

ENVIRONMENTAL HEALTH AND SAFETY

Case Western Reserve University, Department of Environmental Health and Safety
Annual Report 2014-2015

Annual Report
2014-2015

Index

Mission Statement

Notable Accomplishments

Stated Objectives 2014-2015

Stated Objectives 2015-2016

Department Organizational Chart

Department Description

Laboratory Safety Committee

Laboratory Safety Committee Audit Results

Asbestos Program Savings

Metrics and Descriptions

Mission Statement

Case Western Reserve University Department of Environmental Health and Safety

We protect the Environment and the university by acting in a regulatory responsible manner that both respects personnel and the research objectives of the community

We protect the Health and Safety of the CWRU community by providing the support and knowledge required to maintain a healthy and safe workplace

Notable Accomplishments 2014-2015

No Regulatory Violations or Citations were issued in 2014-2015

Address of concerns in Anatomy Laboratories

The history of medical education has traditionally drawn upon the dissection of a graciously donated human body in the education of doctors, surgeons, dentists, and other practitioners of healing. This has involved the use of formaldehyde to preserve the tissue from decay. Studies have demonstrated that formaldehyde exposure in the tanning trades increases the risk to workers for the development of cancer. As a result exposure limits and assessments were put into place to protect all individuals that work with formaldehyde.

The EHS department has been working with facilities to provide as many methods as possible to reduce the exposure to formaldehyde through engineering controls. Efforts have maintained exposures below the regulatory limits set by OSHA for occupational exposure. Still problems with odor, eye irritation, and other concerns have been a constant reminder that formaldehyde is in use.

EHS was fortunate to hire in an industrial hygienist with an inquisitive mind that spent the time asking is this the best we can do? Her searches lead her to a method that involves the use of a chemical that binds to free formaldehyde insitu. Early testing has been dramatic in terms of the reduction in discomfort to the users of the anatomy laboratory. This effort is in its early stages but it is a step in the right direction and has begun the address of a long term problem. Further, the process is neither nether cost intensive nor time intensive.

Address of Asbestos Cost Containment

Asbestos is found in nearly every building on the campus and as a result impacts most construction and maintenance operations. The costs associated with controlling asbestos can be very high. CWRU like many institutions was faced with the choice to continuing using extensive outside contracting or to obtain internal capabilities. Further, the fast pace nature of construction and maintenance projects requires constant communication and situational awareness. In 2013-2014 it was agreed that EHS would convert a vacated night position to a dedicated person in support asbestos activities. As a result of this hire, cost containment due to negotiated pricing, in house services, and directed communications has resulted in a cost savings that nearly equals the cost of the FTE and has provided a much hirer degree of cooperation between EHS, Facilities, and Construction Administration. Plainly the value add of this position change is self-evident

Formation of in-house Asbestos Abatement Capability

Practically every activity performed by the Facilities group involves the cutting or disturbing of materials with the potential for exposure to asbestos. As a result, EHS has put into place training to allow the Facilities group to work in limited situations with materials that previously required the use of external contractors. This has decreased reaction time in emergency situations and given additional options in terms of allowable activities such as the removal of and replacement of floor tile, ceiling tile, or the installation of a shelf that requires drilling into a surface.

Completion of Base Fire Evacuation Plans

All building on campus now have a base evacuation plan and have been drilled. Efforts to update marking, mapping, and a catalog of building captains are moving forward. This culminates three years of efforts by our single FTE dedicated to fire safety. We are starting the second round of drills in the month of August 2015.

Review of all CHP and ECP plans

In past years, the safety plans submitted to EHS were placed on file but were not extensively reviewed by EHS. As part of the EHS Liaison program an effort was made to provide extended personal service to the laboratories in support of their research safety activities. The biosafety officer and a lead chemical safety technician are now reviewing all ECP and CHP plans. The plans are then reviewed in depth. This has generated hundreds of contact hours between EHS and the respective laboratories outside the fines of the formal inspection program.

Completion Internal Audit Inspection

EHS was given the privilege of an external audit. Audits of these types allow a fresh look at programs and growth opportunities free of the constraints of a regulatory audit. Over the entire audit was robust and positive. Areas for improvement were identified and are found in the audit report and EHS response.

Update of the EHS Training Main Facility

The EHS offices are slated for an upgrade. As the result of a flood above the EHS training facility the main training room portion of the office complex was the first to be finished. The upgraded facility includes modernized presentation capabilities. Replacement of the 20 + year old furniture will occur during the renovation the rest of the EHS office.

OBJECTIVES 2014-2015

Implement Customer Satisfaction Survey	Deferred to 2015-2016
Finish conversion of EHS website and associated training	Nearing Completion
Improvement Plan for training compliance	Nearing Completion
Complete full cycle of Asbestos/Lead Facilities training	Completed
Completion of full year savings due to Asbestos program	Completed
Completion of Full Year Zero Based Budget	Completed

OBJECTIVES 2015-2016

EHS Objectives: Each year EHS strives to develop a portion of the many programs for which it has responsibility. The follow global objectives are set for the calendar year 2015-2016

- 1) Work to understand the cause of floods and mold
 - a) Develop mitigation strategies for laboratory related water releases
 - b) Develop a strategy to monitor water release in mechanical spaces
 - c) Review the use of water in laboratories and recommend ways to eliminate or reduce use
 - d) ect...

- 2) Work to understand the needs of EHS clients through the use of survey tools and one on one meetings
 - a) How does EHS impact research and what can be done to reduce regulatory burden while maintaining regulatory compliance
 - b) What can EHS bring to the table to value add researchers day to day activities
 - c)etc...

- 3) Track implementation of new formaldehyde neutralization effort in anatomy. Should reduce exposure to near zero and eliminate to a great extent the odor associated with the use of anatomy labs.

- 4) Finish roll out of basic website and then build upon it to produce a one stop shop for researchers in regards to compliance documentation and training. This is a stretch goal and may take several years

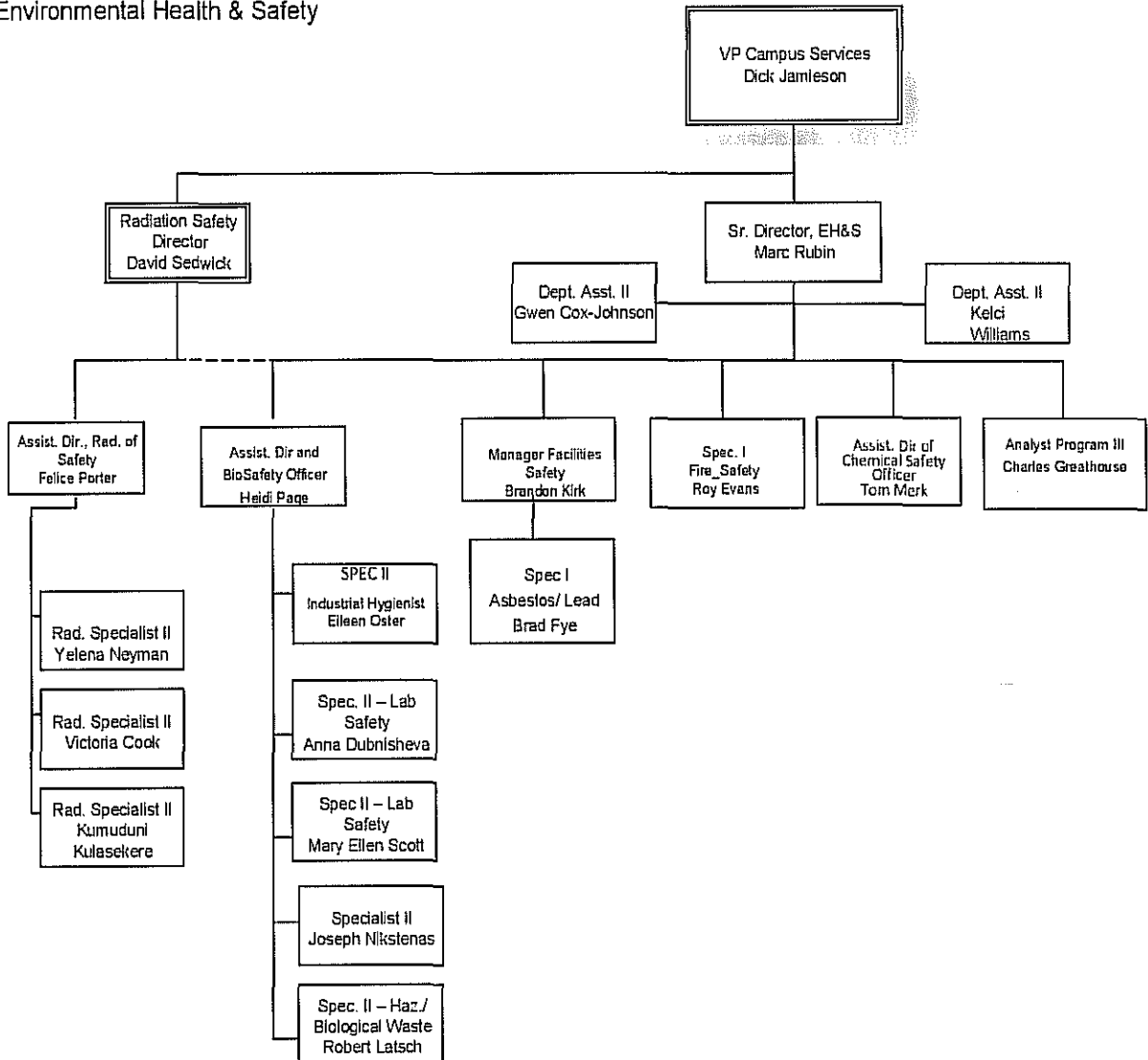
- 5) Provide development opportunities to staff designed to allow them to become better leaders in EHS

- 6) Collect success stories in regards to the ability of EHS to collaborate and support he community

ORGANIZATIONAL CHART



Environmental Health & Safety



DEPARTMENT DESCRIPTION

The Department of Environmental Health and Safety is charged with maintaining a safe work environment for more than 6,000 employees and 10,000 undergraduate and graduate students who work and/or live in over 100 buildings at CWRU and at 5 other major Northeastern Ohio research locations. In addition to the Ohio-based research, EHS shares safety responsibility for its personnel in locations worldwide.

EHS works to balance federal, state and local safety regulations with the requirements of research. At times these tasks appear to conflict with each other and require innovation to achieve the needs of both a safe work environment and productive research community. EHS's customer service approach distinguishes its activities from the strict regulator approaches of yesteryear.

Dissemination of safety information is accomplished through cooperative interactions with its customers (faculty, staff and students) through, formal training, consultation, and safety document creation and maintenance, inspection and oversight activities that are encompassed in the activities of the EHS department. Audit through inspection acts as the feedback mechanism used to measure the level of compliance and the level of community understanding achieved through departmental education and consult efforts.

In a complex environment, however, accidents sometimes occur. In these cases EHS is called upon for emergency response, mitigation of hazardous situations and forward planning where possible to avoid similar future incidents. Departmental services in and following emergencies include in house hazmat response as well as planning with external agencies for larger emergency situations. EHS works closely with internal emergency management, plant, police and security departments as well as with external agencies to generate cooperative plans and responses. Part of this effort with external agencies is directed toward familiarizing governmental regulatory and response organizations with our institutional resources and response workers. This effort provides needed groundwork for synergistic responses during emergencies.

EHS is staffed by six main sub-groups that encompass biological, chemical, facilities, fire, construction, and radiation safety concerns

Safety Services Staff



Biological Safety



The Biosafety program at CWRU employs a multifaceted approach to ensure safe and responsible laboratory practices while maintaining compliance with the various Regulatory agencies to whom we are responsible. The program consists of the following areas:

- Maintain compliance with NIH, OSHA, CDC, USDA, APHIS, EPA, DOT, FAA, DHS and DEA regulations as they pertain to training, handling, transporting, and shipping biological materials and DEA Controlled Substances.
- Review of Exposure Control Plans, IBC protocols and IACUC protocol for the use of biohazardous materials and to ensure proper controls and procedures are in place to protect researchers as well as the greater University community.
- Educate investigators on the biological hazards in their laboratories, current Best Practices and changing regulations.
- Collaborate with University Health Services to provide a robust occupation health monitoring program including recommended prophylaxis and post-exposure treatments based on specific biohazards.
- Provide personal consultations on best work practices, engineering controls and personal protective equipment based on specific biological hazards.
- Ensure proper function of and decommissioning of the high containment (BSL-3) Laboratories on Campus.
- Maintain an up-to-date inventory of the biohazardous materials on the CWRU campus.
- Provide specific training and work practice recommendations to the Animal Resource Center staff that will come in contact with contaminated materials.
- Develop written policies on the handling of specific biohazardous materials.

Chemical safety



With over 1,500 campus locations designated as hazardous material use areas, chemical safety is by far the largest program incorporated under EHS. Areas that fall under the chemical safety program include medical research labs, chemistry and engineering labs, construction and maintenance sites and clinical areas such as dental, nursing and Health Services.

- Maintains campus wide compliance with OSHA, EPA, TSCA, ODH, DOT, IATA, FAA, EAR, ITAR, DHS, DEA, DOD, NFPA, BOCA, as well as local and state agencies
- Assists with APHIS, CDC, USDA, FDA and other drug and biosafety agencies
- Conducts safety training for all students, faculty and staff
- Conducts laboratory inspections annually
- Provides on-one-on consultation with laboratories regarding safety plans
- Provides environmental testing and occupational testing support
- Provides facilities with air testing equipment
- A review of all chemical safety protocols for the use of hazardous materials, to ensure that proper controls and procedures are in place to protect researchers as well as the greater University community
- Education of campus students, faculty, and staff in the chemical and physical hazards associated with their daily routines, and the proper hazard controls used to protect themselves
- Collaborates with University Health Services to provide a robust occupation health monitoring program including recommended treatment and post-exposure treatments based on specific chemical and physical hazards
- Provides consultation on best work practices, engineering controls and personal protective equipment based on specific chemical and physical hazards
- Assures proper function and decommissioning of all hazardous work environments on campus
- Verifies up-to-date chemical or hazard communication plans, unique to each hazardous material use area, are current. This includes inventory of hazardous chemicals and annual site-specific training and review date
- Providing specific training and work practice recommendations to specific campus departments including, but not limited to, police and security, facilities, contractors, custodial and athletics
- Assures compliance with all hazardous waste regulations
- Facilitates the removal of all hazardous waste
- Provides respiratory protection training, and fit testing
- Provides advice on the use of hazardous materials in laboratories and construction sites
- Conducts indoor air quality and other IH assessments
- Reviews upcoming legislation and provides senior management compliance advice
- Works actively with local, state, and federal agencies to provide preplanning for emergency response situations
- Provides limited hazmat response to small releases of materials
- Provides HVAC controls testing for laboratory engineering controls such as fume hoods

Construction Safety



The construction safety program at CWRU focuses on keeping all employees safe while construction projects that occur on campus. The principal responsibility of this program is to monitor construction sites and contractors to ensure compliance with state and federal regulations pertaining to health and safety standards in the workplace. This objective is achieved by using the following disciplines:

- Provide regulatory support for the control of hazards on the job site that might affect the CWRU community
- Provide for the removal to the extent possible of hazards prior to handing over job sites to contractors except as detailed in contract agreements
- Provide support to the project by maintaining a visible presence in the field and to have continued availability to assist the project manager with safety related issues.
- Communicate and assist the project managers to ensure all safety expectations are understood and met.
- Regularly review and be familiar with all applicable legislation and standards to ensure compliance.
- Provide support, direction, and resource to all project managers and contractors working at CWRU.
- Organize, schedule, and perform required right-to-know safety training for all contractors prior to working on campus.
- Participate in the investigation of incidents on campus to determine root cause, and to put corrective actions in place to help ensure repeated incidents do not occur.

Facilities Safety



The facilities safety program at CWRU is responsible for the health and safety of all plant and maintenance staff members. Comprised of over 80 facility and grounds members, the facility safety program must ensure those members are in compliance with local, state, and federal health and safety standards while performing their daily work tasks. This program includes:

- Providing OSHA, EPA, DOT, and other training as required by law. This includes right to know, confined space entry, drivers training, lock-out tag-out, fall protection, injury prevention, and many other topics annually
- Provides lift truck and powered industrial equipment training
- Provide training in hazardous materials handling such as asbestos, lead, mold, and chemical waste
- Conducts inspection and remediation for lead, asbestos, and mold
- Supervises environmental contractors
- Conducts Job Safety Analysis of all facilities worker functions
- Providing in-the-field assistance to all maintenance personnel regularly as well as when a safety concern arises
- Conducts accident and injury investigations and performs root cause analysis to prevent reoccurrence of the incident
- Provide respiratory and hearing protection training and equipment selection
- Supervises the entry of facilities personnel into confined spaces
- Reviews MSDS sheets of materials used on campus for safe application
- Conducts crane inspection and foundry inspection annually to maintain compliance with the OSHA crane and hoist standard

Fire Safety



The Fire and Life Safety Program at CWRU is tasked with the following:

- Hot Work Inspections: brazing, cutting, grinding, soldering, torch applied roofing, welding, etc.)
- Red Tag: anytime fire protection equipment is taken out of services for any reason a red tag permit must first be issued by the Fire and Life Safety Specialist
- Fire Safety Training: All Resident Advisors go through a fire prevention safety course
- Fire Extinguisher Training: Training is available free of charge for any university employee. All maintenance workers are required to attend once per year
- Fire Drills: Four fire drills occur yearly for all resident halls and Greek Life houses. During the summer semester a variety of campus academic buildings will also have a fire drill
- Clery Act Reporting: The Fire and Life Safety Specialist is responsible for all Clery reporting on the CWRU Campus in the fields of arson and fires that occur in resident areas. The Clery Act requires all colleges and universities that participate in federal financial aid programs to keep and disclose information about crime and safety practices on and near their respective campuses
- Fire Inspections: All resident halls and Greek Life houses common areas are inspected two times per year for fire code violations by the Fire and Life Safety Specialist. All other University buildings are inspected on rotation. Any time a member from FM Global, the University insurer carrier, or a member of the Fire Department wishes to inspect a building the Fire and Life Safety Specialist will accompany them
- Special Events: Any time a special event is planned on campus that requires a building to change its everyday floor layout/occupancy, when outdoor tents are being used, or hazardous materials (propane for grilling/heat, fireworks, etc.), the Fire and Life Safety Specialist is involved in the planning process
- Building Emergency Plans: The Fire and Life Safety Specialist is tasked with writing, testing, and updating building specific emergency plans.

Radiation Safety



The University is authorized to use radioactive material by the State of Ohio, which became an Agreement State on August 31, 1999. Radioactive material is extensively used in the several hundred biomedical research laboratories on campus. Safe use in compliance with the complex controls and regulations governing the use of radioactivity is the primary goal of the radiation safety program. Support of research compliance and safety for faculty, staff, students, and the public is essential.

The Director of Radiation Safety is the University RSO who has a direct reporting relationship with upper University management and works under direction of the University Radiation Safety Committee as mandated by federal and state radiation Safety Agencies. At the regulation level within the University, the RSO, Assistant RSO and radiation safety staff and the radiation safety program receive authority through the Radiation Safety Committee as required for Broadscope Radiation Safety License holders for use of radioactive materials.

The Radiation Safety Office within EHS is responsible for safe use of all radioactive materials and use of radiation generating equipment. The radiation safety group maintains strict compliance within the University and among its outside vendors with all of its license conditions as approved by the State Department of Health Radioactive Materials and Radiation Generating Equipment offices.

Like the rest of EHS, the Radiation Safety office has a strong service-oriented culture that assists faculty and staff with development of safe experimental procedures, response to accidental spills and possible radiological exposures and other radiological incidents. The Radiation Safety Office also supervises purchase and tracking of all radioactive materials that enter and leave our Institution, meets programmatic requirements for personnel training, and takes care of all radioactive waste materials management. The Radiation Safety Program surveys all authorized radioactive materials user's laboratories three times each year and perform unannounced inspections of laboratories for violations involving radioactive materials security. The program is audited throughout the year by the Radiation Safety committee for procedural compliance and once each year for general record compliance of its operations. The program is also formally audited for compliance by its own staff throughout the year and by State Regulatory Offices for compliance of both its radioactive materials and radiation generating equipment procedural compliance on a periodic basis.

Authorized use of radioactive materials is granted directly following review by the Radiation Safety Committee and RSO approval and can be suspended at any time for cause by the Radiation Safety Committee and the Radiation Safety Office. For this reason, the Radiation Safety Office and the Authorized User community expend considerable effort to ensure that compliance issues do not interfere with the University research mission and that goals of this program can be expeditiously met.

LABORATORY SAFETY COMMITTEE

The CWRU LSC serves as an advisory committee to EHS. 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.

LSC Responsibilities

The Laboratory Safety Committee is responsible for

- Providing expert knowledge in biological and chemical hazards as found in the laboratory
- Provides feedback in regards to EHS program impacts on laboratory operations
- Provides Faculty support for EHS based initiatives
- Provides as a clearinghouse for communications between other university committees
- Reviews accidents and assists with fault analysis resulting in mitigation recommendations
- Reviews EHS programs to assure sound risk management practices are followed
- Conducts audits of EHS programs annually to assess the effectiveness of EHS laboratory safety programs and procedures.
- Reviews laboratory activities that may be of concern to the public.

LSC Audit Assignments 2014-2015

Biosafety-	Dr. Lance Vernon
Research Protocols-	Dr. Andrea Romani
Clearance Program-	Dr. David Samols
ECP/CHP-	Dr. Clive Hamlin
Licenses-	Dr. Thomas Gray
Regulated Chemicals-	Dr. Kathryn Howard
Website-	Dr. Clive Hamlin
Inspection Program-	Dr. Kim Volarcik
Respirator Program-	Dr. Thomas Gray
Shipping and Export-	JC Scharf-Deering / Lisa Palazzo
Incident Reports-	JC Scharf-Deering
Hazardous Waste program-	JC Scharf-Deering
Industrial Hygiene-	Dr. Emily Pentzer

Laboratory Safety Committee EHS Audit Findings 2014-2015

Biosafety-	No compliance issues noted
Research Protocols-	No compliance issues noted
Clearance Program-	As suggestion was made to automate the clearance request process. This is in fact part of an overall plan to automate the request and documentation process for most EHS programs. This will be slow to come due to complexity.
ECP/CHP-	60% compliance was noted. Better record keeping and eventual electronic forms will help this along.
Licenses- order.	No compliance issues noted All licenses are up to date and in order.
Regulated Chemicals-	No compliance issues noted This is an area of increasing focus with the new addition of an IH to EHS. Future sampling for regulated chemicals will expand. For now the anatomy laboratories with formaldehyde leading as the most used and monitored compound.
Website-	A complete rewrite of the website is shortly to be released
Inspection Program-	The laboratory inspection program is in a major state of change. EHS is experimenting with different methods of doing inspections. As a result, the SOP for the program in general is constantly changing. This will stabilize after this year.
Respirator Program-	No compliance issues noted
Shipping and Export-	No compliance issues noted
Incident Reports-	No compliance issues noted
Hazardous Waste program-	No compliance issues noted
Industrial Hygiene-	This program is being reworked as a result of the new IH position

Subject: Re: Laboratory Safety Committee - LSC Audits
From: Lance Vernon <ltv1@case.edu>
Date: 5/13/2015 12:46 PM
To: Felice S Thornton-Porter <felice.porter@case.edu>, Heidi Page <hep14@case.edu>

Dear Felice,

I completed the audit of Heidi Page and Biological Safety today. Below is the text of my report.

The 2015 audit of Biological Safety was performed on May 13, 2015 by Dr. Lance Vernon. Under the supervision of Heidi Page, the Biological Safety program has enhanced its profile and made several changes in training, tracking and other proactive risk reduction measures. The program appears to meet, and in many cases, exceed regulatory requirements. Complex and detailed real-life scenarios were reviewed, and Ms. Page has taken a thorough, creative and well thought through approach to maintaining a safe work environment for all students, staff and faculty that might come in contact with biological agents. Annual re-training is responsive to regulatory requirements and persons who have completed or have not completed this training are tracked. While some limitations were identified (i.e., information on students and staff who have left CWRU and thus do not require annual re-training, ongoing needle sticks reported from the dental school and limits in the ability to know about some investigators using biological agents as there are no current IRB or animal protection Boards requirements to do so), in general, the arc of progress is excellent and actions are overwhelmingly targeted, tailored and proactive. One suggestion was that Ms. Page could have a more visible profile as, for example, the "Pathogen Concierge"—such that investigators would see utility in contacting Ms. Page and others in Laboratory Safety as a useful resource rather than a regulatory hindrance. Ms. Page seems well on the way toward changing the culture and perspective of faculty, staff and students towards a more friendly, helpful and informative service.

Hope this will suffice,

Best,

Lance

Lance T. Vernon, DMD, MPH
Senior Instructor
Case Western Reserve University
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Department of Biological Sciences
10900 Euclid Avenue
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Ph. (216) 368-0712

Laboratory Safety Committee
Audit of
Research Protocols

✓ RP 5-15-2015

This file was audited by Andrea Roman, a member of the CWRU Laboratory Safety Committee, for the purpose of maintenance of the EHS Chemical/Biological Program.

Comments: Everything found in good standing
No critic

Signature: [Signature] Date 5/8/2015

- ❖ Is the Standard Operating Procedure current?
YES
- ❖ 10 chemical / animal protocols 15 IBS 2014 3rd quarter
- ❖ 10 biological / animal protocols 281 IACUC " "
- ❖ Verify valid IACUC protocol with signatures in folder.
YES
- ❖ Verify current training of researcher and personnel.
YES
- ❖ Has the protocol been signed by EHS?
- ❖ What type of enforcement is utilized?
Contact PI then chair
- ❖ What problems are there currently?
None Appropriate
- ❖ Review protocols to see if safety is met.
YES

June 24, 2015

To: Felice Thornton, EHS
Clive Hamlin, Chair, Laboratory Safety Committee
From: David Samols

Re: Audit of the Clearance Program

Overview:

Clearance refers to the safety review required for decommissioned laboratories or equipment before it can be moved or discarded. Anna Dubnisheva runs the program in well organized and competent manner. For the year 2014-2015 there were 862 clearances in 6 distinct categories. These include Disposal, Relocation, Repair, Cleaning, Lab Decommissioning and the Olin Machine Shop. The latter is special category so that materials that are taken into the shop are certified to be free of contaminants.

Specifics:

The heart of the program is the Clearance Request Form that is filled out for each clearance request. All items must be thoroughly decontaminated before a clearance request is made. For items in the medical school, clearance by a radiation safety officer is required on top of an EHS review. Items for disposal that contain refrigerant are handled separately so that a contractor hired by Facilities Management can remove hazardous material. Similarly, discarded computer equipment from laboratories must be safety cleared first before they can enter the E-waste stream. Decommissioned rooms must be completely emptied before custodial services are allowed to clean a lab. Anna works closely with Demotech and other contractors to make sure that items are properly decontaminated before they are handled.

Suggestions:

The program is running very well with up to date SOPs and a database that tracks every cleared item including the date of its ultimate disposal or relocation. However, currently items are manually entered into the database from the individual Clearance Request Forms. Ideally, there should be a more direct entry system so that once a clearance form is submitted electronically, it will automatically be entered into FileMaker.

David Samols

Audit CHP & ECP (5/26/2015) by Clive Hamlin

Ten (10) files were audited:

Findings were:

1. Two (2) had no CHP or ECP, but recent emails were in the file requesting these documents.
2. One (1) was outdated (2012) and not signed. Email was in the file requesting updated documents.
3. One (1) was complete, but CHP was not signed by PI.
4. Six (6) were up-to-date and in compliance.

Conclusion: 60% compliance is fair. Attempts should be made to improve this.

6/2/2015

Subject: Fwd: Licensing audit
From: Thomas Gray <txg37@case.edu>
Date: 6/30/2015 11:59 AM
To: Felice Porter <felice.porter@case.edu>, Clive Hamlin <crh4@case.edu>, Marc Rubin <mdr6@case.edu>

Clive and Felice,

Marc Rubin and I did the licensing audit on June 26, 2015, and the licences were up-to-date.

Thomas

----- Forwarded message -----
From: Thomas Gray <txg37@case.edu>
Date: Fri, Jun 26, 2015 at 2:47 PM
Subject: Licensing audit
To: Marc Rubin <mdr6@case.edu>

Marc,

This is to confirm that we did the licensing audit and all licences are up-to-date.

Thank you,

Thomas

--
Thomas G. Gray
Associate Professor
Department of Chemistry
Case Western Reserve University
10900 Euclid Avenue
Cleveland, Ohio 44106

Telephone: (216) 368-0991
Facsimile: (216) 368-3001
URL: http://gray.case.edu
tgray@case.edu

7/7/15

To: Marc Rubin, Felice Porter

From: Kathryn Howard

RE: Laboratory Safety Committee Audit of Regulated Chemicals

An audit of the CWRU Regulated Chemicals program was conducted on June 29, 2015 with Anna Dubnisheva, Safety Specialist II, in CWRU EHS for purpose of maintenance of the EHS Chemical/Biological Program.

The Standard Operating Procedures, online and in -person training and testing are current. There is no available data for 2014 regarding registration compliance due to staff turnover in the support staff; however, the information was database searchable with current lab inspections when recorded. The database seems to hold a treasure trove of information. Prior years data was readily available.

In areas with high usage (ie: Anatomy labs) random monitoring is used. Equipment used for monitoring has current calibration. Monitoring results are below PEL's. Respirators have been made available, after appropriate fit testing, to those who are interested in the equipment. Usage of respirators is quite low. There were no spills of regulated chemicals in the past year. (Formaldehyde, Methylene Chloride and Benzene)

EHS has well-established protocols for training personnel and working with laboratories requiring the use of regulated chemicals on campus. The only issue that is apparent is the lack of an effective tracking mechanism for the chemicals. Although all new trainees are asked to report on the use of regulated chemicals in PI laboratories, the return of the information after training is sparse. Perhaps, an electronic follow-up of the form to both the PI and the new hire would improve the return of the information. Additionally, I suspect that there may be some mechanism through SCIQEST(SMARTCART) to enable tracking from the point of purchase.

Best Regards,

Kathryn

Subject: Web-site audit
From: Clive Hamlin <crh4@case.edu>
Date: 7/14/2015 8:40 AM
To: Felice Porter <felice.porter@case.edu>
CC: Charles Greathouse <charles.greathouse@case.edu>

I performed the web-site audit with Charles Greathouse, July 13th, 2015. I found the web-site to be easy to use and logically designed. An improvement would enable PIs or lab-managers to be able to look-up the safety-training records of the employees they are responsible for. I was told this is at the planning stage.

--
Clive R Hamlin
Phone: 216-368-0512
Fax: 216-368-0494
Pager:216-591-6754

Laboratory Safety Committee

Audit of Inspection Program

The audit was conducted by Kim Volarcik, a member of the CWRU Laboratory Safety Committee, for the purpose of maintenance of the DOES Chemical/Biological Program.

I met with Tom Merk, DOES Assistant Director, on June 17, 2015 to review the Chemical Safety Standard Operating Procedure document and the components of the Chemical/Biological Inspection Program.

1. Is the Standard Operating Procedure current?

- No. The current Chemical Safety Standard Operating Procedure that is being used by CWRU DOES, with the revision date of 11-15-2007, references the Filemaker database being used to conduct laboratory inspections. However, DOES currently uses the On Sight database. Therefore, the document needs to be updated to reflect how the On Sight database is being used to conduct these inspections.
- In reading the Procedure document and reviewing it with Mr. Merk, it appears the references to the On Sight database and updates in the procedures of using the new database are the only changes that are required.

2. Review of the DOES Laboratory Inspection Schedule:

- In review of the CWRU DOES laboratory inspection schedule, in March 2015, there was a change in the system of when the laboratories, facilities and designated room inspections would be conducted by the DOES inspectors.
 - July 2014 – February 2015, there were five to six inspectors that would conduct inspections in March, July and October to complete the required laboratories, facilities, and room inspections.
 - Phase I of the new inspection schedule was implemented March 2015. Two inspectors are assigned to complete laboratory, facility, and room inspections between March – June 2015 in the designated buildings located on the quad of CWRU campus. This cycle is to be completed by June 30, 2015.
 - Phase II will be conducted July – September 2015 for the off-site laboratories, facilities, and rooms.
 - Phase III will be conducted October 2015 – January 2016 for the Health Science laboratories, facilities and rooms.

3. Review of DOES Chemical/Biological Program Inspections, including enforcement:

- DOES inspectors are assigned to conduct inspections in the laboratories, facilities, and designated rooms.

- If a non-compliance issue is found, the inspector is supposed to designate the issue to be resolved between 1-30 days, depending on the degree of risk.
- The DOES inspector is required to write up a report and send it to the Principal Investigator (P.I.). This is usually done electronically via an email correspondence.
- The P.I. is required to correct the deficiencies, initial each item of deficiency on the form [to verify correction(s)], and return the signed and dated *P.I. Correction Completion Date Inspection Form* to DOES.
- If the P.I. does not respond to the *P.I. Correction Completion Date Inspection Form*, the following actions must be taken:
 - The DOES inspector is required to send a follow-up email or make a phone call to the P.I.
 - If the deficiencies are not corrected after three attempts, the DOES inspector is required to notify Marc Rubin or Tom Merk. In turn Marc or Tom will contact the P.I.
 - If the P.I. does not correct the deficiencies, after Marc or Tom contacts him/her, then a letter is sent to the Chairperson of the P.I.'s department by Marc or Tom.
 - If the P.I. does not correct the deficiencies after the letter, then a letter must be sent to the Dean of the P.I.'s Department and to the Provost by Marc or Tom.

4. Number of inspections completed:

- There were 2494 laboratories, facilities, and rooms inspected.

5. Number of laboratories:

- There were 770 laboratories inspected.

6. Were all buildings inspected?

- ~~No; in review of the former and new inspection schedules, laboratories and rooms in the following areas were supposed to be inspected in October 2014 and still have not been inspected:~~
 - Pathology Department
 - Robbins Building- Medical School (3rd and 4th floors were not inspected)
 - Wearn Building

7. Review of the data recorded in the On Sight database:

- In review of the On Sight database, some inspectors have not been entering the following required data:
 - Principal Investigator's name of corresponding laboratory or room

- o Completed list of corrections
- o Date of corrections

8. Review of On Sight database and corresponding P.I. paper files; reviewing what deficiencies were found and documentation that each one was corrected in the designated "correction due" date:

- Six investigators, whose laboratories and rooms were inspected and deficiencies were identified, were randomly selected from the On Sight database. The deficiencies that were found during these laboratory inspections included:
 - o Bottle of ether was expired
 - o A caution sign with outdated information.
 - o Outdated Chemical Hygiene Plan.
 - o Bench and floors found to be cluttered with items
 - o Eyewash station not working properly
 - o Problem with chemical fume hood
- In review of the On sight database, none of the follow up information was found for any of the inspections.
- Mr. Merk and I went to the DOES file room to review each of the Principal Investigators' paper files to find the paperwork for each laboratory and/or room inspection. However, we could not find any of the completed *P.I. Correction Completion Date Inspection Form* for these inspections.
- Mr. Merk planned to talk with the DOES laboratory inspectors at their next scheduled meeting:
 - o to find out where the paperwork was filed for these inspections
 - o to continue looking at the outstanding files to ensure the deficiencies found during the inspections have been resolved in the time frame outlined in each *P.I. Correction Completion Date Inspection Form*
 - o to review the On Sight database system and outline for each of them the fields they are required to complete

Overview of the Inspection Program:

1. In recognition of the new inspection schedule, it is important to stay on track and ensure the DOES inspectors complete the required laboratory and room inspections as outlined in the three phases of the new program. This includes double checking to make sure all required laboratories, facilities, and rooms are inspected in a timely manner.
2. It is important for the DOES inspectors to complete the required fields in the On Sight database with the pertinent information from the inspections they completed and to record the deficiencies and dates when these have been completed.

3. When a DOES inspector finds a deficiency during his/her inspection, it is important for the DOES Inspector:

- to complete and send the *P.I. Correction Completion Date Inspection Form* to the Principal Investigator that contains the deficiencies;
- Since the time allotment for correcting the deficiency is associated with risk, it should be top priority to ensure the P.I. responds to the deficiencies as the required time outlined in the letter;
- If the P.I. does not respond to the letter, then the DOES inspector must follow the outlined notification and enforcement schedule as outlined in the Chemical Safety Standard Operating Procedure document;
- Once the P.I. sends the *P.I. Correction Completion Date Inspection Form* with their initials for each deficiency representing each one is completed, and the P.I.'s signature, this form should be filed in the P.I.'s paper file in the DOES filing system.

Auditor: Thomas Gray

EHS Contact: Eileen Oster

Summary of Lab Safety Committee Audit of Respirator Program 6/26/15

Is the Standard Operating procedure current?

Yes

Review In-class respirator training and tests. Are in class training and tests current?

Yes. These are frequently updated to reflect updated respirator models.

Review online respirator training and tests. Are online training and tests current?

Yes. These can be found at blackboard.case.edu

Review Risk Assessments for mandatory respirator wearers

Respirators are required for maintenance personnel who are working with asbestos. Risk assessments have been done for the limited asbestos abatement operations they perform. N95 respirators are mandatory in the BSL-3 labs and in the ARC facilities. Risk assessments have been done for these operations.

Review Risk Assessments for voluntary respirator wearers

Respirators are worn by select gross anatomy students who have a sensitivity to formaldehyde vapors. Risk assessments have been done for formaldehyde.

Were job specific risk assessments carried out before respirators were recommended?

Yes. A determination was made what level of respiratory protection was needed and evaluated whether this was practical for the operations being performed.

Was sampling done for each risk assessment?

Sampling for phenol, formaldehyde, lead, and asbestos have been performed.

Were employees respirator trained?

All employees using respirators are required to be trained. This is done before fit testing is performed. A database is kept in filemaker.

Were medical questionnaires completed?

These are completed and submitted to Health Services or an outside licensed health care professional. These are kept on file in the EHS office file room.

Was fit test completed?

Fit tests are completed for all employees who have had training, have been medically cleared, and do not have facial hair or another reason fit testing can't be accomplished on a negative pressure

respirator. Those employees are issued powered air purifying respirators, which are not tight fitting, are positive pressure and do not require fit testing. These are kept on file in the EHS office file room.

Was appropriate type of respirator offered for training and job.

Risk assessments are evaluated and used to select the appropriate level of protection.

Is the equipment calibration date current?

Calibration of the quantifit, which is used for quantitative fit testing, is up to date.

Are risk assessments current (reviewed annually)?

Risk assessments are reviewed annually or if there is a change in procedure or substance.

Number of risk assessments?

4 for respirator users (Phenol, formaldehyde in anatomy labs, asbestos program for facilities, and lead

Number of people trained for mandatory and voluntary respirator use

222 from 5/2/14 through 5/8/15

Laboratory Safety Committee
Audit of
Infectious Hazardous Material, Shipment, DOT, and International Shipments

This file was audited by JC Scharf-Deering, a member of the CWRU Laboratory Safety Committee, and Lisa Polizza, Director, Export Control and Privacy Management, CWRU for the purpose of maintenance of the EHS Chemical/Biological Program.

Comments: The program review took place on June 30, 2015. The program incorporates chemical, infectious, biological, mixed and international shipping. The program is managed by Mary Ellen Scott, with back-up by Robert Laisch and support of Marc Rubin. Documentation and recordkeeping is well-organized. Where appropriate, materials are maintained in paper with electronic back-up files. There was a recent site visit by the Federal Aviation Administration (FAA) in response to an event; the EHS shipping program passed with commendation.

Recent Changes: Closer review and monitoring of international shipping was implemented within the last 2 years. Coordination with University Compliance/Export Control Program has led to review and vetting, through Visual Compliance, to ensure satisfaction of federal guidelines related to international shipping.

Planned Updates: Annual review of training materials to assure congruence with any relevant and applicable guidelines is planned. Outreach at the time of CWRU HR Orientation will continue. Expanded outreach was discussed. Export Control will continue to monitor and evaluate shipping records from Federal Express to target individuals and programs for training.

Considerations for possible program improvement: Consider modifying the name of the program to reflect some recent changes and updates. A suggested working title: Hazardous Material, DOT, and International Shipments. Consider updating the Environmental Health and Safety Brochure to highlight shipping resources. Note: EHS website lists manual under "Hazardous Material Shipping." Potential to develop visual "flowchart" for shipping decision tree was discussed during this review. Maintain coordination with affiliate hospitals for review/response to project-specific export requirements.

Audits to Form: Please note edits and updates to audit form. Suggested changes appear as highlighted and/or blue revised text.

Signature:  Date: July 9, 2015

Signature: _____ Date: _____

- Is the Standard Operating Procedure current?

The program does not maintain a single Standard Operating Procedure,

Training and guidance documents related to specific regulated materials are updated mainly in response to changes in local procedures, with required updates due to changes in regulations/guidelines/laws. Goal is annual review. Suggest review/update, as necessary.

- Review in-class DOT training & tests. Is in-class training & test current?

Training and guidance documents are regularly updated and are current. In-class training is required initial and re-training for Hazardous Material Shipping for Department of Transportation (DOT) and International Air Transport Association (IATA) guidelines. Re-training is required every 2 years.

- Review online DOT training & tests. Is online training & test current?

Training and guidance documents are regularly updated and are current. On-line training can be complete for the shipping of dry ice only and other exempt materials. Re-training is required every 2 years, including for on-line training.

~~Number of manifests. If there are more than 15 chemical and/or biological manifests, review 15 of these records.~~

Audit review was of Shippers Declaration for Hazardous Materials. There are typically 3 or 4 such shipments in a calendar year. For 2014, there were 4 records. Paperwork was in order.

There were no known shipments of regulated chemical or biological materials for 2015 at the time of this audit.

- What problems are there currently?

There are no specific problems with the current program or records. Expanded outreach to make information about shipping across all relevant programs is on-going in an attempt to capture individuals with the potential to ship covered materials.

~~Was Bill of Lading completed?~~

~~Number of Bills of Lading?~~

~~These questions are not asked or specific for this program. All shipments have Bills of Lading. Consider modifying or eliminating these questions.~~

~~How many were advised on shipment of materials? Was there proper facilitation of shipment of materials this year?~~

Approximately 1 or 2 individuals contact EHS for assistance. Facilitation and verification of packaging and confirmation of training is completed for all individuals who contact program officer.

- How many were trained on shipment of materials?

Since January 2015, 33 individuals completed the Hazardous Materials Shipping training; 8 were certified for dry ice shipping only.

Were there proper facilitation of shipment of materials this year?
(Capture this question with: How many were advised on shipment for materials?)

Were there any improper reported incidents with shipments? If so, what action was taken to correct or remediate?

There were no reported incidents. No remediation or corrective action was required.

For shipments to a country other than the United States, was the content of the shipment verified for export licensing requirements and the recipient verified against the restricted party lists?

There were no known international shipments in 2015 at the time of this audit. Shipments processed through EHS undergo vetting by EHS and/or Export Control using Visual Compliance. There were no incidents related international shipping at the time of this audit.

Review of chemical shipments?

Review of biological shipments?

(These questions are captured under the Number of manifests question above. See suggested edit.)

Was each person that shipped trained? Was shipment done by person(s) with proper training?

If shipment is processed through EHS program, training is verified for person[s] shipping materials. There were not incidents related to lack of or lapse of training at the time of this audit.

Number of chemical shipments?

Number of biological shipments?

(These questions are captured under the Number of manifests question above. See suggested edit.)

Have there been any reviews/audits by outside agencies? If so, were there any findings and what steps were taken to remediate and prevent recurrence?

There was a recent site visit by the Federal Aviation Administration (FAA) in response to an event; the EHS shipping program passed with no findings. The FAA noted excellence of the program.

Laboratory Safety Committee
Audit of
Incident Report

This file was audited by J.C. Scharf-Deering, a member of the CWRU Laboratory Safety Committee, for the purpose of maintenance of the EHS Chemical/Biological Program.

Comments: The program is managed by Tom Merk, with back-up by Heidi Page and Marc Rubin. Interview was conducted with Mr. Merk. Documentation and recordkeeping is meticulous and well-organized. Materials are appropriately maintained and preserved in paper, with redundant electronic back-up files. There have been no recent audits or reviews by outside agencies. No pending issues to address.

Recent Changes: An updated review/audit of EHS metrics was implemented in the last year. In combination with the automated entry system, with both current and historical records beginning in 1992, a review of the incident report types and trends can be obtained quickly and easily.

Planned Updates: Continued review and refinement of metrics is planned. Incident categories being tracked may be updated or expanded, depending on data and type of reports being recorded and analyzed.

Considerations for Possible Program Improvement: Program facilitators already have positive/collaborative working relationship/overlap with Police/Security and Facilities/Customer Service. Consider implementing training of EHS staff to remind and reinforce reporting requirements regarding incidents that are also required to go through Police/Security ("Dispatch").

Auditor's Form: Please note edits and updates to audit form. Suggested changes appear as highlighted and/or strike-through text.

Signature:  Date: June 9, 2015

Is the Standard Operating Procedure current?

Current Standard Operating Procedures (SOPs) are the following:

Incident Inquiry and Response Reporting, Revised February 5, 2014

SOPs are updated mainly in response to changes in local procedures, with occasional updates due to changes in regulations/guidelines/laws. Goal is annual review. Suggest review/update, as necessary.

- Number of incidents during the year?

During the period of July 1, 2014 to June 9, 2015 there have been a total of 67 incident reports filed.

- Is the number of incidents increasing, decreasing, or constant relative to previous years?

Incident reports for the same periods as above in 2014 and 2013 were 69 and 49, respectively. Note: Metrics for consistent tracking and review of incidents were only implemented within the past year. Trends in incident reporting are not easily quantified. Multiple incident reports may relate to the same root cause event.

- Classification of incidents (accidents, biohazards, explosions, exposures, fire, odor, spills, other)?

The classification of incidents is being reviewed and refined as part of the metrics for incident reporting. Current overarching categories for the metrics report include the following: Alarms, Chemical Spills, Waste, Odors, Indoor Air Quality, Flood, and Spill. The reporting of "Odors" has historically been the largest single category of incident; this trend is consistent with currently reported incident types.

- Appropriateness of remedial action?

All incident reports are audited and closed. Of approximately 400 incident reports, only a single report was not remediated properly. This report has now been modified and corrected.

- Use of outside experts and contractors when necessary.

Yes, outside experts and contractors are used when necessary. Experts are routinely used for asbestos abatement. Contractors are occasionally secured for monitoring of air quality. All experts and contractors are licensed and certified.

- Is there resolution documented for each incident?

Yes. As per above, all incident reports are audited and closed. Of approximately 400 incident reports, only a single report was not remediated properly. This report has now been modified and corrected.

- Is there a systematic review of outstanding cases by EHS?

This does not apply. As per above, only a single report was not remediated properly. This report has now been modified and corrected.

- Documentation and integrity of data files, including is there adequate paper (hardcopy) documentation, and is this documentation maintained in a readily accessible central file? (This combines 3 separate questions on form.)

Documentation is maintained in a readily accessible, secure central file. Documentation and recordkeeping is meticulous and well-organized. Materials are appropriately maintained and preserved in paper, with redundant electronic back-up files.

Were any outstanding incidences reported to the committee?

[It was not clear what this question was attempting to address. Consider refining or removing this question from the audit form.]

Number of Injuries

Were Bioterrorism pathogens/toxins/select agents/Bioterrorism involved?

[Incidents are not classified separately as injuries and do not include detail of pathogens/toxins/select agents. Note: no select agents program at CWRU at time of this review. Injury reports are captured and categorized under a different program, which is currently managed by Felice Thornton-Porter.]

Laboratory Safety Committee
Audit of
Chemical/Biological Safety Laboratory & Waste Facilities (Morley, Mills, Wolstein & DOA)

This file was audited by JC Scharf-Deering, a member of the CWRU Laboratory Safety Committee, for the purpose of maintenance of the EHS Chemical/Biological Program.

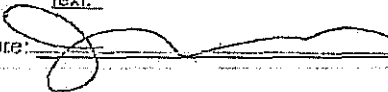
Comments: The program is managed by Robert Latsch, with back-up monitors Anna Dubnischeva and Mary Ellen Scott. Tour and interview was conducted with Mr. Latsch. Documentation and recordkeeping (manifests, logs, etc.) is meticulous and well-organized. Materials are appropriately maintained and preserved in paper, with redundant electronic back-up files. There have been no recent audits or reviews by outside agencies. No pending issues to address.

Recent Changes: An updated review/audit of laboratory space is expected to facilitate and increase compliance with management of laboratory chemical waste control. Comparison and congruence between procurement, laboratory stock lists, and waste disposal was implemented in the last year.

Planned Updates: A recent change to the federal regulations, "Project XL," will require a review and update of standard operating procedures. Many of the requirements of the new regulation are already addressed in the current Case Western Reserve University program.

Consideration for Possible Program Improvement: Program facilitators already have positive/collaborative working relationship/overlap with University Hospitals facility around the cytology labs in the Pathology Building. Consider implementing a semi-annual or quarterly meeting with safety/waste management teams across institutions to discuss issue and best practices.

Audit Form: Please note edits and updates to audit form. For example, "Morley" is no longer a facility. Suggested changes appear as highlighted and/or bracketed text.

Signature:  Date: June 1, 2015

- Is the Standard Operating Procedure current?

Current Chemical Safety Standard Operating Procedures (SOPs) are dated as the following:
Chemical Waste Overview, Revised August 20, 2010
Animal Carcass Waste Disposal, Revised August 20, 2010
Hazardous Waste Management Internal Operating Procedure, Revised August 9, 2010
Waste Chart, Required Insert to Laboratory Safety Manuals, Undated (Early 1990's)

SOPs are updated mainly in response to changes in regulations/guidelines/laws. Goal is periodic review. Latest revision of most SOPs is about 5 years. Suggest review/update, as necessary.

- Inspect the laboratory and ~~both~~ facilities.

The DOA location at the Dental School was observed during this visit. The biohazardous material Steri-cycle autoclave and secure storage location for treated biohazardous waste were also reviewed.

- Document problems or concerns.

None.

- Aisles clear. Bench Clear.

Aisles clear. Benches have clear working space. Many areas are used for storage of equipment. The walk-in hood, for example, contains various materials, but these could easily be moved or relocated.

- Are waste containers overflowing or is waste lying around?

No containers are overflowing; no waste "lying around." A box in the biohazard waste storage area needs to be repacked prior to disposal.

- Are the waste areas, office, laboratory, and bathroom respectably clean (swept, mopped)?

Overall, space was well-kept and organized. Recent waste removal; floor was due to be swept or mopped. Standard trash bucket ready to be emptied.

- Is waste disposed in a timely manner (~~with~~ within 90 days)?

Waste disposal in central areas is on a fixed schedule to assure disposal occurs in a timely fashion (well within the 90 day range).

- Are drum records maintained?

Records are maintained and complete.

- Are the weekly barrel checks logged?

Weekly barrel checks are logged; records maintained and complete.

- Verify that all hoods, safety showers, eyewashes, & equipment ~~is~~ are current in calibration.

All required certifications and calibrations are maintained. An order for the eyewash stations to be serviced is pending. The postal substation/inspection cabinet also has planned maintenance (none required for compliance).

- Verify that equipment that is not currently in use has an "Out of Service" label.

Equipment no longer in use is labeled.

Laboratory Safety Committee
Audit of
Industrial Hygiene & Indoor Air Quality Program

This file was audited by Emily Pentzer, a member of the CWRU
Laboratory Safety Committee, for the purpose of maintenance of the EHS
Chemical/Biological Program.

Comments: No deficiencies No deficiencies to
repeat

Signature: [Signature] Date June 26, 2015

- ❖ Is the Standard Operating Procedure current?
- ❖ Number of industrial hygiene exposures addressed this year.
- ❖ Equipment calibration date current?
- ❖ Number of individual assessments made within the year.
- ❖ Number of outside contracts that were issued for air assessments.

- ❖ Number of environmental sampling exposures addressed this year.
- ❖ Was sampling done for each exposure?
- ❖ Were the results within compliance?
- ❖ Were assessments sent to each employee informing them of the results?

- ❖ Number of asbestos exposures addressed this year.
- ❖ Was sampling done for each exposure?
- ❖ Were the results within compliance?
- ❖ Were assessments sent to each employee informing them of the results?

- ❖ Number of bioaerosol exposures addressed this year.
- ❖ Was sampling done for each exposure?
- ❖ Were the results within compliance?
- ❖ Were assessments sent to each employee informing them of the results?

- ❖ Number of lead exposures addressed this year.
- ❖ Was sampling done for each exposure?
- ❖ Were the results within compliance?
- ❖ Were assessments sent to each employee informing them of the results?

- ❖ Number of indoor air quality concerns addressed this year?
- ❖ Was the Indoor Air Quality questionnaire completed for each indoor air evaluation?
- ❖ Was sampling done for each concern?
- ❖ Were the results within compliance?
- ❖ Was an assessment sent to each employee informing them of the results?

Lab Safety Committee Audit of Industrial Hygiene and Indoor Air Quality Program

Is the Standard Operating Procedure Current?

We have drafted updated SOP's for formaldehyde and isoflurane. Both chemicals are listed by OSHA as chemicals currently under review so there may be changes needed in the near future to be consistent with any new regulatory requirements. We are in the process of developing a general SOP for Industrial Hygiene Investigations and Indoor Air Quality

Number of Industrial hygiene exposures addressed this year.

Twenty, as detailed below.

Equipment calibration date current?

All equipment in use has been or is in the process of annual calibration and no equipment is being used that is out of calibration. A summary of the calibration dates is on the sharedrive and a copy is in the binder labeled "EHS Equipment Calibration" which is kept in the lab.

Number of Individual assessments made within the year?

Assessments of the following areas were made this year:

1. Biomedical Research Building, Room 903, Isoflurane
2. ARC, drop technique, Isoflurane
3. Anatomy Labs, formaldehyde
4. Biomedical Research Building, respirable dust (11/26/14)
5. AW Smith, Room 4, Volatile Organic Compounds

Number of outside contracts that were issued for air assessments?

1. Assessment of Biomedical research Building, respirable dust was conducted by EA Group.
2. Consulting assistance in an odor/IAQ issue in AW. Smith Room 325

Number of environmental sampling exposures addressed this year?

Assessments of the following areas were made this year:

1. Biomedical Research Building, Room 903, Isoflurane
2. ARC, drop technique, Isoflurane
3. Anatomy Labs, formaldehyde
4. Biomedical Research Building, respirable dust
5. AW Smith, Room 4, Volatile Organic Compounds

Was sampling done for each exposure?

Yes

Were the results within compliance?

Yes

Were assessments sent to each employee informing them of the results?

Assessments were sent to employee supervisors for distribution.

Number of asbestos exposures addressed this year.

Zero. Tests for asbestos were pre-emptively performed by licensed contractors to ensure no exposures and details can be found in the attached document.

Was sampling done for each exposure?

Not applicable.

Were the results within compliance?

Not applicable

Were assessments sent to each employee informing them of the results?

Not applicable

Number of bioaerosol exposures addressed this year.

Zero. Concerns about bioaerosol exposures such as mold were addressed by examination of facilities by licensed contractors (see attached document).

Was sampling done for each?

Not applicable.

Were the results within compliance?

Not applicable

Were assessments sent to each employee informing them of the results?

Not applicable.

Number of lead exposures addressed this year.

Zero

Was sampling done for each exposure?

Not applicable

Were the results within compliance?

Not applicable

Were assessments sent to each employee informing them of the results?

Not applicable

Number of indoor air quality concerns addressed this year?

Indoor Air Quality was investigated in:

1. Police dispatch
2. Kelvin Smith Library, Basement mailroom
3. Olin, odors and IAQ
4. Mather, 3rd floor
5. ARC Offices
6. BRB Room 323
7. Crawford Room 220A
8. Harris Library

Was the indoor air Quality questionnaire completed for each indoor air quality evaluation?

We have not been using a formal IAQ questionnaire but employees are interviewed about their observations and health symptoms and based on that information along with any concerns or observations we have made in the field or from interviewing facilities personnel, we may follow-up with monitoring.

Was sampling done for each concern?

Monitoring is only conducted if poor ventilation, mold or humidity, or other indoor air contaminants are suspected to be causing health related or comfort issues. Many times, suggestions for improvements to indoor air quality can be made from visual observations. (i.e. water leaks, blocked vents, cleaning, etc.)

Were the results within compliance?

There are currently no regulatory standard for indoor air quality. We are using the most current version of the American Society of Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE) Standards to evaluate whether ventilation that is within the range of acceptable air quality is being provided. Where specific contaminants are identified or suspected, additional sampling and analysis is conducted in accordance with OSHA standard methods.

Ventilation within the complaint areas have all been found to be within the American Society of Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE) recommendations for comfort and acceptable air quality. All OSHA sampling that has been conducted with complaint areas have all been within the OSHA regulatory limits.

Was an assessment sent to each employee informing them of the results?

Assessments were sent to employee supervisors for distribution.

ASBESTOS PROJECT SAVINGS

Site and Job 2014	Contractors bids		Abatement Savings	Oversight savings	Sampling savings	Total savings	Date
Wood W171 Office Clean-up	PES 1100.00	HAMR 450.00	650.00	500.00		1150.00	9-8-14
Pathology 310	PES 1100.00	HAMR 450.00	650.00	500.00	350.00	1500.00	9-19-14
Hayden 12 Carpet and tile	PES 1750.00	HAMR 900.00	850.00	500.00		1350.00	9-29-14
3072 Fairmount Blvd	HAMR 14,900	PES 3695.00	11205.00			11205.00	11-10-14
Mather 301 Carpet and tile	PES 1750.00*	HAMR 1100.00	650.00	500.00		1150.00	10-20-14
Taplin 3 rd Floor Wall Penetration	PES 1500.00*	HAMR 600.00	900.00	500.00	350.00	1750.00	10-16-14
Dental School DOB270					350.00	350.00	10-17-14
Eldred Theater Bathroom				500.00		500.00	8-8-14
Millis-Fisher Storeroom					350.00	350.00	10-15-14
Kusch Basement Lounge	<i>PES 2423.00</i>	<i>HAMR 0000.00</i>		500.00		500.00	11-3-14
AW Smith 111 Carpet	PES 2715.00	HAMR 240.00	2475.00	500.00		2975.00	10-30-14
AW Smith 334 Carpet +tile	PES 2888.00	HAMR 600.00	2288.00	500.00		2788.00	10-30-14
AW Smith 114,116,118 Carpet and tile	HAMR 3200.00	PES 2231.00	969.00	500.00		1469.00	Not performed yet
AW Smith Drywall removal	HAMR 2900.00	PES 1835.00	1065.00	500.00		1565.00	12-18-14
Taplin 208	PES 1,222.00	HAMR 750.00	472.00	500.00		972.00	12-19-14
Gund Law Oversight	EA (20 shift est) 650.00/shift 400.00 report <i>13,400.00 total</i>	CTG 550.00/shift (20 shift est) <i>11,000 total</i>			<i>2400.00 (not included in running total)</i>		
2015							
Storrs carpet mastic					350.00	350.00	1-23-15
1727 E116th Apt 3					350.00	350.00	1-26-14
11430 Fairchild Mold remediation				500.00		350.00	1-15-15
Garage 35 MPF Repair	PES 896.00	HAMR 700.00	196.00	500.00		546.00	1-7-15
Storrs Staff suite					350.00	350.00	1-23-15
1527 East 116 th Street					350.00	350.00	1-26-15
1715 East 115 th apt 9					350.00	350.00	2-3-15
Mather House					350.00	350.00	1-30-15
Eldred Theater 2 GBs	PES 1284.00*	HAMR 800.00	484.00	500.00		984.00	1-30-15

Site and Job 2014	Contractors bids		Abatement Savings	Oversight savings	Sampling savings	Total savings	Date
Crawford Overhang	PES 1336.00	HAMR		500.00		(500.00)	1-28-15
Pierce Apt 403 Mold				500.00		500.00	2-2-15
Gund Richie room					350.00	350.00	2-12-15
Giulford 213					350.00	350.00	2-12-15
Mather Test vs Air	Air 600.00	Sampling 200.00				400.00	2-17-15
Pierce Lobby repair				500.00		500.00	2-16-15
Wickenden 202 repair				500.00		500.00	2-9-15
Mather House tile removal**	CWRU 0.00	Est 500.00	500.00			500.00	2-15
Raymond House tile removal**	CWRU 0.00	Est 500.00	500.00			500.00	2-15
Gund Law Bridge sampling					350.00	350.00	2-27-15
AW Smith 2 nd Floor tile				500.00		500.00	3-11-15
Taft House Elev Room sampling					350.00	350.00	3-16-15
Bingham 2 nd Floor lab survey	CTG 900.00	HZW 1,170.00				270.00	3-27-15
Wickenden Floor tile**	CWRU 0.00	Est 500.00	500.00	500.00		1000.00	3-11-15
Health Services dispatch testing					350.00	350.00	3-25-15
Thwing basement 45 vapor barrier testing					350.00	350.00	3-20-15
Robbins 325-327, 326/328 top testing					350.00	350.00	3-12-15
Robbins E430A mastic testing					350.00	350.00	3-6-15
1715 117 th Apt 19					175.00	175.00	3-30-15
1715 117 th 1 st Flr storage					175.00	175.00	3-30-15
Degrace Hall East roof stack					350.00	350.00	4-9-15
ITS TECs summer 2015					500.00	500.00	4-1-15
Nord 4 th Floor hall lights					350.00	350.00	4-6-15
Nursing 3 rd floors RR floor					350.00	350.00	4-7-15
ZETA PSI mpf repair				500.00		500.00	4-13-15
Olin Elec chase clean-up/repair				500.00		500.00	4-13-15

Site and Job 2014	Contractors bids		Abatement Savings	Oversight savings	Sampling savings	Total savings	Date
Dental Jan. Closet R&R ipipe				500.00		500.00	4-16-15
Thwing Complete Survey	HZW 5,640.00	CTG 7,700.00				2,060	4-21-15
Strosacker Lobby sampling					350.00	350.00	4-16-15
Thwing Atrium roof sampling					350.00	350.00	4-15-15
Bingham 240B Clean-up				500.00		500.00	4-24-15
Rockefeller 303 Sampling					350.00	350.00	4-23-15
Robbins Counter top removal	HEPA 5,800.00	Prec. 13,800.00	8,000.00			8,000.00	5-1-15
EHS Sampling					350.00	350.00	5-7-15
Raymond House sampling					350.00	350.00	5-7-15
Robbins 321 Sampling					350.00	350.00	5-8-15
Yost staff bathroom sampling					350.00	350.00	5-20-15
Bingham Alt bid sampling					350.00	350.00	5-21-15
Strosacker Abatement oversight				500.00		500.00	5-26-15
Sears Library floor Moist test					500.00	500.00	5-21-15
Ofin Flood Moist test					500.00	500.00	5-21-15
KHS Flood Moist test					500.00	500.00	5-18-15
Allen Memorial 327 testing					350.00		6-2-15
Alumni House testing					350.00		6-2-15
Gund Law annex					350.00		6-1-15
Dental JC additional removal				500.00			6-9-15
Raymond, Sherman, Norton tyler abatement fan unit	HEPA 13,900	Prec. 23,200	9,300.00			9,300.00	6-17-15
Raymond, Sherman, Norton tyler oversight	CTG -150.00/shift	EAG 485.00/shift		700.00 based on 20 shifts		700.00	6-17-15
1680 East 117 th street , apt 302 (Burch Kless)	HEPA 1,400.00	Pioneer 1,439.00	39.00			39.00	
1715 Apt I Sampling					350.00	350.00	6-10-15
Pathology B11 Sampling					350.00	350.00	6-10-15
Pathology				500.00		500.00	6-16-15

Site and Job 2014	Contractors bids	Abatement Savings	Oversight savings	Sampling savings	Total savings	Date
Running total savings as of 6-23-15					73,073.00	

Start of chart compilation approximately August 1, 2014 (currently represents 10.5 months)

* Estimated cost based on previously submitted proposals

** Training class cost 1500.00. \$1,000 savings due to CWRU employee performing work.

*** 28,750 savings due to Brad Fye EHS in house services for CWRU as of 6-23-15

EHS
ANNUAL
REPORT

2014-2015 Metrics

EHS DASHBOARD

The following indices are composite summaries and reflect relative compliance in each category. The values are by quarter and are not cumulative.

	Percentage Compliance Indices			
	1st qtr	2nd qtr	3rd qtr	4th qtr
EHS Composite Compliance Index	Not Tracked	82%	93%	93%
Safety Service Inspections Index	Not Tracked	97%	94.00%	95%
Radiation Inspection Index	Not Tracked	Not Tracked	Not Tracked	100%
Safety Services Training Index	Not Tracked	46%	46.00%	46%
Radiation Training Index	Not Tracked	Not Tracked	Not Tracked	100%
Safety Services Fire Safety Index	Not Tracked	92%	100.00%	100%
Safety Services Facilities Safety Index	Not Tracked	98%	100.00%	100%
Safety Services Biosafety Index	Not Tracked	100%	100.00%	100%
Safety Services Regulatory Index	Not Tracked	100%	100.00%	100%
Radiation Safety Regulatory Index	Not Tracked	Not Tracked	Not Tracked	100%

Composite Index Explanation:

EHS Composite Index=[Chemical Safety Index + Biosafety Index + Facilities safety Index+ Fire Safety Index + 4*Regulatory index]/8

Safety Services Chemical Index=100-1% for any chemical related incident such as a chemical spill or exposure

Safety Services Biosafety Index=100-1% for any biosafety related incident such as a biological release or exposure

Safety Services Facilities Safety Index=100-1% for any facilities related safety issue or training issue such as a person not attending training

Safety Services Fire Safety Index=100-1% for each fire related incident such as a fire alarm

Safety Services Regulatory Index=100% unless a violation occurs and then =0%

Safety Services Training Index= [(number of retraining's completed)/ (number of retraining's expected to be completed based on previous year)]

Safety Services Inspection Index=100-[average of all inspection issues found occurring greater than 1% of all laboratory inspections]

This information is generated as a report from the Onsite Inspection database and is then manually added up and averaged

Radiation safety Training Index=[(number of retraining's completed)/ (number of retraining's expected to be completed based on previous year)]

Radiation safety Inspection Index =[(number of inspections completed)/ (number of inspections expected to be completed)]

BASE METRICS

These base metrics are cumulative totals of actual work product

Safety Services	Q1	Q2	Q3	Q4	YrEnd
Number trained in each qtr	2394	1,698	1,664	3230	8986
Number inspection in each qtr	280	837	551	912	2580
Number of waste dispoals in each qtr	2625	4,259	1,721	1295	9900

Radiation Safety					Year End Total
Inspections	Not Tracked	Not Tracked	Not Tracked	Not Tracked	687
Audits of AU	Not Tracked	Not Tracked	Not Tracked	Not Tracked	157
Training	Not Tracked	Not Tracked	Not Tracked	Not Tracked	1112
Waste Pickups	Not Tracked	Not Tracked	Not Tracked	Not Tracked	480

EHS METRIC 2014-2015

COMMITTEE AUDITS	Quarter 1	Quarter 2	Quarter 3	Quarter 4	YE Actual FY14-15	YE Actual FY13-14
Radiation Safety Committee Audits	0	0	20	25	45	0
Laboratory Safety Committee Audits	0	0	0	16	16	0
IACUC Audits - New Protocols	42	35	44	61	182	
IACUC Audits - Continuing reviews	57	66	82	120	325	
IACUC Audits - Addenda	79	103	155	92	429	936
IBC Audits	13	13	15	11	52	40

CHP/ECP SUBMITTED	Quarter 1	Quarter 2	Quarter 3	Quarter 4	YE Actual FY14-15	YE Actual FY13-14
CHP	33	126	46	154	359	234
ECP	33	126	50	160	369	230
TOTAL	66	252	96		414	464

ORIENTATION	Quarter 1	Quarter 2	Quarter 3	Quarter 4	YE Actual FY14-15	YE Actual FY13-14
New Employees	77	86	30	96	289	508
New Faculty	78	0	10	10	98	58
Orientations	155	8	40	12	215	566

ANESTHETIC GASES/VAPORS	Quarter 1	Quarter 2	Quarter 3	Quarter 4	YE Actual FY14-15	YE Actual FY13-14
Isoflurane	0	0	0	0	0	1

TRAINING	Quarter 1	Quarter 2	Quarter 3	Quarter 4	YE Actual FY14-15	YE Actual FY13- 14
Laboratory Safety/Regulated Chemicals	781	466	716	843	2806	3070
Right-to-Know	406	130	96	115	747	1164
ARC Safety Training	37	10			47	300
Formaldehyde	89	163	8	40	300	524
Bloodborne Pathogens	771	393	512	610	2286	2702
Respirator	20	31	47	27	125	272
Vehicle Safety	50	33	56	23	162	172
Fire Safety	112	84	0	0	196	32
Fire Extinguisher	0	153	0	0	153	0
Plant	71	203	95	136	505	212
BSL 3			2	1	3	4
DOT/IATA Shipping	21	8	17	17	63	26
Contractor	36	20	15	18	89	36
Special Classes				0	0	472
Scissor Lift			28	12	40	
Fork Lift			17	13	30	
Other				0	0	0
TOTAL	2394	1694	1609	1855	7552	8986

ROOM INSPECTIONS (Inspections run from January to December)

Building Name	2014 July- September	2014 October- December	2015 January- March	2015 April-June	YE Actual FY14-15	YE Actual FY13- 14
Art Studio					0	1
A.W. Smith				138	138	96
Bingham					0	132
Bioenterprise (UCRCL University West)	27				27	101
Bishop		1			1	20
Bolwell					0	16
Biomedical Research Bldg.		450	13		463	461
Cleveland Clinic Foundation					0	1
Clapp					0	32
Corrner's Office (UCRCL)					0	9
DeGrace (Biology)		1			1	35
Dental		213			213	96
Glennan			147	15	162	136
Kent Hale Smith	33	9		70	112	219
Lerner UH					0	20
Lowman					0	1
MacDonald					0	33
Metrolifeath	92	14			106	33
Mills	13	4			17	211
HASA	17				17	17
Nursing		130			130	198
Olin				96	96	124
Pathology		2	1		3	133
RAD Waste Facility					0	68
RB&C					0	48
Research Tower		60			60	92
Robbins (MED East)		56	91		147	361
Rockefeller			114		114	121
Sears Bldg.					0	2
Service Bldg.					0	2
Simulation Center (MC Sina)	28				28	26
Stretnacker					0	13
VA Hospital	5				5	19
Walker	1				1	91
Warm		1			1	23
West Quad (MC Sina) (CCMB)					0	120
White					0	139
Wickenden	64				64	730
Weinstein Research Bldg.		308			308	662
Wood		366			366	
TOTAL	280	1615	462	223	2580	5014

CRANE INSPECTIONS	Quarter 1	Quarter 2	Quarter 3	Quarter 4	YE Actual FY14-15	YE Actual FY13- 14
AW Smith	0	0	1	0	1	
Rockefeller	0	0	4	0	4	
Olin	0	0	1	0	1	
White	0	0	3	0	3	
Kent Hale Smith	0	0	0	0	0	
Bingham	0	0	5	0	5	
Total	0	0	14	0	14	

RESPIRATOR USE	Quarter 1	Quarter 2	Quarter 3	Quarter 4	YE Actual FY14-15	YE Actual FY13- 14
Physical	11	46	62	27	146	544
Train	20	31	47	27	125	272
Fit Test	5	30	46	27	108	272

BIOHOOD REPORTS	Quarter 1	Quarter 2	Quarter 3	Quarter 4	YE Actual FY14-15	YE Actual FY13- 14
Recertify (pass)	17	98	178	50	343	#VALUE!
Repair (service + fail)	35	14	7	11	67	#VALUE!
Total	52	112	185	61	410	

ASHRAE TEST	Quarter 1	Quarter 2	Quarter 3	Quarter 4	YE Actual FY14-15	YE Actual FY13- 14
Pass	0	0	0	0	0	4
Restricted	0	0	0	0	0	0
Fail	0	0	0	0	0	0
TOTAL	0	0	0	0	0	4

FUME VELOCITY HOOD TESTING	Quarter 1	Quarter 2	Quarter 3	Quarter 4	YE Actual FY14-15	YE Actual FY13- 14
Pass	62	28	30	78	198	432
Restricted	84	114	78	12	288	286
Failed	16	2	6	2	26	14
TOTAL	162	144	114	92	512	732

CLEARANCES	Quarter 1	Quarter 2	Quarter 3	Quarter 4	YE Actual FY14-15	YE Actual FY13- 14
Relocation	176	48	18	223	465	352
Repairs	6	8	1	2	17	60
Disposal	96	65	95	92	348	606
Demolition					0	1
Equipment Fabrication (OLIN)	10	13	11	4	38	38
Renovation					0	1
Relocation to Storage					0	1
Termination					0	1
Clean	1	1	15	2	19	4
Return to Vendor	0				0	6
Cold Room Repairs	3	4	3	4	14	64
Decommission	7	1	1	8	17	28
TOTAL	299	140	144	335	918	1158

ERGONOMICS	Quarter 1	Quarter 2	Quarter 3	Quarter 4	YE Actual FY14-15	YE Actual FY13- 14
Ergonomics Assessment	4	5	7	5	18	30

CHEMICAL PURCHASE APPROVALS						YE Actual FY13- 14
Purchase Approvals	98	89	112	95	374	404

HAZARDS MATERIALS SHIPPING

DOT/IATA SHIPPING	Quarter 1	Quarter 2	Quarter 3	Quarter 4	YE Actual FY14-15	YE Actual FY13- 14
Aviation	6	2	18	12	38	0
Biological	6	2	18	12	38	0
Corrosive	6	2	18	12	38	0
DOT/IATA	6	2	18	12	38	0
Dry Ice	10	9	7	15	41	0
Exempt	10	9	18	12	49	0
Infectious	6	2	18	12	38	0
TOTAL	32	22	61	51	166	0

TYPES OF INJURIES

INJURY TYPES	Quarter 1	Quarter 2	Quarter 3	Quarter 4	YE Actual FY14-15	YE Actual FY13- 14
Needlestick	No data	32	4	9	45	26
Splash	No data	1	0	0	1	4
Burn	No data	0	1	0	1	4
Concussion/Contusion	No data	15	5	8	28	12
Laceration	No data	41	7	4	52	36
Strain/Sprain	No data	12	5	4	21	26
Slip/Fall	No data	19	18	4	41	32
Inhalation/Exposure	No data	7	3	2	12	6
Bite/Sting	No data	0	0	1	1	8
TOTAL	0	127	43	32	202	154

INCIDENTS	Quarter 1	Quarter 2	Quarter 3	Quarter 4	YE Actual FY14-15	YE Actual FY13-14
Explosion/Fire					0	12
Food in Lab					0	0
Suspicious Substance/Package	1				1	0
Unsafe Conditions		1	2		3	0
Odor	7	10	25	27	69	76
Spills/Leaks	5	2	4	6	17	20
Alarms/Fire/Intrusion/Hoods/Gas	2	6	5	2	15	2
Waste Disposal	6	2	1	3	12	22
Other	3				3	0
Equipment Alarm					0	0
Hood Repair				3	3	0
Flood	1	2	3		6	12
Mercury	2	1	1	2	6	0
IAQ	3	3	4	2	12	4
TOTAL	30	27	45	45	147	148

REPORTED FIRES	Quarter 1	Quarter 2	Quarter 3	Quarter 4	YE Actual FY14-15	YE Actual FY13-14
Residence Halls	1	2	0	0	3	12
Non-Residence Halls	1	0	1	0	2	12
TOTALS	2	2	1	0	5	24

FIRE SAFETY REPORTS	Quarter 1	Quarter 2	Quarter 3	Quarter 4	YE Actual FY14-15	YE Actual FY13- 14
Fire Alarms	79	87	68	64	298	308
Hot Work Permits	123	89	88	103	403	692
Red Tag	21	5	9	10	45	36
Fire Drills	60	46	46	0	152	92
Fire Inspection, Complete Bldg.	6	16	80	23	125	88
TOTAL	289	243	291	200	1023	1638

ASBESTOS AND LEAD ISSUES

ISSUE	Quarter 1	Quarter 2	Quarter 3	Quarter 4	YE Actual FY14-15	YE Actual FY13- 14
Abatements	18	20	10	30	78	150
Surveys	22	6	29	45	102	260
Mold Issues	3	8	3	12	26	10
Lead	10	3	2	3	18	200
TOTAL	53	37	44	90	224	620

OTHER MONITORING	Quarter 1	Quarter 2	Quarter 3	Quarter 4	YE Actual FY14-15	YE Actual FY13- 14
Formaldehyde Monitoring	0		0	No data	0	14
Preventative Maintenance Confined Space Shutdowns	11	11	8	21	51	24
TOTAL	11	11	8	21	51	42

