspections have demonstrated that this procedure achieved better compliance and resulted in fewer repeat violations.

## **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**

MSDS are available on-line through Chemwatch at the DOES Website. The University provides this access to Material Safety Data Sheets (MSDS) for chemicals used in laboratories at local computer terminals in each laboratory. This database currently gives access to MSDS for 3,000,000 chemicals and mixtures of chemicals and comprehensively covers the greater than 60,000 chemicals in use at various times at the University. In a few basic chemistry laboratories, the laboratories develop their own safety information for unlisted compounds synthesized during the course of research project execution.

### **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.

<b>PLANS</b>	<b>09/10</b>	<b>08/09</b>	<b>07/08</b>	<b>06/07</b>	<b>05/06</b>	<b>04/05</b>	<b>03/04</b>	<b>02/03</b>	<b>01/02</b>
CHP	283	289	230	194	159	42	21	24	7
ECP	328	280	227	49	33	35	19	23	4
TOTAL	611	569	457	243	192	77	40	47	11

### **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 include job specific evaluation, which includes monitoring of hoods, calibration of equipment, inspections of workspace, and critical examination MSDS information for chemicals used by pregnant workers. Three workers completed the Declaration of Pregnancy Form this fiscal year and counseling was provided.

### **REGULATED CHEMICALS**

Through occupational hazard assessments, the more frequently used regulated chemicals are reviewed each year. Additionally, there is a yearly review of users. The results of this survey dictate the kind of monitoring that should be implemented. 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.

Agent-specific sampling plans are utilized for the medical, dental, biology, and nursing anatomy laboratories. Formaldehyde vapor samples are periodically carried out for Anatomy laboratories. The samples collected provided analysis of Short Term Exposure Limits (STEL) and Time Weighted Average Permissible Exposure Limits (TWA-PEL). Anatomy laboratories used virtual examination of the body over the past year. Formaldehyde monitoring was performed in Robbins Building Gross Anatomy rooms: E20, E329, and E330. Measured exposure levels were below the OSHA permissible exposure limit (PEL) and short term exposure limit (STEL).

## **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 carried out when necessary and an assessment is made through sampling and analysis by EA Group. EA Group is a consulting firm and laboratory specializing in environmental, health and safety issues that provided outside compliance monitoring in the following areas:

- Asbestos and Lead-Based Paint Hazard Management
- Environmental Laboratory Analysis
- Indoor Air Quality Management
- Environmental Compliance Services
- Industrial Hygiene, Health and Safety Services
- Assessment and Remediation of Microbiological Contamination

Eleven IAQ complaints were investigated over the past year. Follow-up included assessment through questionnaires, performance monitoring, contracting for in-depth monitoring, analysis of EA Group results, and presentation of summary reports. Follow-up is executed when the analyses is complete. A report is written assessing the results and given to any complainants and their immediate supervisors.

The following 11 indoor air quality investigations were performed.

- a. Air sampling and analyses for mold and fungi were performed in Adelbert Building Suite 14. No air contaminant issues were found. Air vents/ducts and carpeting were cleaned.
- b. Air vent/duct cleaning was performed in Bioenterprise laboratory rooms 270 and 280 in response to an odor concern and a potential sensitivity reaction. Symptoms cleared up after the cleaning.
- c. Air vent/duct cleaning was performed in Bioenterprise office room 326 to address occupant's sneezing. Occupant's sensitivity reaction cleared up after the cleaning.
- d. Air vents/ducts and carpeting were cleaned in H.G. Wood office room G72A to address occupants' allergic type symptoms. Symptoms cleared up after the cleaning.
- e. Air monitoring was performed in the Institute of Pathology in response to a xylene odor in the basement hallway by laboratory rooms B-11 and B-12. Exposure level was far below the OSHA permissible exposure level. The source of the odor appeared to be from xylene containers improperly disposed of in the hallway by UH personnel working in one of the laboratories. UH personnel were informed about proper waste disposal procedures and have since vacated the office. A follow-up indicated no current odor issue.
- f. Allergy type symptoms of Robbins Building office room E403 occupants were addressed by cleaning air vents/ducts and carpeting in the area. A follow-up indicated no further issues.

- g. Air monitoring was performed in School of Nursing office room NOB150 in regards to an air quality concern. Measurement results indicated no exposure issues. Air vent and ducts were cleaned. A follow-up indicated occupants are satisfied.
- h. Carpet cleaning was performed in Sears Tower office room T308 in regards to the occupant's allergy like symptoms. Occupant's symptoms cleared up after the cleaning.
- i. Carpet cleaning was performed in Sears Tower office room T403 in regards to the occupant's allergy like symptoms. Occupant's symptoms cleared up after the cleaning.
- j. An evaluation and recommendations were made about a moldy book collection in the Kelvin Smith Library.
- k. Moldy ceiling tiles in Wickenden Building room 131 were treated with a disinfectant.

### ENVIRONMENTAL MONITORING

The complexity of water quality assessment is reflected in current required monitoring and wastewater quality indicators. These measurements include:

- Total suspended solids (TSS)
- Dissolved metals and salts
- Microorganisms such as fecal coliform bacteria
- Dissolved metals and metalloids
- Heavy Metals

Some of simple measurements can be made on-site (temperature, pH, dissolved oxygen, conductivity), directly at the site of the water source in question. More complex measurements must be made in a laboratory setting that requires a water sample to be collected, preserved, and analyzed at another location.

Required environmental sampling protocol ensures collection of samples from various media in a timely manner (e.g., soil, surface water, ground water, and containers). All environmental sampling is addressed on a case-by-case basis. The following drinking water investigation was performed.

- a. Water samples were taken from Mandel Center drinking fountains and analyzed. No maximum contaminant levels were found.

### ANESTHETIC GAS MONITORING PROGRAM

Concerns about anesthetic gas exposures led to development and implementation of an anesthetic gas-monitoring program. The anesthetic gas and vapors that leak into work areas during medical procedures are considered waste anesthetic gases. People who work in hospitals, operating rooms, dental offices and veterinary clinics, can be exposed unnecessarily to harmful levels of waste anesthetic gases. The waste anesthetic gases and vapors of concern are nitrous oxide and halogenated agents (vapors) such as halothane, enflurane, methoxyflurane, trichloroethylene, and chloroform. Some potential effects of exposure to waste anesthetic gases are nausea, dizziness, headaches, fatigue, and irritability, as well as sterility, miscarriages, birth defects, cancer, and liver and kidney disease.

In locations where anesthetic gases are used and employees are at risk for exposure to waste anesthetic gases, exposure may be assessed and/or controlled by some or all of the following:

- Effective anesthetic gas scavenging systems that remove excess anesthetic gas at the point of origin

- Effective general or dilution ventilation
- Good work practices on the part of the health-care workers, including the proper use of controls
- Proper maintenance of equipment to prevent leaks
- Periodic personnel exposure and environmental monitoring to determine the effectiveness of the overall waste anesthetic gas control program. The Table below shows locations in which specific gas monitoring was carried out.

ANESTHETIC GASES/ VAPORS	09/10	08/09	07/08	06/07
AIR	0	0	0	1
CARBON DIOXIDE	0	0	0	1
DIETHYL ETHER	0	0	0	1
ENFLURANE	0	0	0	1
ETHER	7	7	7	2
ETHYL CARBAMATE (URETHANE)	6	6	6	0
HALOTHANE	9	9	9	3
ISOFLURANE	168	168	168	44
METHOXYFLURANE	3	3	3	0
NITROUS OXIDE	5	5	5	4
TOTAL	198	198	198	57

For the 83 researchers that are using the anesthetic gas in their laboratories and not in the ARC, a new standardized nose cone design and in-house vacuum protection filter was developed that helps to ensure anesthetic gas scavenging system effectiveness. The Table above shows that Isoflurane is the anesthetic gas in predominate use. The remaining researchers that were surveyed either no longer work with anesthetic gas or are currently working in the ARC. There are currently 115 researchers that use anesthetic gas in the ARC. Seventeen (17) anesthetic gas setups in the laboratories were inspected. Questionnaires are no longer being sent to the researchers. The researchers that use anesthetics gases are now identified through their IACUC protocol.

### ASBESTOS MONITORING

The human respiratory system has basic mechanisms to filter the air we breathe. However, even with our natural defenses at work, some particulate material does pass through and reach the lung wall. Once attached to the lung wall, most particles are attacked and destroyed by large cells called macrophages. Because asbestos is a mineral fiber, the macrophages are unable to remove it from the lung. The macrophages deposit a coating on the asbestos fiber, and scar tissue begins to form around it.

Asbestosis, lung cancer, and mesothelioma are three diseases associated with asbestos exposure. Asbestosis is characterized by fibrotic scarring of the lung. It's a restrictive lung disease that reduces lung capacity. Asbestosis is prevalent among workers who have been exposed to large doses of asbestos over a long period of time.

Studies indicate that employees exposed to industrial concentrations of asbestos have an increased risk of lung cancer. This risk is compounded for smokers who work with asbestos. Mesothelioma is a cancer of the chest cavity lining. It's the rarest of the three asbestos-related diseases.

It's important to note that the studies that have documented the hazards of asbestos were conducted with asbestos workers and laboratory animals. Risks associated with low level, non-occupational exposures are not well established.

In terms of how much asbestos is too much, OSHA has established an eight-hour time-weighted average (TWA) permissible exposure limit (PEL) for employees of 0.1 fibers per cubic centimeter of air. Employees cannot be exposed to concentrations of asbestos exceeding 1.0 f/cc averaged over a 30 minute sampling period.

Employers with employees exceeding these exposure levels need to implement engineering or work practice controls to reduce the exposures below the established limits. If these controls are not feasible or can't by themselves reduce the exposures to acceptable levels, then respiratory protection, protective clothing and other personal protective equipment (PPE) must be implemented.

Appendix A in OSHA's Asbestos Standard identifies the mandatory protocol for conducting asbestos air monitoring. A continuous flow pump capable of delivering a flow rate of between 0.5 and 2.5 liters per minute is required. The sampling medium must be a mixed cellulose ester filter membrane, designated by the manufacturer as suitable for asbestos counting.

Once the samples are collected, they must be analyzed-the asbestos particles physically counted-by an analytical laboratory. The protocol the laboratory must follow is also detailed in Appendix A.

Asbestos monitoring is addressed on a per case basis. EA Group sampled and analyzed multiple asbestos projects throughout the campus and CASE Farms. An average of 175 requests were made for construction and renovation projects. Laboratories were a major part of the renovations this year. For all projects positive for asbestos, a request was submitted to Facilities, Construction, & Housing 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 suspended since historical data revealed that this program could be curtailed as a cost savings measure. Monitoring continues to be conducted on a case-by-case basis. There were 3 mold assessments done for three buildings. All samples that tested positive for mold growth were abated.

Historical bioaerosol sampling results were analyzed to study changes in the patterns of bacterial and fungal growth in different seasons of the year. These sampling strategies and consultation with the construction teams about abatement and mold remediation have resolved ongoing mold grout problems. For all projects impeded by mold growth problems, a request was submitted to Customer Service or arrangements were made by DOES to have the area remediated by an approved contractor. There were 6 projects that were assessed for mold. All samples that tested positive for mold growth were abated.

#### LEAD MONITORING

The EPA requires all remodelers working in pre-1978 residences to follow the lead-safe work practices. In April 2010, the EPA announced several new actions to prevent lead paint



poisoning. The EPA will not take enforcement action for violations of the new Lead Renovation, Repair, and Painting (RRP) Rules' firm certification requirement until 10/1/2010.

Almost a million children have elevated blood lead levels as a result of exposure to lead hazards, which can lead to lower intelligence, learning disabilities, and behavior issues. In addition, adults exposed to lead hazards can suffer from high blood pressure, headaches, and memory loss. Children under six years old are most at risk. EPA announced these three actions:

- A final rule to apply lead-safe work practices to all pre-1978 homes, effectively closing an exemption that was created in 2008.
- A notice of proposed rulemaking to require dust-wipe testing after most renovations and provide the results of the testing to the owners and occupants of the building. For some of these renovations, the proposal would require that lead dust levels after the renovation be below the regulatory hazard standards.
- An advance notice of proposed rulemaking to announce EPA's intention to apply lead-safe work practices to renovations on public and commercial buildings where lead-based paint hazards may be created by renovations on the interior of these public and commercial buildings.

Lead monitoring is addressed on a per case basis. For all projects positive for lead-based paint above EPA regulations, a request is submitted to CASE Construction project Managers or arrangements are made by DOES to have the area remediated by an approved contractor. There were an average of 25 requests for sampling made for CASE-owned residences.

## **RESPIRATOR PROGRAM**

The OSHA Respiratory Protection Program is designed to protect workers from airborne hazards in the absence of feasible engineering controls. Currently, experimental requirements for respiratory protection in CASE laboratories, is limited largely to biological work involving N95 respirators. A few laboratories only require chemical protection. The largest portion of the respiratory protection program is aimed at less controlled areas such as those encountered by emergency response workers and Plant Services Workers. Workers and students sometimes wear additional respiratory protection devices on a voluntary basis. Such voluntary use occurs in anatomy classes and in animal resource facilities by personnel who attend to animals in the ABSL-3 facility. The respiratory program was further expanded as part of pandemic influenza planning for the University to include Police, Security, BSL3, and Custodial.

The Respirator Protection Plan includes:

- Physical Evaluations
- Respirator Training
- Fit-Testing
- Annual Questionnaire

An inventory of respiratory protection equipment was carried out that included cartridges, filters, face pieces, wipes, and valves. All response personnel have a face piece that is used at least once per year. There are currently 2 Self-Contained Breathing Apparatuses (SCBAs) in inventory. Medical school personnel are responsible for their own cartridge replacements.

Medical evaluations were completed for 325 employees. Respirator Safety Training was attended by 349 employees.. Among the 349 trained employees, only 199 were fit-tested for a respirator. Those workers that do not report for physicals are not able to wear respirators and

are actively encouraged to complete their certification. Workers who utilize respiratory protection who do not receive a fit test are users of powered air purifying respirators (PAPR). Most of Plant Services falls into the PAPR user category because of the vigorous physical demands of their occupational use. The custodial workers will only receive a fit test if there is an outbreak of a disease like pandemic influenza at the University. The statistics of this program are shown in Table 9 of the Appendix.

## **HOOD CERTIFICATION PROGRAM**

### CHEMICAL FUME HOODS

The objective of the chemical hood program is to ensure that all fume hoods are safely protecting workers utilizing them for protection from hazardous materials. Testing includes velocity testing to assure that the existing chemical hoods previously ASHRAE tested have remained in the same functional condition under which they were certified. With velocity testing, DOES is able to provide a much greater measure of safety and security of the chemical hoods in the absence of yearly ASHRAE testing. ASHRAE testing, however, provides the performance parameters monitored by the velocity testing procedures in order to maintain a high level of safety assurance for the fume hood program.

All chemical hoods have been ASHRAE tested once. Based on this procedure the ASHRAE test is ideally 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 requires additional ASHRAE follow up to assess hood performance.

Velometers with data download capabilities are used for the annual face velocity tests. Implementation of the use of acetic acid based smoke tubes and aluminum tanks for SF<sub>6</sub> has been effective. One hundred twelve (112) work order requests were initiated with Facilities for chemical hoods that were performing below par and needed repair. Monitor repair is still one of the biggest issues concerning the chemical hoods. The Vortex II hoods on the 4<sup>th</sup> floor of Millis needed all the sash bearing replaced due to chemical deterioration. Monitoring of all Vortex hoods for this failure is being maintained.

Face velocity tests were conducted on 461 chemical hoods, while ASHRAE 110 tests were done on only 65 chemical hoods over the past year. Certification of chemical hoods by Safety Services that were located in off-campus facilities was transferred to University Hospitals (155) MetroHealth Hospital (26) and Veterans Administration Hospital (19) facilities and a process was set up to obtain copies of chemical hood certifications from each Facility Safety Officer. This allows Safety Services to reduce hood monitoring by 23% (214).

As an Energy Platform for DOES along with Facilities Management, the "Shut the Sash" initiative helps to promote Sustainability Energy Savings. This endeavor not only saves energy but also, encourages safe working practices for researchers when using chemical hoods. Hood testing was carried out in a majority of the laboratories that were occupied or used by CASE personnel. The statistics for the hood certifications are shown in Table 10 of the Appendix.

## BIOSAFETY CABINETS AND LAMINAR FLOW HOODS

Biosafety cabinets (BSC) and Laminar Flow hoods were certified through a contracted company, Laboratory Certification Services (LCS). The laminar flow and Biosafety cabinets are recertified at a cost of \$95/laminar flow hood and \$125/hood/biosafety cabinet. PIs are notified annually to re-certify their hoods. An online database on the DOES website allows the researcher to sign up for re-certification or repair of their laminar flow hoods and Biosafety cabinets.

BIOHOODS	09/10	08/09	07/08	06/07	05/06	04/05
RECERTIFY	326	253	181	234	274	142
REPAIR	6	88	51	25	31	16
TOTAL	332	341	232	259	305	158

## **CLEARANCE/ RELOCATION PROGRAM**

The DOES coordinates safety clearance of equipment and laboratory spaces in need of repair, renovation, and relocation. DOES staff ensure safe transition of materials and equipment to new locations and also the proper decommissioning of the existing location ensuring the disinfection and decontamination process for equipment and Biosafety cabinets, chemical and biological waste disposal, and communication with professional movers and researchers.

The implementation of the Clearance Program centralizes the process of equipment and maintenance surveys. The Laboratory Relocation and Termination Procedures are used for moves, departures from CASE, and Safety Clearances. There were 362 Clearance forms issued, which covered clearance of approximately 725 pieces of equipment. This equipment was either moved or discarded during the 2009/2010 fiscal years. There were 53 Primary Investigators (PIs) representing more than 106 research laboratories that relocated for different purposes such as decommissioning, renovation, relocation or termination. The results are shown in Table 11 of the Appendix.

DOES specialists accrue many man-hours assisting researchers in cleaning out their laboratories including: moving, decontaminating, recycling, and discarding equipment and materials. These acts continue to foster cooperative interaction with other University departments and build lasting relationships.

## **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), and the FAA have precise regulations with respect to packing, labeling and transport of hazardous materials. Therefore, employees who handle regulated materials are required to receive training. See Table 12 of the Appendix for the DOT/ IATA Shipping Trends. ChemTrek was maintained as the emergency responder for shipments originating at the University.

Training Guidelines for Exempt Human Specimen & Dry Ice were developed and implemented in May 2008. There have been 78 special training sessions for Exempt Human Specimen

shipment and 128 for Dry Ice shipment using the training materials. There were a total of 391 packages of dangerous goods sent from CASE by FedEx alone.

### **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 record included all incidents involving Emergency Response, Indoor Air Quality, and other types of non-standard assignments (Table 14 of the Appendix). Injury Investigation and reporting was also reestablished. Formal interviews following incidents are conducted along with follow up. Finally, preventative measures are documented and the record is sent to the Risk Management department. The complete spectrum of incidents is listed in Table 15 of the Appendix.

Evening shift responded to 65 incidents and completed reports during July 2009 through June 2010. This is a decrease of 8.5% from last year's 71 evening incident responses. There was a 50% reduction in the number of biohazard incidents involving sharps.

### **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 Operations Center (EOC) should the need arise.

Collaboration with Case Protective Services, Cleveland Fire and Hazmat as well as Summit County Hazmat in live scenario trainings has improved communication and allowed outside response partners to become familiar with the University campus. The DOES coordinated its response with the Risk Management Department to prospectively meet FM Global Insurance recommendations concerning the safety of the University. Follow up of specific safety concerns were again completed and which documented better compliance with each year.

### **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 post 911 security levels and in response to 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 and the new CASE Police Department, DOES has begun to assemble an expanded collaborative network that includes Cleveland Fire, Cleveland Police, University Heights Police, University Hospitals, and the County Emergency Medical Association (EMA). The DOES has also established representation on the Lake County Emergency Preparedness Committee, the Regional Medical Response System (RMRS) Committee, and the University Hospitals Emergency Preparedness Sub-Committee of the Environment of Care Committee.

## RESPONSE EQUIPMENT

All emergency response vehicles and response equipment are checked and maintained regularly. Table 16 of the Appendix illustrates equipment that supports response readiness at Case Western Reserve University and supplies kept on hand for these purposes.

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: goggles, gloves, N95 respirators and chemical respirators) has also been evaluated for adequacy and the types of materials kept on hand were augmented to increase response capabilities.

## **BIOLOGICAL SAFETY**

### BSL-3 FACILITIES

In the aftermath of September 11, 2001, the Patriot Act was enacted to protect against bioterrorism. 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. There were no researchers added over the last year that are using a select agent in a regulated quantity.

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. The Assistant Responsible Official (ARO) is the Biological Safety Officer for DOES. The Biological Safety Officer (DOES Director) also sits on the following committees: Select Agent Committee, ABSL3 Committee, Institutional Biosafety Committee (IBC), Institutional Health & Safety Committee, the University Compliance Committee, 2 BSL-3 Advisory Committees, the Task Force on Avian Influenza Preparedness, and has been Chair of the Bio-defense and Emerging Diseases Task Force. The Biological Safety Officer also sits on the IACUC, IBC, and the Avian Flu Subcommittee.

One select agent on campus is currently registered with the government agencies. Forty (40) individuals, involved in this program, underwent background checks and fingerprinting carried out by the Federal government and are authorized to enter the facilities. The increased number of persons involved in the program is due to an inclusion of those users that use the facility yet are not directly using the select agent. There are three levels of security controlling select agent access in the BSL3 select agent facilities.

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

An internal audit of the files is conducted once a year. The importance of the information requires that the RO and ARO be audited in this fashion to add a level of comfort for those ultimately responsible.

Each researcher generates an electronic sample log. The manuals for the program require annual audit, as do the SOP's and forms for the program. These documents have been reviewed and updated.

### SELECT AGENT COMMITTEE

The Select Agent Committee is comprised of Select Agent Users, the CASE Biological Safety Officer, the RO and the ARO from DOES, the Director of Animal Facilities, and the ARC Veterinarian. This Committee is charged with the responsibility for 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.

Annual inspection of both facilities was conducted in November 2009 and correction of minor programmatic defects was completed in December 2009. The RO and ARO, all BSL3 and ABSL3 facilities were re-inspected and all paperwork associated with the program was reviewed to ensure continuity of the program. A DOES representative handles Security for the Select Agent Program and completed the Select Agent Security Plan.

## **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, however, all laboratories should be concerned with physical safety.

### FACILITY INSPECTIONS

Scheduled building walkthroughs are conducted by Facilities 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.

DOES, in cooperation with Property Management also inspects University-owned rental properties annually. The DOES further inspects Underground Storage Tanks (UST) that may be found on properties owned by the University. One UST is housed at the Wolstein Research Building. City inspectors inspect this UST biyearly. 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 assessments are conducted in response to employee's requests. Forty-five (45) individual office assessments were completed in 2009-2010. Questionnaires were completed and suggestions were made on how individuals can improve areas through implementation of good ergonomic work practices and information was provided to help them understand these practices. Most suggestions were accepted and implemented with minor impact on Departmental budgets. Requests were received by several departments mainly Pathology and Bioenterprise. Other ergonomic equipment such as pens, wireless computer mice, eyeglasses, and aromatherapy stress balls were distributed during assessments and at one safety fair.

### HEARING CONSERVATION PROGRAM

The Hearing Conservation Audiometric Testing and Training Program is ongoing. The services of the Cleveland Clinic and a Licensed Audiometric Specialist continue to be enlisted for this program. This annual program includes approximately 150 CASE employees.

In an attempt to identify and resolve possible noise hazards on campus, sound level monitoring is addressed on a per case basis. The following 4 sound level investigations were performed.

- a. Sound level measurements of a sonicator located in Wolstein Research Building laboratory 2107 were performed regarding a reported concern. Measurement levels were below the OSHA action level. The laboratory manager agreed to post a sign stating to close the sonicator door when in use.
- b. Sound level measurements were performed in Glennan Building 7<sup>th</sup> floor hallway and rooms 720 and 720A. The rooms contain two air compressors. Measurement levels were below the OSHA action level.
- c. Sound level measurements were performed in Kent Hale Smith office room 522 regarding a reported concern of elevator noise. Measurement levels were well below the OSHA action level.
- d. One of the occupants of School of Nursing office room NOB150 raised a concern about the sound level of the air system. Sound-level measurements indicated levels well below the OSHA action level.

## LIGHTING PROGRAM

The Safety department, on an as needed basis, conducts primary lighting measurements to evaluate lighting in work environments for adequacy. 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

The DOES Plant Safety Specialist met monthly with the Zone Safety Committee to address unusual problems and individual problems and concerns. Several pieces of safety equipment are distributed to plant personnel as needed.

The Plant Safety Specialist is always available 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 was used over the past year to enhance Plant service's employees' 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.

## PROGRAMS

Job Safety Analysis allows the Plant skilled tradesmen to be more efficient and safety oriented. DOES is continually developing Standard Operating Procedures for safe operation in each relevant plant safety area.

## EXHAUST FAN MAINTENANCE

There were 21 shutdowns of the fan exhaust in Medical School, BRB, RT, Millis and WRB. All exhaust fans were monitored by the SSOF 2<sup>nd</sup> shift Specialist to ensure safe air quality for Plant personnel before maintenance and filter replacements. This operation occurs after work hours on a quarterly basis. No regulatory exposure levels were exceeded during these procedures.

## CONFINED SPACE PROGRAM

'Confined Space' means a space that:

- Is large enough and so configured that an employee can bodily enter and perform assigned work; and
- Has limited or restricted means for entry or exit (for example, tanks, vessels, silos, storage bins, hoppers, vaults, and pits are spaces that may have limited means of entry.); and
- Is not designed for continuous employee occupancy



OSHA uses the term "confined space" to describe such spaces. In addition, there are many instances where employees who work in confined spaces face increased risk of exposure to serious hazards. In some cases, confinement itself poses entrapment hazards. In other cases, confined space work keeps employees closer to hazards, such as asphyxiating atmospheres or the moving parts of machinery. OSHA uses the term "permit-required confined space" (permit space) to describe those spaces that both meet the definition of "confined space" and pose health or safety hazards.

The Confined Space program was reviewed and revised this year including permitting, signage, and training. Forty (40) permits for entry were issued this year for CASE employees and outside contractors working on CASE property.

The 2<sup>nd</sup> Shift Specialist performed 32 confined space entries and documented environmental monitoring results on entry permits during July 2009 to June 2010. The number of 2<sup>nd</sup> Shift confined space entries increased by 28%.

#### 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 program now includes site and equipment inspection as well as training. Ninety five (95) permits, both long-term and short-term, were issued to CASE employees and outside contractors. Long-term permits that extended over one month were issued that required weekly inspections. DOES reviews only Contractor Hot Work permits since the amount of campus construction decreased and the Facilities Department oversees CASE maintenance projects requiring hot work permits.

#### **CONSTRUCTION SAFETY**

A DOES representative oversaw the Hazardous Materials Waste Collection Program of Construction Debris Recycling for Fluorescent Bulbs and Ballasts, conducted weekly Construction Safety Walkthrough Inspections on projects throughout campus, and participated in the Construction Managers Weekly Project Meetings on the projects listed in Table 17 of the Appendix.

#### CONTRACTOR OVERSIGHT

The Plant Safety Specialist conducted weekly Construction Safety walkthrough inspections on projects throughout the campus for outside contractors and CASE employee projects. 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 includes all types of contractors and personnel that carry out construction on CASE property. There were 59 classes for 80 different outside contractors conducted and this program informed three hundred fifty six (356) outside contractors.

## **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 2009 was filed on February 2010.

No water testing of boilers for nitrates and nitrites was performed in the dormitories this fiscal year. The current design of the boiler alleviates the requirement for sampling.

Overall, waste collection at CASE continued to increase during the 2009-2010 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 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 902 Hazardous Waste Forms from 2009-2010 were scanned into the database and organized into folders on the server. The number of bottles listed on the forms vary from one bottle to several bottles per pickup. The scanned forms were then verified against the Hazardous Waste Log Book for discrepancies.

### TREATED INFECTIOUS WASTE

Treated Infectious 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 use test packs to assess sterilization following autoclaving under standard conditions. The samples are then incubated for 24 hours, 48 hours, and one week. Growth in any of the samples would indicate failure of the decontamination process and reassessment of the autoclaving procedures. 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. An average of 1015 loads were treated per month equaling 13,720 cubic feet of infectious waste. Infectious waste treated in the SaniPak Autoclave equaled a total

average poundage of 85,572 and was transported by CASE Custodial to the American Landfill in Ohio. Healthcare Waste Solutions (HWS) incinerates the remaining waste.

#### INFECTIOUS STATE MEDICAL WASTE

Healthcare Waste Solutions (HWS), the waste disposer, incinerated all Regulated Medical Waste through a Treatment Storage Disposal Facility (TSDF). This waste included dead animals that were infected with infectious material, syringes, needles, and potentially infectious materials. The total number of Regulated Medical waste boxes that were incinerated totaled 6,768 containing a total 248,487 pounds of waste for the fiscal year.

#### NON-INFECTIOUS ANIMAL CARCASSES

Non-infectious animal carcasses are being autoclaved through Stericycle (formerly BFI) as of February 2010. This has decreased the amount of infectious waste going for incineration. These boxes are checked weekly to ensure that the poundage per box does not exceed fifty pounds and to ensure that there are no radioactive animals found. There have been an average of 360 boxes disposed containing a total 14,400 pound of carcasses for the fiscal year.

#### 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 main campus Complex. Currently the following types of waste are recycled:

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

An average of twenty (20) Bills of Lading were collected for recycled material. Facilities is now handling the collection and disposal of ewaste. EHS is the oversight for this program and guides the process with regards to regulatory matters.

#### 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 8 sites. 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, and Mercury. Disposal site waste distribution and recycling are shown in Table 18 & 19 of the Appendix.

## **MANAGEMENT CENTER WASTE DISTRIBUTION**

<b>MANAGEMENT CENTER</b>	<b>ARTS/ SCIENCE</b>	<b>ENGINEERING</b>	<b>DENTAL SCHOOL</b>	<b>MEDICAL SCHOOL</b>
WASTE COST	\$47,644	\$58,312	\$4,633	\$446,712

<b>WASTE COST</b>	<b>09/10</b>	<b>08/09</b>	<b>07/08</b>	<b>06/07</b>	<b>05/06</b>	<b>04/05</b>	<b>03/04</b>	<b>02/03</b>
ARTS/ SCIENCE	47,644	112,782	105,197	54,950	47,250	41,746	51,961	112,064
ENGINEERING	58,312	34,019	56,876	41,808	28,485	64,292	37,952	71,723
DENTAL SCHOOL	4,633	0	5,473	4,452	4,735	4,238	2,335	5,475
MEDICAL SCHOOL	446,712	166,055	129,625	431,601	547,094	471,374	413,696	138,999

## **REGULATORY INTERACTIONS**

### **EPA/ RCRA INSPECTION**

The following Environmental Protection Agency/Resource Conservation & Recovery Act (EPA/RCRA) inspections took place during 2009/2010:

9/25/2009 – COMPREHENSIVE QUARTERLY INSPECTION OF AUTOCLAVE UNIT

There were no violations notes during this inspection.

12/10/2009 – COMPREHENSIVE QUARTERLY INSPECTION OF AUTOCLAVE UNIT

There were no violations notes during this inspection.

3/18/2010 – COMPREHENSIVE QUARTERLY INSPECTION OF AUTOCLAVE UNIT

There were no violations notes during this inspection.

6/25/2010 – COMPREHENSIVE QUARTERLY INSPECTION OF AUTOCLAVE UNIT

There were no violations notes during this inspection.

### **OSHA COMPLAINTS**

No Occupational Safety & Health (OSHA) complaints were received in 2009/2010.

## AUDITS

The Laboratory Safety Committee conducts audits of Safety Services' activities throughout the year.

AUDITS	09/10	08/09	07/08	06/07	05/06	04/05	03/04	02/03
Chemical Hygiene and Exposure Control Plans		X		X		X		X
Hoods		X		X		X		X
Bloodborne Pathogens		X		X		X		
Industrial Hygiene & Indoor Air Quality		X		X		X		X
Training	X	X		X		X		X
Respirator		X		X		X	X	
Clearances	X		X		X		X	
Regulated Chemicals	X		X		X		X	
Waste			X		X		X	
Incidents	X		X		X		X	
Website	X		X		X		X	
Inspections	X		X		X		X	
Protocols		X			X		X	
Hazardous Material Shipment & DOT Training		X	X	X		X		
Facilities			X		X		X	
Licensing		X			X			
Select Agent		X	X		X			
TOTAL	6	10	9	7	10	7	9	4

Ten areas were subject to audit during the 2009/2010 fiscal years. These included:

- Training
- Clearances
- Regulated Chemicals
- Incidents
- Website
- Inspections

## TRAINING PROGRAM

### LSC AUDIT COMMENT

The SOP is current. 5367 persons were trained in some or all of the following: OSHA Laboratory Standard; Blood-borne Pathogen; BLS3, ABL3; Hazcom; DOT and IATA. 350 were late for retraining. 369 had Respirator Training, and 330 Contractor Training. An automated system, to remind persons late for retraining, is expected to be installed soon.

### SSOF RESPONSE

No response required.

## CLEARANCE

### LSC AUDIT COMMENTS

The program was found to be in good order. SOP was updated March 11, 2010. 158 clearances were performed during the first six months of this year. They were timely and the system is managed electronically.

### SSOF RESPONSE

No response required.

## REGULATED CHEMICALS

### LSC AUDIT COMMENTS

25 regulated chemicals are overseen, with an extensive SOP for each chemical. There were no recorded spills, exposure problems, or incidents involving these chemicals. The program relies on a voluntary survey with partial compliance. Several procedures involving formaldehyde are thought not to be registered. Suggestion for improvement is to include regulated chemicals in regular chemical training and routine laboratory inspections.

### SSOF RESPONSE

Regulated chemicals are currently discussed during Laboratory Safety trainings and during laboratory inspections.

## INCIDENT REPORTS

### LSC AUDIT COMMENT

Incidents reviewed did not include injuries or involvement of blood borne pathogens, toxins, select agents, or bioterrorism events. These are recorded separately. The SOP was current. There were 97 incidents during the prior 12 months, a number similar to previous years. All incidents were handled appropriately on-site with local resources, with good documentation.

### SSOF RESPONSE

No response required.

## WEBSITE ACCURACY

### LSC AUDIT COMMENT

The web-site was found to be effective and user-friendly. Minor issues involve dating of the Chemical Hygiene Plan and the Laboratory Manual, and misspelling of tetrahydrofuran in the Laboratory Self-inspection form.

## SSOF RESPONSE

These are currently being reviewed and revised.

## INSPECTIONS

### LSC AUDIT COMMENT

All documents and reports were found to be in good order. 1571 laboratories, involving 4091 inspections, were performed during 2009. Most issues were resolved at the PI level, two required Department Chair involvement.

## SSOF RESPONSE

No response required.

## 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 scrutiny.

## **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  
Training  
Biohoods  
Hazard Communication Plan  
Indoor Air Quality  
Clearances  
Hazardous Waste  
Website Accuracy  
Research Protocols

Exposure Control Plans  
Chemical Hoods  
Bloodborne Pathogens  
Industrial Hygiene  
Respirators  
Regulated Chemicals  
Incidents  
Inspection Reports  
Infectious Material Shipment



DOT Shipments  
Select Agents  
Liaison Program  
Plant Safety Programs

Laboratory/ Waste Facility  
License/ Registration  
Physical Safety Programs  
SOP Reviews

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

#### MINORS, VOLUNTEERS, VISITORS AUDIT

##### Comments

- Guidelines were completed and distributed in 9/2008.
- In 2009, 71 volunteer forms were received.
- In 2010, 87 volunteer forms were received.
- All records are current and program run well.

#### 2009/2010 INSPECTIONS AUDIT

##### Comments

- 2009 Inspection report return was 95% completed.
- 2010 Inspection report return was 96% completed.
- Inspectors contacted delinquent researchers.
- Repeat violations decreased from average 4 to 3

#### CHEMICAL HYGIENE & EXPOSURE CONTROL PLANS

##### Comments

- 122 of 426 Exposure Control Plans are past due
- 113 of 426 Chemical Hygiene Plans are past due
- Chemical Hygiene & Exposure Control Plans were requested for all new researchers once notified through Human Resources and annual inspections.
- Training of researcher and personnel was verified once plan received.
- Most plans were updated annually.
- All protocols were checked to ensure both plans and training were current.

#### BIOHOODS

##### Comments

- 131 of 446 biohoods are past due
- Researchers are notified of past due biohoods through inspection and email reminders.
- Researchers submit forms for biohood certification and repair.

#### SSOF Response

No response required.

Prepared by Felice Thornton-Porter on 10/30/2010.

**APPENDIX**

**TABLE 1 - Training and conferences attended in 2009-2010 included:**

- Confined Space Entry
- IATA Course
- OSHA 30 hour Course
- Ohio Asbestos Building Inspection Certification
- Advanced Industrial Hygiene Course
- Advanced Toxicology Course Environmental Remediation Course
- Ohio Asbestos Management Planner Certification
- Asbestos Building Inspector Certification
- Asbestos Management Planner Certification Refresher
- Ohio Asbestos Project Designer Certification
- NFPA Life Code Specialist for General Construction and Health Care Systems
- Comprehensive Industrial Hygiene Review Course
- Food Safety and Quality Certification
- Food Chemical Safety Certification

**TABLE 2 - All staff members received:**

- 8-hour RCRA Hazardous Materials Manager Refresher Certification
- The Hazardous Waste Operations and Emergency Response Standard (HAZWOPER) Certification

**TABLE 3 - DOES Web Page Updates:**

- Released updated DOES website
- Work toward Onsite web module

**TABLE 4 - DOES has provided researchers with the following Online services:**

- Food/Drink in the Laboratory
- Critical Needs Assessment
- Laboratory Inspections
- Arrow Product Recall
- Newsletter
- Volunteer Week
- Bloodborne Pathogen Training online
- A Summer Safety Reminder
- Website Downtime
- Fume Hood Repair Status

**TABLE 5 - Compliance Issues Addressed by Employee Compliance Committee (ECC)**

YEAR	COMPLIANCE ISSUES
2010	Eating/ Drinking/ Smoking/ Personal Protective Equipment Issues Emergency Scenario for Senior Administration held 1/7/2010 Demonstration of new features on DOES Website Minors/ Volunteers/ Visitors Guidelines Temporary Employment Human Resources Supervisory Briefing of Employment Legal Updates Review of DOES Annual Reports Laboratory Safety Inspections – Phase I Human Resources Briefings of Documenting Performance/ Behavior Problems HP Assist Laboratory Safety Inspections – Phase II Biohood Audit Cylinders DOES name change to EHS Executive Director Resignation
2009	Distribution of both Radiation Safety & Safety Services Annual Reports DOES conducts Ergonomic Assessments CASE employees at the VA Hospital Kelly Services employees at the VA Hospital Rabies vaccine shortage DOES/UH Safety Roundtable – 1/28/2009 OSHA final rule for Personal Protective Equipment (PPE) – 12/12/2008 DOES Strategic Plan Research of Policy on Reproductive Protection Employee Relations will assist Bureau of Workers Compensation claims Kelly Services will send Kelly employee injury log to DOES for tracking Animal Resource Center inspection on 2/24-26/2009 by AAALAK Accreditation went well
2008	New DOES Safety Inspection Enforcement Policy New DOES Policy on Minors, Volunteers, & Visitors 2008 DOES Laboratory Inspection Schedule Phase 2 – Satellite CASE Facilities Kelly Services reviewing new training modules for Kelly employees Irradiators personnel must now be fingerprinted CLIPS Program has six students for the Summer List of CASE employees working at NASA New Job Exposure Checklist New Faculty Checklist 2008 DOES Laboratory Inspection Schedule Phase 3 – Medical Complex DOES Peer Review on 9/29-30/2008 went well Research Administration Department Reconstruction

**TABLE 6 - Historical Training Trends**

TRAINING	09/10	08/09	07/08	06/07	05/06	04/05	03/04	02/03
Hazard Communication	601	791	481	197	118	276	272	52
Laboratory Safety	2602	2581	2032	2364	1884	1754	753	940
Regulated Chemical	1375	1163	868	1720	0	0	0	0
Bloodborne Pathogen	2093	2036	1396	1400	1330	1001	859	910
Respirator	483	481	177	44	103	73	118	70
Vehicle Safety	149	118	94	156	98	128	135	0
Fire Extinguisher	0	0	0	75	75	72	60	0
Plant	600	600	600	70	240	280	282	0
BSL3	78	78	30	29	38	39	49	0
DOT/IATA Shipping	391	118	169	55	168	26	15	4
Contractor	356	330	317	328	422	118	190	80
Special Classes	910	902	890	395	396	207	195	90
Other	2002	1181	0	0	0	0	0	0
TOTAL	11640	10379	7054	6833	4872	3974	2928	2146

**TABLE 7 - Calibrated Instruments**

<b>INSTRUMENT</b>	<b>MODEL</b>	<b>SERIAL #</b>	<b>FREQUENCY</b>	<b>NEXT DUE</b>
High flow Impactor Pump	10-709	1298-2617	Annually	Out of Service
Mini-Buck Calibrator	M-30	M-5648B	Annually	11/16/2010
Mercury Vapor Analyzer (Jerome)	431-X	1835	Annually	4/21/2011
Mercury Vapor Analyzer (Jerome)	J405-0007	40500498	Annually	6/24/2011
PhD Ultra Atmosphere Monitor (Combustible Gas Meters)	02-30102N	10406	As Needed	Out of Service
PhD Ultra Atmosphere Monitor (CGM)	02-30102N	10389	As Needed	Out of Service
CMS-Analyzer Unit	640-5050	ARKH-0164	Annually	6/19/2011
Accuro (Hand Pump)		ARSE-FO23	No Calibration	No Calibration
Accuro (Automatic Pump)	2000		No Calibration	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	Out of Service
Airchek 2000	210-2002	00503	Annually	Out of Service
Airchek 2000	210-2002	00868	Annually	Out of Service
Pocket Pump	210-1002	07413	Annually	Out of Service
Miran Sapphire (ASHRAE)	205B	205B-67068-357	Annually	5/10/2011
Miran Sapphire (ASHRAE)	205B	205B-79375-398	Annually	12/29/2010
Shorridge Instrument (Velocity Meter)	ADM-870C	M04132	Annually	Out of Service
Extech (Light Meter)	407026	Q102498	Annually	11/23/2010
Tramex Survey Encounter (Moisture Meter)		SE 10061608	No Calibration	Out of Service
UXR Boroscope			No Calibration	No Calibration
VelociCalc Plus	8360	40110	Annually	Out of Service
VelociCalc Plus	8360	603016	Annually	Out of Service
VelociCalc Plus	8384A	57020273	Annually	11/16/2010
VelociCalc Plus	9535	0720005	Annually	11/16/2010
VelociCalc Plus	9545	0807001	Annually	4/1/2011
VelociCalc Plus	9545	0807006	Annually	4/1/2011
FitTester Quantitative Respirator Leak Rate Analyzer	3000	0189	Annually	6/3/2011
MultiRae Personal Multigas Monitor	PGM50-5P	095-512273	Annually	3/25/2011
MultiRae Personal Multigas Monitor	PGM50-5P	095-518178	Annually	11/22/2010
MultiRae Personal Multigas Monitor	PGM50-5P	095-518221	Annually	11/22/2010
MultiRae Personal Multigas Monitor	PGM50-5P	095-518218	Annually	11/22/2010
MultiRae Personal Multigas Monitor	PGM50-5P	095-518200	Annually	11/22/2010
Rotameter	MMA-25		No Calibration	No Calibration
Pulse Check Pump Module	710466	G1-5713-F99	Annually	Out of Service
Pulse Check Pump Module	710466	G1-5712-F99	Annually	Out of Service
Pulse Check Pump Module	710466	G8-15922-L01	Annually	Out of Service
Pulse Check Pump Module	710466	G1-5709-F99	Annually	Out of Service
Pulse Check Pump Module	710466	G1-5710-F99	Annually	Out of Service
Quest Sound Level Meter	2900	CDD010048	Annually	11/17/2010
Quest Sound Calibrator	QC-10	QID020090	Annually	11/17/2010
Quest Sound Calibrator	QC-10	QIE 070033	Annually	Out of Service
Quest Octave Band Filter	OB-100	HWD020018	Annually	11/17/2010
Quest Noise Pro DL Dosimeter		NLE 080021	Annually	Out of Service
Quest Noise Pro DL Dosimeter		NLE 080022	Annually	11/17/2010

**TABLE 8 - Inspection Statistics**

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.

<b>BUILDING NAME</b>	<b>09/10</b>	<b>08/09</b>	<b>07/08</b>	<b>ROOMS INSPECTED IN 2006/07</b>
ART STUDIO	0	0	32	32
AW SMITH	128	128	126	125
BINGHAM	124	124	122	143
BISHOP	0	0	20	20
BOLWELL	0	0	18	19
BIOMEDICAL RESEARCH BLDG.	469	495	614	876
CLEVELAND CLINIC FOUNDATION	3	3	5	0
CEDAR AVENUE SERVICE CENTER	0	0	3	34
CLAPP	33	33	0	30
CLARK	0	0	0	0
DEGRACE (BIOLOGY)	41	41	42	42
DENTAL	228	228	233	221
GLENNAN	204	219	193	137
HANNA PAVILION	0	0	45	45
HEALTH SERVICES	0	0	41	39
KENT HALE SMITH	182	182	199	193
LOWMAN	0	0	0	1
MACDONALD	30	24	44	42
MATHER GYM	0	0	0	0
MATHER MEMORIAL	0	0	0	0
METROHEALTH	85	93	88	77
MILLIS	204	204	240	190
MORLEY	0	0	0	39
NURSING	0	139	144	131
OLIN	89	89	118	118
PATHOLOGY	179	141	148	143
RAD WASTE FACILITY	0	0	0	2
RBC	34	48	47	68
RESEARCH TOWER	94	108	147	90
ROBBINS (MED EAST)	96	66	273	237
ROCKEFELLER	93	93	89	91
SEARS BLDG.	2	2	0	0
SEARS TOWER	0	0	74	103
SERVICE BLDG.	0	2	4	6
SQUIRE VALLEYVIEW FARM	0	0	1	3
STROSACKER	19	19	2	3
VA HOSPITAL	24	24	31	17
WEARN	72	55	118	44
WEST QUAD (MT. SINAI)	29	29	24	34
WHITE	124	124	126	126
WICKENDEN	151	151	146	141
WOLSTEIN RESERCH BLDG.	609	583	872	615
WOOD	286	295	273	273
UCRC II	8	9	27	36
UNIVERSITY WEST	100	100	89	90
<b>TOTAL</b>	<b>3740</b>	<b>3851</b>	<b>4818</b>	<b>4676</b>

**TABLE 9 - Respirator Statistics**

RESPIRATOR USE	USERS 09/10	USERS 08/09	USERS 07/08
PHYSICAL	325	481	388
TRAIN	349	440	354
FIT TEST	199	277	205

RESPIRATOR TYPE	USERS 09/10	USERS 08/09	USERS 07/08
PAPR	0	11	3
HALF FACE	1	1	2
FULL FACE	12	32	35
N95	184	158	51
N/A	2	75	114
TOTAL	199	277	205

DEPARTMENT	RESPIRATOR USERS 09/10	RESPIRATOR USERS 08/09	RESPIRATOR USERS 07/08
TERMINATED FROM PROGRAM	0	46	59
ARC	49	45	25
RESEARCH	84	47	33
CUSTODIAL	80	136	107
FARM	4	1	1
HEALTH SVCS.	4	18	0
SECURITY	38	82	68
PLANT	61	75	64
DOES	29	31	31
TOTAL	349	481	388

**TABLE 10- Hood Certification Statistics**

ASHRAE TEST	09/10	08/09	07/08	06/07	05/06	04/05	03/04	02/03	01/02	00/01
PASS	54	6	6	13	6	90	20	65	58	149
RESTRICTED	2	0	0	0	7	17	3	17	21	54
FAILED	0	1	1	0	0	0	4	16	15	17
N/A	9	0	0	0	0	0	0	0	0	1
TOTAL	65	7	7	13	13	107	27	98	95	221

VELOCITY TEST	09/10	08/09	07/08	06/07	05/06	04/05	03/04	02/03	01/02
SATISFACTORY	231	298	288	527	156	296	121	431	0
RESTRICTED	208	142	110	184	35	106	92	140	0
INOPERATIVE	22	96	16	33	6	55	39	58	1
TOTAL	461	536	414	744	197	457	252	629	1

**TABLE 11- Clearance/ Relocation Trends**

CLEARANCES	09/10	08/09	07/08	06/07	05/06	04/05	03/04	02/03	01/02
RELOCATION	382	337	289	177	244	245	934	808	50
REPAIRS	37	0	24	10	61	68	53	44	18
DISPOSAL	233	310	223	190	210	316	230	311	69
DEMOLITION	0	3	67	16	162	8	1	12	1
RENOVATION	57	27	1	20	18	15	29	4	1
RELOCATION TO STORAGE	0	0	35	10	1	1	0	40	0
TERMINATION	0	0	0	17	7	30	3	0	0
CLEAN	0	0	0	0	7	3	0	1	0
RETURN TO VENDOR	6	10	2	2	1	0	0	0	0

DECOMMISSION	10	18	10	16	4	0	1	0	0
TOTAL	725	705	651	458	715	698	1256	1190	147

TABLE 12 - DOT/ IATA Shipping Trends

DOT/IATA SHIPPING	09/10	08/09	07/08	06/07	05/06
Aviation	0	3	0	0	5
Biological	64	5	48	47	40
Corrosive	0	0	0	1	0
DOT/ IATA	65	7	66	61	92
Dry Ice	128	54	25	46	51
Employee Handling	0	0	1	0	11
Exempt	78	45	7	0	0
Infectious	56	3	1	2	10
Radioactive	0	1	7	1	0
TOTAL	391	118	155	158	209

TABLE 13 - Security Check Trends

SECURITY CHECK VIOLATIONS	09/10	08/09	07/08	06/07	05/06
BRB	19	7	12	13	18
MED EAST	5	1	2	4	2
WOOD	9	6	13	7	18
RESEARCH TOWER	6	0	4	5	12
HOSPITAL BUILDINGS	2	1	0	0	6
WOLSTEIN	30	8	5	23	12
MILLIS	0	1	0	3	4
AW SMITH/ ROCKEFELLER	0	0	1	1	2
KHS	0	0	0	0	0
TOTAL	71	24	37	56	74

TABLE 14 - Injury Trends

INJURY TYPES	09/10	08/09	07/08	06/07	05/06
NEEDLESTICK	22	18	16	2	23
BLOOD SPLATTER	1	2	0	0	1
CHEMICAL SPILL	10	10	8	11	10
BURN	4	4	0	0	0
CONCUSSION/ CONTUSION	4	4	0	0	0
LACERATION	30	30	21	16	1
PUNCTURE	4	4	2	9	2
STRAIN/ SPRAIN	8	8	3	17	2
SLIP/ FALL	17	28	24	11	3
OTHER	27	23	21	9	12
INHALED	4	4	6	3	0
ANIMAL BITE	12	16	3	3	0
TOTAL	143	155	104	81	54

DEPARTMENT OF INJURY	09/10	08/09	07/08	06/07	05/06
DENTAL	11	26	21	13	25
NURSING	2	1	5	0	0
MEDICINE	8	8	28	8	11
CUSTODIAL	8	8	17	14	1
ARC	5	3	3	3	4
ARTS/SCIENCE	12	12	8	3	6
ENGINEERING	12	12	4	0	1
PLANT	10	10	8	5	0
SECURITY	10	6	0	0	0
OTHER	65	69	10	35	7
TOTAL	143	155	104	81	54



**TABLE 15 - Incident Trends**

INCIDENTS	09/10	08/09	07/08	06/07	05/06	04/05
INDOOR AIR QUALITY	7	8	6	3	0	2
BIOHAZARD	10	0	0	0	0	0
CLOGGED DRAIN	1					
EXPLOSION	1					
FALL HAZARD	1					
FOOD IN LABORATORY	2					
ALLERGEN	1					
PLUMBING	3					
SECURITY BREACH	2					
SUSPICIOUS SUBSTANCE	3					
UNSAFE CONDITIONS	1					
DEAD MOUSE	0	0	1	0	0	0
ODOR	60	80	96	54	49	107
ASBESTOS	2	0	0	0	38	15
MOLD/ FUNGUS	9	3	9	3	19	18
WATER SAMPLING	0	0	0	0	0	14
NOISE	4	0	0	1	2	1
SPILLS	25	9	17	14	38	22
FIRE	2	1	5	2	3	4
INJURY	0	5	1	81	54	10
WASTE DISPOSAL	15	12	37	12	7	12
LEAD	0	0	0	1	0	2
FORMALDEHYDE	0	0	0	0	0	3
GAS	22	0	0	19	24	25
OTHER	12	22	16	12	13	49
ALARM	26	15	11	21	15	0
ANESTHETIC	0	14	1	0	0	0
HOOD	1	2	3	0	8	0
EXPOSURE	0	18	2	2	0	0
FLOOD	8	6	5	9	0	0
LEAK	0	9	2	4	0	0
MERCURY	10	0	11	6	0	0
REPAIR	0	0	0	1	0	0
TOTAL	230	190	223	245	271	306

INCIDENT/ INQUIRY	09/10	08/09	07/08	06/ 07	05/ 06	04/ 05	03/ 04	02/ 03	01/ 02	00/ 01	99/ 00
TOTAL	230	190	223	245	271	306	297	204	210	152	201

**TABLE 16 - Emergency Response Equipment**

AN ACTION PLAN FOR MAINTAINING PROPER READINESS WAS DEVELOPED USING EQUIPMENT AS FOLLOWS:

- |  |   |
|--|---|
| <ul style="list-style-type: none"> <li>Kappler ER Decon shower (1)</li> <li>MSA 5 minute escape pack (1)</li> <li>Spill Containment kits, orange (7)</li> <li>(4) Mercury absorbent and kit (3 lbs)</li> <li>Spill filter strips (40-50)</li> <li>Respirator Cartridges (20-30 pair)</li> <li>Chemical classifiers</li> <li>Hydrophylic Spill Kits (12)</li> <li>SCBA (2)</li> <li>Mercury Vacuum (1)</li> <li>Amphomag cartridge refill (1 container)</li> <li>Biosystems air monitor hand test pumps (2)</li> <li>Biosystems calibration kit (1)</li> <li>Pelton communication headsets (2)</li> </ul> | <ul style="list-style-type: none"> <li>Kappler containment pool (1)</li> <li>North 5 minute escape pack (1)</li> <li>Spill Containment kits, white</li> <li>Absorbents, Various (100 lbs.)</li> <li>Drager kit and analyzer (2)</li> <li>Waste water classifiers</li> <li>Hydrophobic Spill Kits (8)</li> <li>Mobile Decontamination Tent (1)</li> <li>Drum leak kit (1)</li> <li>Spill-X Guns (5)</li> <li>Biosystems portable air monitor (2)</li> <li>Biosystems air monitor electric pump (1)</li> <li>Kappler pressure test kit (1)</li> </ul> |
|--|---|

SPECIAL EQUIPMENT ON-HAND INCLUDES:

Gloves (Boxes)

Nitrile gloves (8)	Silver shield gloves (1)
Silvershield glove liners (20)	Butyl rubber gloves (1)
Viton gloves (1)	PVA gloves (1)

Suits (Boxes)

Tyvek suits, white (8)	Tyvek QC suits (3)
Saranex suits (1)	Kappler vapor suit "A" (2)
Kappler training suits, blue (3)	Polycoat overalls (35)

Foot Protection (Pair)

Tyvek polycoated booties (24)	Hazmat boots (4)
Tingley ER orange boots (3)	Rainfair ER yellow boots (2)

Eye Protection (Each)

Face shields (2)	Flexi-Filters P100 (21)
Safety glasses (5)	

Respirator (Each)

Full face respirator 3000 series (1)	N95 Respirator (80-100)
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**TABLE 17 - Construction Projects Inspection for 2009/2010**

- Bingham Structures Lab Renovation – Environmental Survey an Renovation
- Wickenden 5<sup>th</sup> Floor Renovation Project
- Pathology Building Renovation and Joint Venture Project with U.H. Hospital
- Pathology Flood Renovation and Recovery
- New Alumni House Dorm - Interior Demolition and Renovation Project
- BioEnterprise 3rd<sup>st</sup> floor Renovation Project
- BioEnterprise 4<sup>th</sup> Floor Renovation Project
- Sidewalk Replacement Campus wide – all areas
- Landscape and Lawn Sprinkler Projects campus wide – all areas
- Air Handler Project for M-1, C-1 Project in the #55 Parking Garage 2 Levels
- Air Handler Project D-1, D-2 in #55 Garage – 2 Levels
- Bolton School Of Nursing – ADA Rest Rooms
- Dental School – ADA Restrooms Renovations
- Boiler replacement @ different buildings on campus
- Triangle Apartment Building Environmental Assessment for Demolition
- Parking Garage # 55 Renovation
- Bolting Nursing School Rm NOB 080 Renovation
- Tomlinson Building Phase I Environmental Assessment Project
- Tomlinson Phase I Renovation
- Tomlinson Base Building Renovation
- Leutner Cafeteria Renovation
- Hayden Grad Student Office Renovation
- Emergency Generator Installations Campus wide
- Smith Dorm - Mold Abatement
- Triangle Property Building #1 Apartment Renovation
- Triangle Property Environmental Assessment
- Wood Roof Replacement Project
- Pathology Roof Replacement
- Pathology Building Facade Restoration
- Sears Library Roof Replacement
- Adelbert Gym Roof Replacement
- Robbins Building Roof Replacement
- Parking Lot # 55 Garage Renovation
- Valley Ridge Dairy Barn Renovation
- White Building Foundry Floor Renovation
- Wood Lab HG-12 Renovation

- Wood HG00 Lab Renovation
- Wood Lab WG4 Mold Remediation
- Wood HG 1 Cold Room Mold Remediation
- Wood WG 12 Lab Reno
- Wickenden Lab 433/435 Lab Renovation
- Fribley 2nd floor Office renovation
- Health Service 1st and 2nd Floor Renovation
- Wolstein Hall Renovation
- Bingham Room 34 Mold Remediation
- Bingham Room 311 Mold Remediation
- Bingham Structures Lab Lead paint Remediation - Basement
- Dennison Music Room ACM Assessment and Remediation
- Gund Law School Mold Remediation Room 215
- Gund law School Rest Room Renovation
- Hayden Hall Room 402/403 ACM Abatement
- Leutner Receiving Dock Oil Spill and Remediation
- Mather memorial ACM abatement in Room6A
- Med East Atrium Lobby ACM Abatement
- Med east Room 715/715A ACM Abatement
- Bolton School of Nursing Lab Renovation - NOB080 \_ACM
- Bolton School of Nursing Room 250 -Renovation
- Bolton School of Nursing - Room 216 - Environmental Assessment
- Pathology Rooms 27,28,29,30 and 31 Environmental Assessment
- Presidents House Bath Room renovations
- Perceptis House Environmental Assessment
- Sigma Nu Fire Damage and Environmental Assessment
- Sears Building - kalis Hall Renovation
- Sears Building Room 357 Renovation
- The Temple Project and Environmental Assessment Survey

TABLE 18 - DISPOSAL SITE WASTE DISTRIBUTION

WASTE TYPE	MILLIS G35	ART STUDIO	DOA 990	UCRC II	CASC	WOLSTEIN	WEST QUAD (MT. SINAI)
CONTAINERS, <1 GAL (#)	1953	0	6066	0	130	935	21
CONTAINERS, UNKNOWNNS (#)	77	0	179	0	0	27	0
CONTAINERS (DIRECT INCINERATION) (#)	130	0	122	0	0	33	0
CONTAINERS, HIGH MERCURY (#)	0	0	32	0	0	0	0
CYLINDERS (#)	3	0	10	0	0	0	0
DRUM, OIL (55 GAL)	0	0	1	0	0	0	0
DRUM, FORMALIN (55 GAL)	0	0	23	0	0	0	0
DRUM, PHOTO WASTE (55 GAL)	0	5	12	0	0	0	0
DRUM, METHANOL/ TISSUE (55 GAL)	0	0	42	0	0	0	0
DRUM, MERCURY WASTE (55 GAL)	0	0	1	0	0	0	0
DRUM, FLAMMABLE (55 GAL)	0	0	13	0	0	0	0
DRUM, POTASSIUM HYDROXIDE SOLUTION(55 GAL)	0	0	1	0	0	0	0
DRUM, PCB CONTAMINATED SOLVENT (55 GAL)	0	0	2	0	0	0	0
DRUM, CONTAMINATED SILICA (20 GAL)	2	0	0	0	0	0	0
DRUM, HALOGENATED SOLVENT (55 GAL)	1	0	0	0	0	0	0
DRUM, ANTIFREEZE (55 GAL)	0	0	0	0	1	0	0
PAILS (5 GAL)	3	0	18	0	14	0	0
PAILS (2-5 GAL)	161	0	101	0	19	1	0
VIALS (#)	7	0	214	0	0	88	0
VIALS (UNKNOWN) (#)	25	0	0	0	0	0	0
MERCURY APPARATUS (DISMANTLE/ DISPOSAL)	1	0	0	0	0	0	0
BOX, SPECIMEN (28 GAL)	0	0	76	0	0	6	0

**TABLE 19- RECYCLING**

<b>WASTE TYPE</b>	<b>CASC (# of units)</b>	<b>MILLIS (# of units)</b>	<b>DOA (# of units)</b>
BALLASTS (PCB)	3170	0	2031
BALLASTS (NON-PCB) (#)	5270	0	0
BATTERIES, ACID (#)	213	1320	0
BATTERIES, ACID/LEAD (#)		85	12
BATTERIES, NON-SPILLABLE (#)	948	0	0
BATTERIES, ALKALINE (#)	230	0	0
BATTERIES, NI-CD (#)	6	0	0
BATTERIES, LITHIUM (#)	7	0	0
ELEMENTAL MERCURY (#)	1	0	1

