ENVIRONMENTAL HEALTH & SAFETY OFFICE

ANNUAL REPORT

FY 2011-2012

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Environmental Health & Safety (EHS)

Mission Statement

The mission of the Environmental Health &Safety Office is to support the University's teaching, research and health care activities by providing guidance, training and services to the institution and its employees. Our goal is to promote and foster a safe working environment by incorporating health and safety into the daily operations of the University, resulting in the prevention of injuries and illnesses of faculty, staff and students, promotion of best practices as well as compliance with federal, state, and local regulations and laws governing the activities of the institution.

Responsibility Statement

The Environmental Health & Safety Office (EHS) is responsible for the administration of the biological safety, chemical safety, occupational safety, radiation safety, and specific environmental programs, and other programs deemed necessary for the health and safety of the University community. EHS program activities are organized into five sections supported by an administrative group. These sections are: 1) Biological Safety; 2) Occupational Safety; 3) Environmental Programs; 4) Radiation Safety; and 5) Chemical Safety.

Aspirations

The Environmental Health & Safety Office aspires to make significant contributions to the University by:

- Functioning as a major resource for environmental health, safety and environmental protection.
- Integrating health protection and safety practices into employee and departmental activities.
- Communicating effectively so staff can readily use the resources created and services provided.
- Providing quality service to foster a safe and healthful workplace.

Executive Summary

In addition to routine business activities, EHS emphasized the following areas during the last fiscal year: (1) developed a Facility Closure Plan, (2) created information regarding the use of controlled substances in research, (3) replaced a cyclotron in the PET facility, and (4) initiated the Workplace Occupational Safety & Health Working Group.

1. **Facility Closure Plan.** Work on a plan to decommission a space at EHS's waste storage facility on the UI Research Campus was initiated. An RFP was developed, and the contract for developing the closure plan, conducting the work to decommission the space and submitting the results to EPA has been awarded to an Iowa-based company. The 'Facility Closure Plan' has been submitted to the EPA, and a public comment period is underway. The decommissioning work, final report to EPA and EPA approval to release the facility for general use is expected to be completed in FY13.

2. **Controlled Substances Used in Research.** In an effort to provide readily available information for UI researchers who plan to use controlled substances that are regulated by the Drug Enforcement Administration (DEA) and Iowa Board of Pharmacy Examiners (IBPE), EHS developed a guidance document, list of frequently asked questions, and a training course. The documents are intended to assist UI researchers in understanding what they need to do to properly manage the purchase, storage, use and disposal of controlled substance used in their research.

3. **Radiation Producing Machines Replaced**. The EHS Radiation Section assisted the UIHC's Positron Emission Tomography Imaging Center in the removal and replacement of their 20 year old cyclotron. The project involved extensive decommissioning radiation surveys and monitoring prior to removal and shipment of the old cyclotron for disposal out of state by a decommissioning contractor. Following vendor installation of the new cyclotron, EHS conducted extensive radiation monitoring of all areas adjacent to the vault housing the cyclotron to verify that radiation levels are maintained below regulatory safety requirements.

   The Radiation Section also assisted in the decommissioning, removal, shipment, and replacement of the UIHC DeGowin Blood Center's blood irradiator. The old irradiator, which contained a large cesium-137 sealed source that required 'increased security controls,' was replaced with a cabinet x-ray blood irradiator that contains no radioactive source and does not require application of 'increased controls' security requirements for the area. The irradiator replacement significantly reduces the regulatory burden on both the Blood Bank and the University's radioactive materials license.

4. **Workplace Occupational Safety & Health Work Group.** A workplace occupational safety and health work group was created to foster a safe environment for faculty, staff, and student employees. The work group will review campus workplace safety programs, foster coordination and communication between safety programs across campus, recommend priorities and strategies to promote workplace safety on campus, and assist in the development, revision, implementation and maintenance of these programs. Membership includes representatives across campus from Athletics, EHS, Human Resources, FM, University Housing, UIHC, UEHC, Public Safety and Risk Management.

Biological Safety Section

The Biological Safety Section is responsible for the administration of programs in the research and non-research community that involves the management of biological or infectious agents and biohazardous materials used at The University of Iowa. The covered programs include general biological safety, bloodborne pathogens, recombinant DNA, select agents, and shipping/transportation of infectious substances/diagnostic specimens with or without dry ice. Administration of these is accomplished by developing, recommending, administering and implementing policies and procedures that promote the safe use of the types of materials covered by each program, as well as exercising surveillance and enforcing standards for health and safety within their jurisdiction.

Biological Safety Program

Scope: This program provides support to areas that work with biological materials or infectious agents, which primarily include clinical and research lab areas. This consists of maintaining a biosafety manual and reference materials, providing health and safety consultation to the University's Biohazardous Waste Program, reviewing protocols where biosafety level 2 or 3 organisms are manipulated, providing biosafety signs, prescribing safe handling techniques, and conducting site visits for containment and/or regulatory assessments.

Activities and Accomplishments for FY12:

- Reviewed 507 protocols submitted primarily from animal ACURFs and Hazard Containment Protocols; in addition, ten material transfer agreements (MTAs) were reviewed.
- Updated the web-based Basic Biological Safety course.
- Updated the web-based Advanced Biosafety course.
- Updated biosafety web documents.
- Published Lab News articles that were distributed to the research community.
- Updated biological agent inventories for research staff following their annual laboratory audit.
- Received requests from eight investigators for documentation of their laboratories or other authorization, related to funding or ordering materials from suppliers.
- Hired and began training a new Associate Biosafety Officer as support for the Biosafety Section.
- Evaluated eight injuries/possible exposures, non-bloodborne pathogen related.
- Updated registration documents for the human pluripotent stem cell committee and program; two registration documents have been reviewed and approved.
- Collaborated with Office of Animal Resources to develop procedures for the handling and disposal of animal waste from animals exposed to agents (non-recombinant) requiring ABSL1/2 housing.
- Participated in two USDA inspections related to permit applications.
- Monitored both the Iowa Administrative Bulletin and the Federal Register for regulatory changes which may impact the biological safety programs.

Biological Safety Equipment Certifications

Scope: This program involves overseeing the biosafety cabinet certification, repair and maintenance contract with ENV Services. Administration of the program involves coordinating the testing and repair of biological safety cabinets (BSCs) and horizontal flow equipment, in compliance with NSF Standard 49 and industry standards, for their safe operation and maintenance, scheduling cabinet decontaminations for repair or prior to a move, and billing for all services performed by ENV technicians.

Activities and Accomplishments for FY12:

- Reviewed use and approved the purchase of new BSCs.
- Scheduled 506 BSCs for certification.
- Scheduled certification of 22 horizontal flow cabinets.
- Scheduled formaldehyde or vaporous hydrogen peroxide (VHP) decontamination of 62 BSCs.
- Scheduled the decontamination of filter housing units and one BSL3 room.
- Scheduled annual testing of other HEPA-filtered safety equipment including Thoren cage racks, an ultra-centrifuge, and roof-top exhaust HEPA filter units for the BSL3 labs.
- Scheduled troubleshoots and/or repair service for 93 cabinets.
- Worked with PIs and ENV to obtain 42 quotes for service.
- Updated BSC web document.
- Updated the SOP for program administration and a separate SOP for technicians providing service to University staff/faculty.
- Validated 18 BSC decontaminations.

Bloodborne Pathogens Program (BBP)

Scope: This program is intended to assist departments in meeting the requirements of OSHA's Bloodborne Pathogens Standard. This law, as defined by OSHA, covers individuals whose duties entail reasonably anticipated contact with blood and blood products and other potentially infectious materials. The purpose is to reduce or eliminate the risk of exposure to bloodborne pathogens in clinical, research, teaching, service and administrative units.

Activities and Accomplishments for FY12:

- Reviewed and/or updated Exposure Control Plans (ECP) upon request.
- Updated the University's ECP template, and provided notice of the update to UI departments.
- Updated EHS's four online BBP training courses.
- Updated Hepatitis B consent/declination forms in collaboration with UEHC.
- Evaluated four possible BBP exposures.
- Continued to contact departmental BBP Exposure Control Officers to ascertain status of their BBP Exposure Control Program (ECP).
- Met with CCOM administration to discuss out of compliance departments and request assistance.

DOT Transportation Compliance Program: Shipping/Transportation of Infectious Substances and/or Dry Ice

Scope: The Department of Transportation (DOT) and International Air Transport Association (IATA), which regulate the shipping of hazardous materials, require that individuals who ship materials defined as infectious substances or diagnostic specimens receive training in order that they have knowledge of and comply with shipping regulations. Since these often involve shipments using dry ice, a hazardous material, information on shipping with dry ice is included in this training course. A separate course for individuals who use dry ice to ship otherwise non-hazardous materials is also available.

Activities and Accomplishments for FY12:

- Reviewed the online Shipping Infectious Substances/Diagnostic Specimens, With or Without Dry Ice course and the Shipping With Dry Ice course to ensure compliance with the 2012 updates to the IATA/DOT regulations.
- Updated shipping web documents, as necessary.

Recombinant DNA Program

Scope: The National Institutes of Health's *NIH Guidelines for Research Involving Recombinant DNA Molecules (NIH Guidelines)* governs the creation of recombinant DNA molecules and their use in organisms, human subjects, animals, and plants. Compliance authority on campus is placed with the Institutional Biosafety Committee (IBC) for review of recombinant DNA use. EHS's Biosafety Officer and Director are members of the committee and also coordinate the committee's review process; biosafety section staff generates the approval letters that are sent to PIs after IBC review and inspects laboratories for proper procedures, practices, facilities, and experience.

Activities and Accomplishments for FY12:

- Approved 170 new non-exempt rDNA protocols.
- Approved 74 amendment requests to active rDNA protocols.
- Reviewed ACURFs and ACURF amendments to ensure all recombinant work is registered with the IBC.
- Reviewed 297 non-exempt protocols and 86 exempt protocols.
- Held 25 IBC meetings.
- Utilized the rDNA database to track and facilitate annual reviews of protocols.
- Conducted monthly reviews of protocols approved 1 and 2 years prior to assess status and ensure notification of any significant changes made by the PI. Protocols reviewed: 292.
- Each month, notified PIs of expired protocols. (Protocols are approved for a maximum of 3 years.) Inactivated 129 expired protocols from further review. In addition, inactivated 28 protocols before they expired (PI reported the rDNA work was no longer active, or the PI left the University).
- As part of the laboratory audit program, conducted audits of all BSL2 laboratories using rDNA.
- Provided one-on-one assistance for faculty and staff that had issues when accessing/using the online registration process.
- Updated rDNA web documents.
- Provided the annual NIH/OBA membership report to the Associate Vice President for Research for Regulatory Affairs, who then submitted it to NIH/OBA.
- Recruited two new IBC members, a veterinarian and a virologist.
- Updated EHS's two online training courses for researchers using rDNA, UI and VAMC courses.
- Revised an internal program SOP and updated procedures for IBC review of rDNA documents.
- Collaborated with Office of Animal Resources to develop procedures for the handling and disposal of animal waste from large animals exposed to recombinant agents requiring ABSL2 housing.
- Three possible exposures were reported to NIH/OBA that required review and follow-up.

Select Agent Program

Scope: The program was developed in response to the 2001 Patriot Act and the 2002 Public Health Security and Bioterrorism Preparedness and Response Act to provide compliance oversight and administrative support to researchers who wish to use biological agents and toxins that present a severe threat to human, animal, or plant products (select agents). The program establishes requirements concerning registration, security risk assessments, safety plans, security plans, emergency plans, training, transfers, record keeping, inspections and notifications to CDC or USDA/APHIS. The regulations are designed to provide protection against misuse of select agents and toxins whether inadvertent or the result of terrorist acts against the United States homeland or in the commissioning of other criminal acts. Registering with the DHHS (CDC) or USDA involves submitting an application form, obtaining approval from the Department of

Justice for each person who will have access to select agents, and the laboratory facility undergoing an inspection by DHHS/USDA. The UI has assigned Haley Sinn, Biological Safety Officer, as the Responsible Official (RO). Rachel White, Associate BSO, Carol McGhan, EHS Director and James Walker, Associate VP for Research for Regulatory Affairs, serve as alternate ROs. These individuals are authorized to receive or ship the agents and serve as the primary contact(s) with the registering agency. Principal Investigators are exempt from registering with the CDC or USDA if they possess toxins in quantities that are below the amount listed in the regulation. Clinical labs are also exempt from registering if they destroy or transfer agents after being isolated from clinical samples and required agency reporting.

Activities and Accomplishments for FY12:

- Maintained the list of current active/approved individuals who are allowed access to the BSL3 rooms/areas.
- Updated select agent campus inventory, as necessary.
- Held monthly meetings with two groups for safety/security issues related to select agent work.
- Attended BSL3 user group meetings at HLI.
- Performed an annual general biosafety and security inspection of the laboratories registered under 42 CFR 73.
- Audited the select agent inventory records annually.
- Audited the BSL3 training records for researchers, manager, director, emergency response staff, support staff and RO/ARO.
- Revised the internal SOPs for the Select Agent Program.
- Updated EHS's Select Agent Program website.
- Participated in annual drill/exercises at select agent facilities to test and evaluate the effectiveness of the three plans for each facility.
- Submitted amendment requests to CDC in order to update our registration, as necessary.
- All new PIs sign a form declaring that they do/do not have any select agents or toxins. The declaration form is kept on file in EHS. Each PI using exempt quantities of toxins on the select agent list signs a separate form to attest that he/she knows there is a quantity limit and must maintain his/her toxin inventory below that limit to remain exempt.
- Three facilities were re-commissioned, as part of the annual requirement for the select agent program.
- Reviewed 14 protocols submitted with revisions and/or for annual review by the CCOM BLS3 Committee**.**
- Completed quarterly staff checks of all CCOM-BSL3 registered users.
- Continued to scan select agent related documentation and update the Excel spreadsheet to record and track amendment submissions to CDC.

Biological Safety Program Goals for FY13:

- Conduct annual review/update of the University's Bloodborne Pathogens program and communicate changes.
- Conduct ongoing Sponsored Programs grant reviews to ensure submittal of required rDNA and human embryonic stem cell protocols.
- Conduct annual laboratory audits of BSL2/3 laboratories with active rDNA protocols.
- Submit an annual NIH/OBA report regarding IBC membership to the Office of the Vice President for Research.
- Conduct annual review/update of the rDNA program and communicate changes.

- Support Office of Animal Resources by providing biological assessment services for review of projects using pathogenic organisms with animals.
- Perform annual general and security inspection of the laboratories registered under 42 CFR 73.
- Perform an annual inspection of select agent toxins (exempt quantities) labs.
- Audit BSL3 training for researchers, managers, directors, support staff and RO/AROs.
- Perform an annual drill/exercise at select agent facilities to test and evaluate the effectiveness of the three plans for each facility.
- Review ACURFs/ACURF amendments to ensure registration of rDNA work.
- Revise our select agent program, as necessary, to meet any updates/changes to the Select Agent Regulations.
- Create an online training course for the appropriate/safe use of biological safety cabinets.

Occupational Safety Section

The Occupational Safety Section is responsible for developing and implementing programs, procedures, and processes to reduce occupational safety and health risk exposures for the University. The section strives for best practices by focusing on process-driven approaches to safety rather than approaching safety as a separate element of business and operations.

Programs administered campus wide include OSHA inquiries and inspections and exposure records access, Illness and Injury Prevention, Respiratory Protection and Personal Protective Equipment, Ergonomics, Asbestos, Indoor Environmental Quality, Hearing Conservation, Lockout/Tagout for Hazardous Energy, Confined Space Entry Programs, and Student Use of Hazardous Equipment and Machines.

For the business, operations, and facilities sectors of campus that support the research and academic enterprises, and academic departments with mechanical shops, administrative reviews are conducted to evaluate program and training compliance as detailed below.

Services provided for UIHC include industrial hygiene exposure assessments, indoor environmental quality investigations, ergonomics services, and committee work associated with the Environment of Care Committee administered by the UIHC Safety and Security Office.

Occupational Safety and Health (OSH) Administrative Reviews and Services

Scope: To provide ongoing contact with the business and finance operations, service departments and units, and the academic sectors on campus where hazards inherent to their operations warrant closer inspection. This includes developing, strengthening, and assessing the status of safety program activities in departments. The review process is initiated by sending the review process flow chart to the unit/department contacts. On-site reviews are conducted and items that need correction are tracked for progress and follow-up. Final memos of the results from the review are also distributed to unit/department directors to acknowledge their leadership role in employee health and safety outcomes.

Activities and Accomplishments for FY12:

Conducted reviews for 89 units/departments.

- All units were reviewed for compliance with the following IOSH and NFPA standards:
  - Emergency Preparedness
  - Access and Egress
  - First Aid
  - Fire Extinguishers
  - Flammable and Combustible Storage
  - Compressed Gases
  - Housekeeping
- OSHA standards are applicable to units, depending on the nature of their operations, or the equipment or materials used. The following list provides the number of units that were reviewed for each of the written programs, assessments, and completion of employee training.
  - Personal Protective Equipment - 89 units
  - Chemical Hazard Communication - 80 units
  - Bloodborne Pathogens - 27 units

- Lockout/Tagout - 59 units
- Machine Guarding - 59 units
- Electrical Safety – 30 units
- Powered Industrial Trucks (Fork trucks) - 34 units
- Hazardous Waste - 13 units
- Hot Work - 25 units
- Asbestos Awareness - 6 units
- Fall Protection - 4 units
- Hearing Conservation - 7 units

Students Working With Machinery & Equipment

In response to a serious incident that occurred at a large university on the east coast with Federal OSHA involvement, the EHS Occupational Safety Section took initiatives to assess risk exposure to UI students.

Scope: This program covers department areas and activities that are under the Provost Office where students are exposed to professor-led/academic class projects that involve the use of large industrial powered equipment such as metal and wood turning lathes, band saws, drill presses, radial arm saws, floor mounted grinders, etc.

Activities & Accomplishments for FY12:

- A campus wide assessment was made to determine what academic departments have such machines and equipment that are being used in student academic class projects.
- Academic departments that met the criteria for this risk exposure were identified.
- Meetings were held with department heads in these departments to explain the initiative.
- A survey audit form covering 8 areas of risk concerns was developed.
- A total of 17 shop/studio areas spanning 7 academic colleges and departments were audited. Follow-ups were done to ensure all items covered in the audit were in compliance.

Safety Processes, Collaborations, Regulatory Inspections

Scope: UI processes include management systems and committee collaborations to identify and control risks and increase effectiveness of processes and program results.

Activities and Accomplishments for FY12:

- Provided continued support to University, UIHC, and department committees for risk control related to occupational safety and health. This includes the Fire Safety & Emergency Management Advisory Group, the UIHC Nursing Patient committee, the FM Safety Steering Committee, the UI Pharmaceuticals Safety Committee, the College of Dentistry Nitrous Oxide Oversight Committee, and the Occupational Safety and Health Work Group.
- Served as the central UI contact for IOSH regulatory activity on campus.
- Maintained Occupational Safety and Industrial Hygiene web publications for the campus covering 27 regulatory areas, 24 online courses; and added two new courses for confined space programs.
- Provided orientation to the new FM Safety Officer and services regarding a chemical approval process for custodians, hearing conservations programs, monitoring equipment selection, an accountability matrix for employees, non-FM building maintenance protocols, and fall protection and confined spaces.

Injury and Illness Analysis

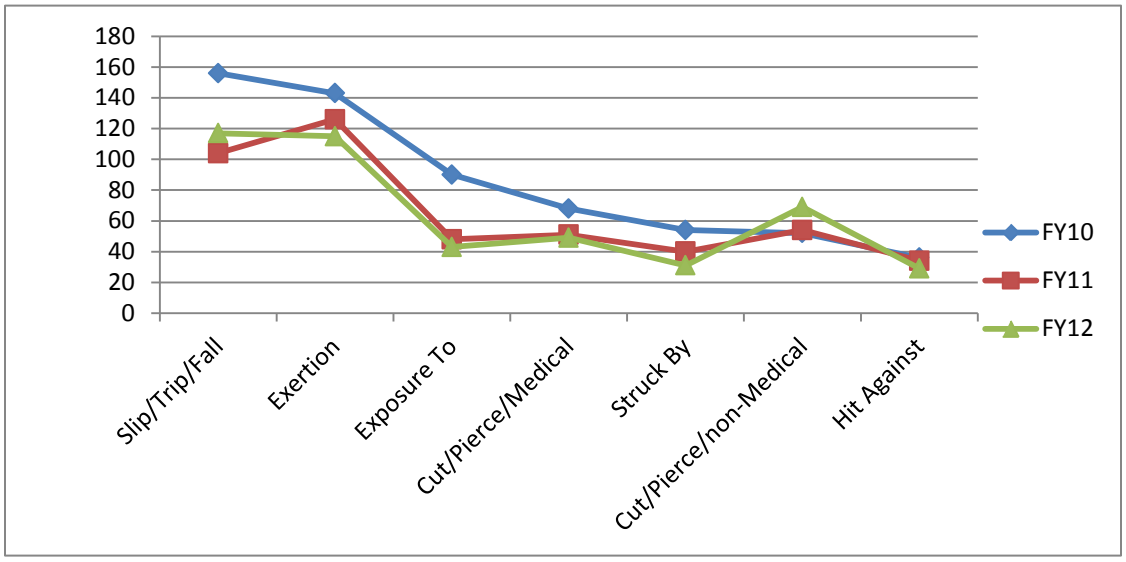
Scope: The program includes reclassifying First Report of Injury forms that have been submitted through the central HR database. Once properly classified, staff is better able to track incidents, perform incident analysis on select reports, and provide data on first reports that were filed and OSHA recordable incidents to department/units during OSH reviews to address loss control activities, as needed. Based on specified criteria, accidents/injuries are investigated to reduce the potential for similar recurrences.

Activities and Accomplishments for FY12:

- Reviewed 1499 incident reports for accident type classification filed by University and UIHC individuals through the University Human Resources injury reporting/workers compensation system.

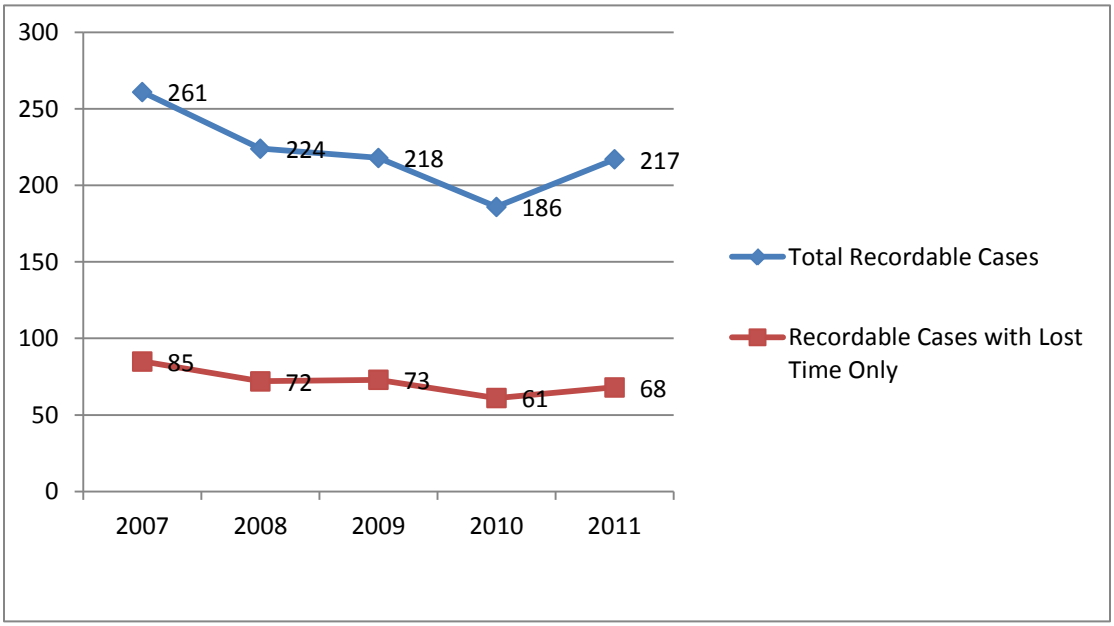
Listed below is a comparison of the most frequently reported types of accidents by University of Iowa Employees (excluding UIHC), as shown in the number of reported accident types:

Accident Type	FY10	FY11	FY12
Slip/Trip/Fall	156	104	117
Exertion	143	126	115
Exposure To	90	48	43
Cut/Pierce/Medical	68	51	49
Struck By	54	40	31
Cut/Pierce/non-Medical	52	54	69
Hit Against	36	34	29

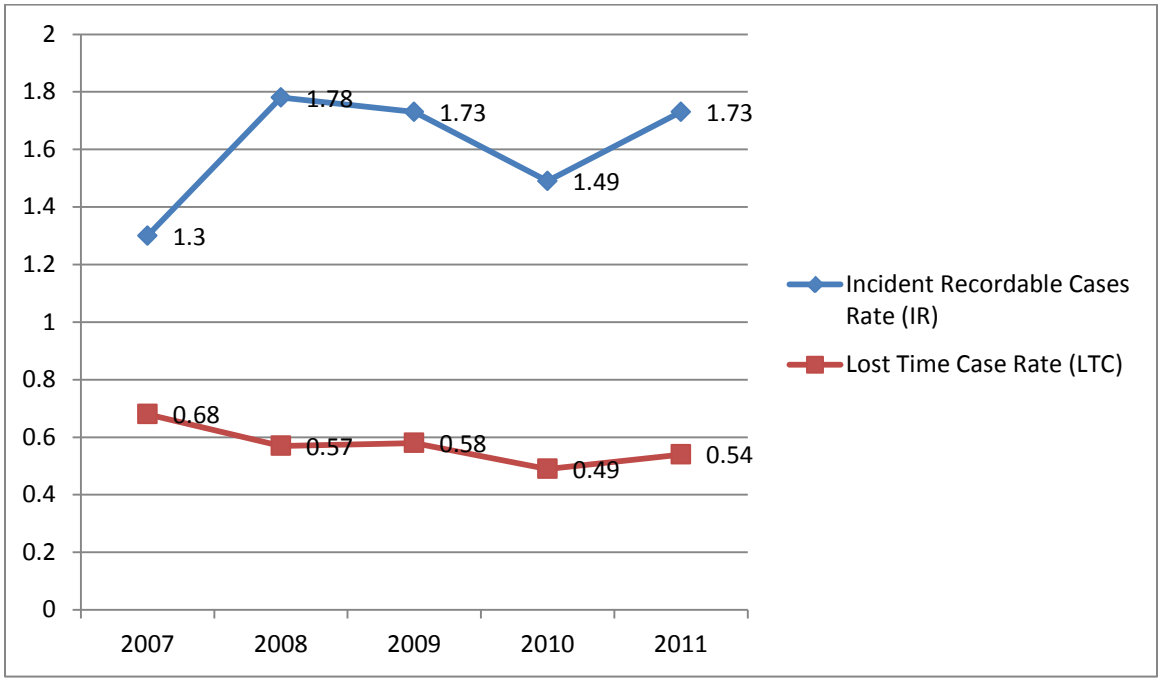


OSHA Recordable Cases for injury/illness are another statistical measure of performance. The next four graphs show OSHA recordable cases for the University (excluding UIHC).

OSHA Number of Recordable Cases for University Employees



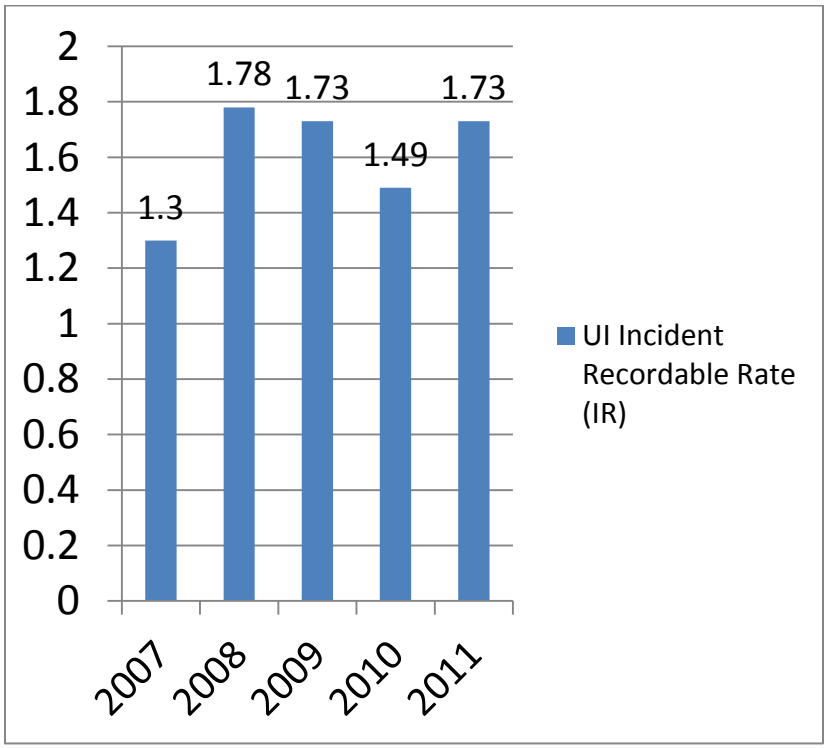
OSHA Recordable Injury/Illness Case Rate for University Employees



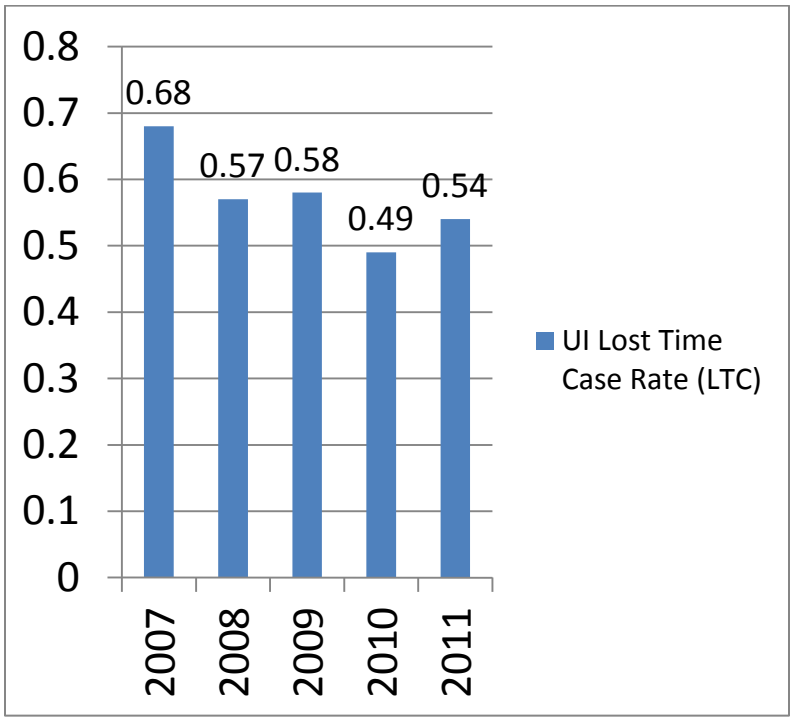
The Incident Recordable Case Rate (IR) represents the total recordable cases that the University experienced for a given year per 100 full-time employees. It is a mathematical calculation that takes the total number of cases and multiplies it by 200,000 and then divides it into the total man hours worked for the year.

The Lost Time Case Rate (LTC) represents the number of cases from the total recordable cases that involved lost work days away from work for the University for a given year per 100 full-time employees. It is a mathematical calculation that takes the total number of recordable cases involving lost work days and multiplies it by 200,000 and then divides it into the total man hours worked for the year.

The two graphs below show how the University of Iowa compares to the national rates on universities for recordable incident and lost time cases. For the last five years the University of Iowa has been below the national rates for both incident and lost time.



The National IR for Universities for this period was 2.2 to 2.6.



The National LTC for Universities for this period was 0.6 to 0.7.

The chart below compares the types of cases investigated during 82 formal investigations conducted by EHS staff on first reports of injuries.

First Report of Incident/Injury Investigations completed by EHS (UI employees, excluding UIHC)				
Exertion	15		Chemical	1
Struck By	6		Exposure To	7
Laceration	3		Noise	3
Needle Stick	8		Cut	11
Fall	5		Burn	5
Caught In	4		Contact	3
Eye	5		Puncture	2
Electrical Shock	1		Face	1
Inhalation	1		Hit Against	1

EHS works closely with University departments with high numbers of OSHA recordable cases to determine what steps can be taken to reduce these types of injuries. Combined, these departments represent 70% of the total UI logged cases for 2011.

Ergonomics

Scope: The ergonomics program identifies physical stressors in University and UIHC work environments that can contribute to musculoskeletal disorders. Effort to reduce or eliminate the identified stressors is then made. The program involves assisting departments in the implementation of ergonomic programs, conducting group training when requested, and performing workstation evaluations for individuals suffering from known musculoskeletal symptoms or injury.

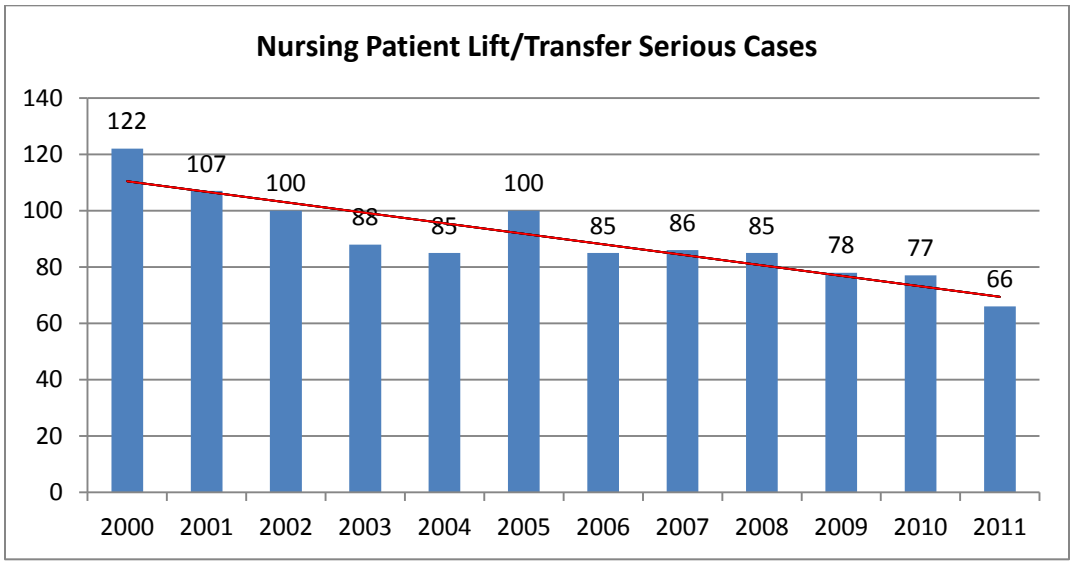
Activities and Accomplishments for FY12:

- Conducted 247 evaluations, primarily in office environments, for individuals who had developed musculoskeletal symptoms or disorders that negatively impacted their daily work activity. A number of these individuals were being treated by their private physicians. In the majority of cases, the site evaluations helped to improve the individual's condition, thereby improving overall work activity. The following is a breakdown of locations involved:

UI Office	UIHC Office	UI Labs	UI Other	UIHC Other	Total
104	128	2	5	8	247

- The UIHC Patient Lift/Transfer Ergonomic Program (started in 2002) has worked to develop, maintain, and improve methods that will reduce the number and severity of musculoskeletal injuries that occur to patient care staff.
- Served as Chairperson of UIHC's Ergonomic Sub-Group for patient handling. Since the beginning of the program, over $1,000,000 of fixed or movable patient lift/transfer equipment has been purchased. Several portable lift, ceiling lift, and lateral transfer devices were added to the safe patient handling program this past year. The new Iowa River Landing Outpatient Clinics located at Coralville and scheduled to open in the fall of 2012 was also evaluated by the ergonomics subgroup

for patient lift/transfer equipment needs. Serious injuries to the shoulder and spinal column continue to decline as shown in the graph below.



- Served as a member on the Ergonomic Nursing Team, which meets three times per month to address how the Patient Lift/Transfer program and equipment are implemented in daily nursing activities in inpatient and outpatient units. In addition, the team investigated 70 incident/ accident reports involving patient lift/transfer situations.
- Partnered with the College of Public Health to provide field practicum experience for clinical ergonomics for three third year resident physicians in the Occupational Medicine Residency Program.

Indoor Environmental Quality

Scope: The Indoor Environmental Quality (IEQ) program addresses issues associated with indoor environmental quality for campus buildings. Requests are made by individuals, departments, administrators, medical providers, and staff involved with building maintenance, renovation, or construction. Issues that arise include general air quality, odors, mold, allergens, dust, thermal comfort, and noise. Underlying issues facilitated to resolution may include the overall office environment, construction impacting occupied areas, and unique or aged structures.

Investigations often include assessing the building and/or HVAC system for moisture intrusion since that is the primary facilitator of mold growth indoors. Sampling may include carbon monoxide, carbon dioxide, dust levels, formaldehyde and other chemical samples, and biological samples when indicated or requested to identify and rule out background substances more commonly associated with individual sensitivities or allergies.

Activities and Accomplishments for FY 12:

- Conducted twenty-five indoor environmental quality investigations.
- Collected and interpreted results of forty-two samples to assist in the investigation of various IEQ issues.

Industrial Hygiene

Scope: Industrial hygiene services are provided to evaluate various chemical and physical hazards, recommend means of hazard elimination or control, and evaluate ongoing program effectiveness.

Activities and Accomplishments for FY12:

- Performed Respirator Program Administrator services for EHS respirator programs; reviewed and updated the Oakdale and downtown office programs; and provided a summary report to the EHS Director.
- Conducted a program review of thirteen departments' required respirator programs.
- Provided fifteen respirator qualitative fit tests for various departments.
- Provided thirty-two respirator quantitative fit tests for EHS staff.
- Conducted administrative reviews of six asbestos management programs.
- Performed sixty-one industrial hygiene evaluations to assess hazards, conducted air monitoring when needed, and recommended appropriate controls. Evaluations included the collection and interpretation of seventy-nine chemical sample analyses and real time measurements. These evaluations were performed for a variety of purposes that included exposure determinations for respirator use, fume hood installation needs, pesticide applications, formalin levels, disinfectant products, evaluation of asbestos programs or disturbance of asbestos containing material, heat stress in laundry and animal facilities, confined space safe entry procedures, workplace emergency equipment.
- Conducted individual noise dosimetry monitoring for 23 individuals in the FM Power Plant, Housing and Dining, and UIHC AirCare.
- Conducted area noise level monitoring in five areas for Facilities Management, Housing and Dining, Business Services, and the Office of Animal Resources.
- Responded to three chemical spills with the Chemical Safety staff and provided sampling and recommendations for contractor remediation of an acid spill.

Office Safety

A new office safety program was initiated in January 2012. The program was introduced to Central Human Resources executive and department representatives and then initiated on campus.

Scope: The program covers office operations in buildings that are completely separate from other University operations. They are not physically located in the same room or immediate area of another type of occupancy or operation. It covers hazards that are commonly associated with an office environment. The office safety hazard survey is done in conjunction with office ergonomic evaluations.

Activities and Accomplishments since January 2012:

- Met with the senior human resources leadership group and presented two formal meetings on the program.
- Developed a web guide and information on the six common hazard areas associated with an office environment.
- Developed an office safety checklist that is used by EHS and can also be used by individuals and departments on campus to evaluate their office areas.
- Conducted 144 administrative surveys of offices in FY12 that included 88 at UIHC and 56 at the University.

Occupational Safety Section Goals for FY13

- Continue to participate in University, UIHC, and department committees for risk control related to occupational safety and health.
- Provide support as ex-officio members to the Workplace Occupational Safety and Health Working Group and the sub work groups.

- For OSHA's 2012 revision of the Hazard Communication standard and other chemical standards, assess University impacts, revise EHS programs and guidelines and course offerings, and incorporate criteria in department reviews and audits.

Environmental Programs Section

The Environmental Programs Section is responsible for facilitating compliance with pertinent environmental regulations by managing biological, chemical, and radioactive wastes, conducting waste generator compliance assessments, facility inspections and audits, institutional waste generation and minimization assessments, and annual reporting to the Environmental Protection Agency of these compliance-based activities. Environmental programs are focused on two areas: operational and compliance.

Summary of Major Environmental Program Initiatives

- Continued working with FM Planning, Design and Construction Project manager to complete items on the EMF punch-list.
- Began effort to put hazardous waste storage area known as Facility A through EPA decommissioning and closure.
- Completed assessment and review of management practices of all waste streams generated by UI.
- Completed implementation of an online waste pickup request process for both radioactive and hazardous chemical wastes.
- Began review and update of effectiveness of waste generator audit procedures.

Operational Programs

Hazardous, Radioactive, and Biohazardous Waste Management Programs

Scope: The operational waste management programs are intended to meet the regulatory requirements imposed on the University by federal and state regulations, and the conditions imposed on the University for the operation of a permitted treatment, storage and disposal facility (TSDF) on the University of Iowa Research Park. Program activities are defined and regulated by the following agencies: U.S. Environmental Protection Agency (EPA), U.S. Department of Transportation (DOT), Iowa Department of Public Health-Radiological Division (IDPH), Iowa Department of Natural Resources (DNR), Iowa Occupational Health & Safety Administration (IOSH).

Waste Collection, Container Tracking, Transportation and Storage

Scope: Hazardous waste chemicals are identified, inventoried, collected and transported to the University of Iowa Research Park for processing and storage prior to contractor collection and disposal. EPA prohibits the entry of unknowns into a TSDF. For unknown chemicals, a chemical analysis service is offered to allow the identified chemical to be entered into the waste management system. In addition, EHS facilitates the management of unstable and/or explosives by contracting with a high hazard technical team that stabilizes and deactivates such chemicals.

Radioactive wastes are collected from University research operations and UIHC patient treatment areas. The wastes are transported to the University of Iowa Research Park for processing and storage prior to contractor collection and disposal.

Biohazardous waste collection is managed by EHS as follows:

- EHS oversees contractor collection and disposal of waste generated at major UI research, academic and support facilities (~ 10-15 areas).

- EHS collects waste from the remaining facilities and subsequently disposes of those through contractor collection. EHS does not participate in the collection and management of biohazardous waste generated at University of Iowa Hospitals & Clinics, but does manage and oversee the vendor contract for this service.

Activities and Accomplishments for FY12:

- Hazardous chemical waste: a total of 27,619 containers were collected from 680 waste generators during 3,924 visits. Waste amounts varied in size from a few milligrams to 55 gallons.
- Radioactive waste: a total of 767 containers were collected from 83 waste generator sites during 242 visits. Waste consisted of liquids, solids, and patient therapy waste.
- Biohazardous waste: a total of 23,281 containers were collected (excludes waste generated at UIHC); 20,830 collected by contractor; 2,451 collected by EHS.
- Unknown analysis: 79 unknowns from 23 locations were analyzed and identified.
- Cleanouts: completed 67 laboratory cleanouts generating 9,732 items of hazardous chemical waste.
- See attachments for statistical and graphical information.

Waste Processing, Contractor Shipment and Disposal Activities

Scope: Hazardous chemical waste collected throughout the University are transported to the University of Iowa Research Park and stored prior to processing, recycling, treating, or disposal. Chemicals are disposed of through a contractor who received a single contract covering both labpack and bulk disposal. The contract is a Board of Regents coordinated, cooperative contract that includes the University of Northern Iowa, Iowa State University (ISU) and the University of Iowa (UI). The contract is issued through ISU and UI and reviewed by the Risk Management Department with input from the section manager.

Radioactive waste is intensively micro-managed through the segregation of wastes into 45 separate streams and subsequent processing to achieve maximum cost savings. The foundation of radioactive waste management is decay-in-storage. This technique is used to reduce the amount of radioactivity contaminating a particular waste stream to background levels.

Activities and Accomplishments for FY12:

Hazardous Chemical Waste

- Processing:
  - Bulking – 13,536 items were commingled together into 490 drums last fiscal year.
  - Recycling – 1,320 gallons used oil; 1,288 lead-acid batteries weighing 10,382 lbs; 1,303 other hazardous batteries weighing 1,077 lbs, and 2,558 pieces of lead shielding weighing 2,779 lbs.
  - Waste processing generates a large amount of regular trash to be disposed of at a landfill. Last year 45 truckloads containing such waste were taken to the Iowa City Landfill.
- Other:

	FY09		FY10		FY11	
Process	**Weight (kg)**	**Items**	**Weight (kg)**	**Items**	**Weight (kg)**	**Items**
Neutralization	401.3	429	948.7	459	1,635.3	1,040
Non-hazardous Gases Vented	143.9	40	31.8	6	100.9	96
Non-hazardous-to IC Landfill	639.2	960	538.8	575	1,071.6	1,761
Sewer	6080.1	2,966	6,553.5	2,194	8,225.1	4,794

- Cost Containment:
  Labpacks are a considerably more expensive disposal option, but are necessary due to extenuating factors such as chemical compatibility, stability, or EPA-mandated treatment methods. Because of their high cost [bulk solvents cost $0.44/kilogram (kg), labpacks cost $12.97/kg], EHS minimizes the number of labpacks created. Last year 127 labpack drums were filled with 5,177 items weighing 6,106 kg.
- Contractor Shipments and Disposal:
  - Thirteen shipments of hazardous chemical waste were completed and sent to off-site EPA permitted facilities.
  - Two mixed waste (chemical and radioactive hazards) shipments totaled 10 drums.
  - Eleven barrel/labpack shipments totaled 561 drums.
- See attachments for statistical and graphical information.

Radioactive Waste

- Saved approximately $76,000 in contractor disposal costs by using labor-intensive practices to process radioactive waste.
- Aqueous liquids are held for varying periods of isotope-dependent decay times prior to being discharged to the sanitary sewer. Last year 150 containers in 4 drums along with 23 individual smaller containers were discharged for a total of 155 gallons.
- Mixed wastes are placed into cabinets, allowed to decay, surveyed, reclassified as hazardous waste, and then disposed of through the hazardous waste program. This reduces the toxicity of the waste, eliminates the "mixed waste" classification and affords a large cost savings. Last year 3 containers of mixed waste were released after decay-in-storage.
- Lead shielding is surveyed for contamination and recycled through the hazardous waste program if no contamination is present. Last year 2,149 pieces were collected.
- Refuse is created during the extensive processing of RWMP, which is disposed of through landfilling. Last year 48 truckloads of such waste were taken to the Iowa City Landfill.
- A sorting station is used to sort dry waste for two purposes: review and removal, if necessary, of inappropriate items prior to disposal in the Iowa City Landfill. Last year 52 drums of short-lived waste were processed.
- A compactor is used to compact short-lived dry waste to minimize storage space prior to being sorted; 13 drums of dry waste were filled and compacted to reduce the volume of waste being stored until it is ready for sorting, etc.
- Completed three radioactive waste shipments of 21 drums, including:
  - 3-dry waste barrels;
  - 1-hazardous scintillation cocktail vials;
  - 13-non-hazardous scintillation cocktail vials;
  - 1-mixed waste drum;
  - 3-dry waste in yard-boxes, and
- See attachments for statistical and graphical information.

Biohazardous Waste

- Operated the program that manages biohazardous waste, excluding waste generated by UIHC, which operates a separate program.
- Establish procedures in which a vendor collects waste from dock areas at twelve buildings that are large quantity generators; EHS collects waste from twelve small quantity generators.
- Disposed of 23,281 containers of waste (excludes waste generated at UIHC); 20,830 collected by contractor; 2,451 collected by EHS.

Monitoring Activities

Scope: The radioactive waste management program performs significant internal monitoring directed toward contamination control, environmental monitoring, and personal dosimetry. Contamination control includes extensive use of wipes and survey instruments.

Activities and Accomplishments for FY12:

- Surveys - more than 8,000 surveys are performed annually.
  - Vehicle – surveyed after each use – 103 times – using 1,030 wipes.
  - Facility – surveyed on a weekly basis – 52 surveys – using > 3,600 wipes.
  - Containers – surveyed > 850.
  - Lead shielding – surveyed prior to disposal – 2,149 pieces.
- Environmental dosimeters – no significant doses were released in the facility operations.

Quality Assurance Activities

Scope: The waste section maintains an extensive quality assurance program regarding waste records and waste section practices. Audits are conducted to ensure the accuracy and completeness of generated records used for tracking wastes from generator to final disposal.

Activities and Accomplishments for FY12:

- Daily review of data collected during waste collections; ongoing record audits.
- Periodic review of drum contents for quality assurance and annual barrel record review.
- Weekly review of individual storage location contents and periodic inventory checks.
- Periodic self-RCRA quarterly inspections.
- Barrel check and item inventory checks after every waste shipment.
- Reviewed drum contents for quality assurance.

Regulatory Compliance Programs

Environmental Reporting/Permit Management

Scope: The Waste Section manages a permitted Treatment, Storage & Disposal Facility (TSDF) that allows the University to store hazardous waste at several locations on the University of Iowa Research Park. This permit dictates an extensive recordkeeping network of information that documents the condition of the facilities and allows EHS to track each container of waste from a specific generating site within the University to the ultimate disposal site. Information from generators, transportation manifests, in-house storage records, packaging and container information, contractor transportation records, and contractor disposal records are merged into an operating record. The operating record is the basis of assessing compliance with applicable regulations. This program includes submitting regulatory required reports to the appropriate agencies.

The University of Iowa's TSD operating permit also requires a Waste Minimization Plan focused on reducing generation and subsequent release to the environment of the most persistent, bio accumulative and toxic constituents in hazardous wastes. The plan's three inherent goals are to reduce the most hazardous substances, avoid transferring these constituents across environmental media, and ensure these constituents are reduced at their source.

Activities and Accomplishments for FY12:

- Completed annual EPA report, mandated by our EPA operating permit. EHS is required to submit an "Annual Report to EPA on the Status of Waste Reduction Techniques" and a signed Certification that a program is in place.
- Completed and submitted biennial hazardous waste report for EPA.
- Performed the following waste minimization activities:
  - Conducted regular solicitation of waste coordinators at each generator site.
  - Performed waste segregation and micro-management.
  - Conducted waste training and education activities.
  - Performed waste generator assessments, which allowed direct one-on-one communication with generators. To date, thirty one different waste minimization techniques have been identified in use.
  - Micro-managed the bulk fluid portion of the waste stream to allow fuel-blending as the preferred method for disposal. Fuel-blending allows recovery of the heat value from the waste.
  - Generated an annual historical summary of waste disposal costs and submitted it to the Associate Vice President for Research.
  - Generated graphical information on waste minimization of liquid scintillation cocktail, mixed waste, benzene, chromic acid, and lead shielding, for the Annual Report to EPA on the Status of Waste Reduction.

EPA Compliance

Scope: The EPA Compliance Program is intended to promote compliance with select environmental programs. The program consists of participating in regulatory agency inspections, conducting waste generator assessments, and managing a Material Safety Data Sheets (MSDS) inventory used for conducting hazardous waste determinations. The purpose of waste generator assessment/audits is to evaluate waste generator sites, confirm generator identity, identify waste generating processes, evaluate regulatory compliance, promote waste minimization efforts, disseminate information on new methods and technology to reduce waste, promote disposal of unwanted chemicals and proper chemical management. The audit program has shifted focus towards large quantity generators, groups targeted by EPA for inspection, and generators with disposal issues that have been identified during waste collection.

Activities and Accomplishments for FY12:

- Compliance evaluation inspections by EPA were conducted on April 20, 2012 and May 8, 2012. Inspections covered the permitted waste storage facilities, the main campus hazardous waste storage area, and waste generators on both the UI Research Campus and the main campus. Although several violations were found among waste generators, no violations were found in facilities managed by EHS.
- The Iowa Department of Public Health conducted an inspection of the facility during the last fiscal year as part of the University's annual radioactive materials license inspection. No violations were identified.
- The U.S. Department of Justice Drug Enforcement Agency conducted an inspection regarding disposal of controlled substances that had been facilitated by EHS. No violations were noted.
- The Iowa Department of Natural Resources conducted an inspection for EMF compliance with Storm Water General Permit #1. No violations were noted, but there were recommendations made to update the Pollution Prevention Plan to include new facilities.
- Conducted facility reviews of TSDF for local emergency personnel.

- Continued the implementation of programs to perform audits or assessments for select areas that generate hazardous waste. Audits are alternated between lab and non-lab areas.
- Identified groups at high risk for EPA inspection, thus audited the “Top Fifty” and “Top-Fifty Plus” waste generators to focus efforts where most needed.
- Continued implementation of a building-by-building generator audit to broaden efforts to reach all waste generators at least annually.
- Completed the assessment of management methods for every University waste stream.
- Developed training programs for universal waste management.
- Reviewed the waste generators’ manual; updated policies and procedures for waste management.
- Began the process of closing waste storage area known as Facility A. Submitted Closure Plan to EPA that has received tentative approval.
- Completed implementation of online pickup requests for radioactive and hazardous chemical waste.
- MSDS solicitations: over 900 MSDS were solicited from manufacturers; currently, over 19,000 separate MSDS are part of the EHS’s collection of this information.
- Assisted EHS Chemical Safety Section in creating policies and procedures for management and disposal of controlled substances.

Goals and Initiatives for FY13:

- Facility operations: receive no violations from EPA; complete quarterly self-RCRA inspections.
- Implement quarterly audits of universal waste lamp and universal waste battery storage areas.
- Complete review and update of waste generator audit procedures.
- Implement use of a Corrective Action Plan for waste generators that are found to be non-conforming during audits.
- Complete site-specific training at FM Shops and Fleet Services Repair Shop.
- Conduct spill exercises that implement the use of an SCBA.
- Review opportunities to increase recycling of unused chemicals.
- Complete closure of waste storage area identified as Facility A.
- Review and update internal procedures.

Radiation Safety Programs

The Radiation Safety Section is responsible for administrating the University's radiation safety program. This includes maintaining the radioactive material license, registration and compliance testing of radiation producing machines, assessing program performance, providing training and program services, and managing regulatory and policy compliance.

Administrative Programs

Radioactive Materials License Maintenance

Scope: EHS's Radiation Safety Section maintains the University's single academic/medical radioactive materials license of broadscope that covers all uses of radioactive materials for both research and medicine. The license is issued by the Iowa Department of Public Health (IDPH) and is subject to annual IDPH on-site inspection and five-year renewal.

Activities and Accomplishments for FY12:

- The University's Radioactive Materials License is up to date and will be due for renewal April 30, 2013. No license amendments were required or filed during FY12.
- Completed IDPH annual registration of Radiation Oncology medical physicists, personnel servicing X-Ray machines (Radiology Engineering and EHS), and personnel conducting health physics activities (EHS).
- Registered and obtained approval for use of Radiation Oncology's new Intrabeam™ Intraoperative Radiation Therapy (IORT or electronic brachytherapy) x-ray unit.
- Maintained access control programs and audited compliance for each of the sites under the Increased Control Order for Radioactive Materials in Quantities of Concern.
- Obtained an export license from the Nuclear Regulatory Commission (NRC) to ship the Blood Bank's Cs-137 blood irradiator to Best Theratronics in Canada for disposition and removed the source from our inventory with the NRC's National Source Tracking System (NSTS).
- Performed extensive radiation monitoring for the decommissioning, removal, and shipment of the PET Imaging Center's old cyclotron and following its replacement with a new cyclotron with greater production capabilities.
- Routinely monitor both the Iowa Administrative Bulletin and the Federal Register for regulatory changes which may impact the radiation safety programs and notifies stakeholders who are or may be affected.

License Inspection Activities

Scope: The Iowa Department of Public Health (IDPH) conducts an on-site inspection of a portion of the University's broadscope radioactive materials license each year including: a review of UIHC's Positron Emission Tomography Imaging Center, Nuclear Medicine and Department of Radiation Oncology; and the UI's and UIHC's increased controls program for radioactive materials in quantities of concern.

Activities and Accomplishments for FY12:

- EHS participated in the IDPH's on-site inspection of the University's radioactive material license and radiation safety program from October 10 – 13, 2011. No violations or concerns were identified within the scope of this inspection.

- EHS provided mammography physicist services and participated in the Radiological Division of IDPH's Mammography Quality Standards Act (MQSA) inspection of the Department of Radiology's Breast Imaging Center on December 8 -9, 2011. Three violations were cited and corrected.

Radiation Safety Committees

Scope: The University's Radiation Safety Committee (RSC) is comprised of five interrelated committees that function to provide radiation protection program oversight, review, policy development, and radioactive materials use authorization under the management of the Associate Vice President for Research. The radiation safety program is delegated to the RSC and the Radiation Safety Officer (RSO) who have the authority to enforce and direct University personnel regarding radioactive material regulations, license conditions, and University radiation safety policies.

1. Radiation Protection Executive Committee

The Radiation Protection Executive Committee is responsible for providing oversight and review of the University's radiation protection program and establishing radiation safety use and enforcement policies. The Executive Committee is comprised of representatives of University administration and EHS, and the chair and vice-chairpersons of the Basic Science Radiation Protection Committee, the Medical Radiation Protection Committee, and the Hospital Radiation Safety Review Group.

Activities and Accomplishments for FY12:

- Two meetings were held during FY12.
- Reviewed and endorsed four quarterly UI/UIHC ALARA reports.
- Reviewed and approved RSO's evaluative summaries of each of 22 radiation safety audits, noting and initiating corrective action for a total of 27 items of non-compliance (9 items at the UIHC and 18 items in the UI research labs).
- Reviewed the 2011 radionuclide air emissions report noting the UI/UIHC emissions (0.7 mrem/yr) were well within regulatory limits (10 mrem/yr).
- Reviewed and approved the Annual Radiation Safety Program Report for FY11.
- Reviewed the 2011 annual radioactive materials license inspection report.

2. Hospital Radiation Safety Review Group (HRSRG)

The Hospital Radiation Safety Review Group is responsible for the review of the University Hospital's radiation protection program as well as the review and approval of medical authorized users and clinical uses of radioactive materials under the conditions of the University's radioactive materials license. The membership of the HRSRG is comprised of representatives of the UIHC's administration, nursing service, licensed physicians, and other individuals with specialized training and knowledge as necessary, and a representative from EHS. The chair and vice-chairpersons serve as representatives to the Executive Committee.

Activities and Accomplishments for FY12:

- Four quarterly meetings were held during FY12
- Reviewed and approved 4 quarterly UIHC ALARA reports.
- Reviewed 4 quarterly reports on special procedure fluoroscopy patient skin doses. No skin damage was observed during follow-up medical exams of any of the 53 patients whose calculated skin dose exceeded the 300 rad adult threshold and none that exceeded the 100 rad pediatric threshold during the 8,097 special procedure fluoroscopic procedures completed.
- Reviewed 4 quarterly radiation safety reports on the UI Family Care Clinics in Southeast Iowa City, North Liberty, Belle Plaine, Lowden, Wapello and River Crossing. Reviewed annual audits of each

clinic (Belle Plaine was not performing x-rays and was not audited), which identified and corrected 1 regulatory violation.

- Reviewed the credentials of 2 new radiation oncologists and approved them as authorized users in the department of Radiation Oncology. Reviewed and approved Nuclear Medicine's request for the clinical use of F-18 florbetapir (Amyvid™) as a diagnostic PET radiopharmaceutical for estimating the amount of beta-amyloid plaque in the brain of patients being evaluated for Alzheimer's disease.
- Reviewed the 2011 radionuclide air emissions report.
- Reviewed the 2011 annual radioactive materials license inspection report.

3. Medical Radiation Protection Committee (MRPC)

The Medical Radiation Protection Committee is responsible for ascertaining that all experimental or research uses of radiation in or on human beings conform to currently accepted radiation protection practices, regulations, and license conditions. The membership of the MRPC is comprised of licensed physicians, individuals with specialized training and knowledge as necessary, and a representative from EHS. The chair and vice-chairpersons serve as representatives to the Executive Committee.

Activities and Accomplishments for FY12:

- The MRPC held 19 meetings and approved 47 new research applications and 24 application amendments for radiation and/or radioactive materials use with humans.

4. Radioactive Drug Research Committee (RDRC)

The membership of the MRPC serves as the RDRC and is responsible for the review and approval of certain proposed uses of radioactive drugs for human research intended to obtain basic information regarding metabolism, human physiology, pathophysiology, or biochemistry, but not for diagnostic or therapeutic use or for clinical trials.

Activities and Accomplishments for FY12:

- The RDRC held 5 meetings which included quarterly reviews of the single RDRC protocol that remained open during FY12 (IRB# 201012803-R), and discussions with the Food & Drug Administration (FDA) regarding the continued production of O-15 water under the compounding clause of Section 121(c)(2)(B) of the FDA's Modernization Act until the PET Imaging Center completes and submits an IND application prior to the June 12, 2012 deadline. Verified that the PET Center obtained letters from the FDA verifying that the IND applications for each the PET of the radiopharmaceuticals had been received and that production of these materials can continue until the FDA completes its review and approval of the applications
- The Committee Chair submitted annual project and membership summaries to the FDA noting that there was one open RDRC protocol during 2011 and that there were no changes in committee membership.

5. Basic Science Radiation Protection Committee (BSRPC)

The BSRPC is responsible for the review of applications for non-human use of radioactive materials to ensure that they conform to currently accepted radiation protection practices, regulations and license conditions. The Committee is comprised of authorized radioactive material users from within the University's Basic and Health Sciences. A representative from EHS also provides guidance on radiation protection regulations and policies to the Committee. The chair and vice-chairpersons serve as representatives to the Executive Committee.

Activities and Accomplishments for FY12:

- The BSRPC reviewed and approved 4 new UI applications for the non-medical use of RAM through their mail ballot process.

- The RSO reviewed and approved 110 non-medical use application amendments.

Radiation Safety Administrative Support Activities

Scope: The Radiation Safety Section provides administrative support for the management of both medical and basic science radioactive material use applications and the routine operational activities associated with use of radioactive materials on campus. Administrative support activities also include preparing meeting agendas and documenting minutes for the Radiation Safety Committees.

1. Medical Research Applications

Activities and Accomplishments for FY12:

- Processed and approved 47 new applications and 24 application amendments.
- Maintained the application files for 96 principal investigators with 122 active medical research-use applications.
- The table below compares this fiscal year's medical use application activities with that of past years.

Activity	FY10	FY11	FY12
New Protocols	42	49	47
Amendments	23	29	24

2. Basic Science Applications

Activities and Accomplishments for FY12

- Processed 4 new applications, 10 cancellations, 5 inactivations, 110 application amendments, and completed 94 application renewals.
- Maintained and managed 102 active authorizations for the RAM use in the basic sciences.
- The table below compares this fiscal year's non-medical use application maintenance activities with that of past years.

Activity	FY10	FY11	FY12
Renewals	131	91	94
Amendments	92	103	110
Cancellations	8	6	10
Inactivation	10	11	5
Reactivations	2	1	0
New Authorizations	3	6	4
Active Authorizations	125	114	102
Total Inactive Authorizations	122	132	148

3. Other Support Activities

Activities and Accomplishments for FY12:

- Managed Radioactive Materials (RAM) Procurement Program.
- Maintained and reviewed medical & basic science applications for completeness.
- Provided administrative support for each of the five committees which make up the University's Radiation Safety Committee.

Operational Safety and Compliance Programs

University Audit Program

Scope: EHS audits the radiation safety program to assess its performance and provides its findings, evaluations, and actions to the Radiation Protection Executive Committee. The audit schedule for the periodic review of the radiation safety program is designed to provide limited quarterly reviews of the program elements that require the performance of daily, weekly, or monthly tasks, and annual review of the performance of less time critical elements. The current audit schedule is listed below:

1. Medical

- Nuclear Medicine – Quarterly limited scope review of daily, weekly and quarterly requirements 3 times per year plus 1 full annual review.
- PET Imaging Center - Quarterly limited scope review of daily, weekly and quarterly requirements 3 times per year plus 1 full annual review.
- Radiation Oncology - Quarterly limited scope review of daily, weekly and quarterly requirements 3 times per year plus 1 full annual review.
- Patient Fluoroscopy Dose Records – Reviewed quarterly by the Hospital Radiation Safety Review Group for each department performing special fluoroscopy guided procedures as specified by IDPH Regulations.
- X-Ray Administrative Audit for Mammography- Annually for film-screen, digital and stereotactic mammography operations.
- UIHC Family Care Clinics (Southeast Iowa City, North Liberty, Belle Plaine, Lowden, Wapello and River Crossing) – Annually audit their x-ray programs.

2. Basic Science

- Radiation Research Gamma Irradiation Facility - Annually during use authorization application renewal.
- Blood Bank Cell Irradiator – Annually during use authorization application renewal.
- Non-medical research labs – Audited monthly, quarterly, or semi-annually according to radioactive materials use.
- After Hours Security Checks – Research labs are checked periodically for RAM security during other than normal business hours.

3. EHS Radiation Safety Programs

- Operational Radiation Safety Programs – Quarterly review of room survey, bioassay, RAM receipt and delivery and instrument calibration programs.
- Radioactive Waste – Four quarterly limited scope audits which review all operations at least once per year.

Activities and Accomplishments for FY12:

- Twenty-seven program audits were completed.
- Audits identified a total of 19 items (9 UIHC & 10 UI) of regulatory or University safety policy non-compliance. Corrective actions and follow-up were implemented for each of the identified items.

4. Increased Controls Audits for RAM Quantities of Concern

- Audits of security and approved access to each of the areas affected by the increased controls order are conducted at least quarterly. No items of non-compliance were observed.
- In June of 2012, the Blood Bank replaced their Cs-137 blood irradiator that was under the increased controls order with a cabinet x-ray blood irradiator. EHS supervised the removal and shipment of the Cs-137 irradiator to Best Theratronics in Canada for disposition. EHS monitored Best

Theratronics' installation of the new x-ray blood irradiator (which is not under the increased controls order) and registered the machine with the IDPH.

Bioassay Program

Scope: EHS monitors occupational dose commitment of radiation workers at the University with the greatest potential for internal radionuclide intake based on receipts and/or usage of radioactive material by the end users. Bioassays are also offered to monitor potential exposure to the embryo/fetus throughout gestation of female personnel declaring a pregnancy who work in areas where radioactive materials are actively used.

Activities and Accomplishments for FY12:

- Performed 176 bioassays for UI/UIHC personnel. No internal exposures exceeded 10% of our operational ALARA limit of 125 mrem effective dose equivalent. The table below provides a comparison of the total number of bioassays performed in previous years.

Bioassay Type	FY10	FY11	FY12
Thyroid	77	133	154
Urine	15	18	22
Total	**92**	**151**	**176**

Dosimetry Program

Scope: EHS manages and maintains the Dosimetry Program that provides external exposure monitoring for radiation workers and the embryo/fetus of declared pregnant radiation workers as required by regulation.

Activities and Accomplishments for FY12

- Issued a total of 17,678 dosimeters to a monthly average of 846 individual participants.
- Only a total of 55 (6.7%) individual dosimeter participants exceeded an annual occupational whole body radiation dose greater than the 100 mrem regulatory limit prescribed for members of the general public not working with radiation.
- Of the dosimeters issued, 5.3 % were either returned late for processing or not returned. Comparisons to the past two fiscal years are given below.

Activity	FY10	FY11	FY12
Dosimeters Issued (annual total)	17,075	16,873	17,678
Individual Participants (monthly average)	797	822	846
Lost/Late Dosimeters (annual average %)	5.6%	5.9%	5.3%
Percentage Issued to UI Personnel	13.6%	9.0%	8.5%
Percentage Issued to UIHC Personnel	86.4%	91.0%	91.5%

- The number of individual dosimeter program participants increased by 2.9% from FY11, while the total number of dosimeters issued increased by 4.8% due in part to the extensive monitoring involved with the PET Imaging Center's cyclotron replacement and new participants in the UIHC's Anesthesia and Ambulatory Surgery Clinic.
- The number of late/lost dosimeters decreased from 5.9% to 5.3%. The Radiation Section will continue to focus efforts on further reduction of late/lost dosimeters.

ALARA Program

Scope: Dosimetry and bioassay results are reviewed by EHS to ensure exposures are maintained **A**s **L**ow **A**s **R**easonably **A**chievable (ALARA). Personnel exposures in excess of established ALARA limits are investigated by EHS. Quarterly ALARA reports, compiled by EHS, are distributed to the Radiation Executive Committee and the Hospital Radiation Safety Review Group.

Activities and Accomplishments for FY12:

1. External Radiation Exposures

A. UIHC Dosimeter Participants

- Nineteen UIHC participants recorded exposures (< 2% of the total dosimeter participants) exceeding the monthly ALARA Level I limits (4% of the annual regulatory limits). Of these, 8 were deep dose exposures, 2 lens of the eye, and 9 extremity exposures. Four of the Level I deep doses dose were found to be falsely elevated due to improper dosimeter usage.
- Six UIHC participants recorded exposures (1.0% of the total dosimeters participants) exceeding ALARA Level II limits (8% of the annual regulatory limits). Of these 2 were deep doses and 4 were extremity doses. Both of the deep doses were falsely elevated due to improper dosimeter use.
- Each quarter EHS performed a review of the dosimetry wear practices and dose records of up to three user groups which was included in the quarterly ALARA Reports that are reviewed by the HRSRG and Executive Committee.

B. UI Dosimeter Participants

- No UI dosimeter participants exceeded any ALARA limits.

C. ALARA Totals

- The table below reflects the UIHC department demographics of exposures in excess of the University ALARA levels.

 # Reports Exceeding ALARA Level I Action Levels

Whole Body Deep Dose Equivalent	Cardiology (improper use)	4
	Interventional Radiology	2
	PET Imaging Center	2
	Total Level I Whole Body Deep	**8**
Lens of Eye Dose Equivalent	Interventional Radiology	2
	Total Level I Lens of Eye	**2**
Extremities Dose Equivalent	PET Imaging Center	3
	Interventional Radiology	6
	Total Level I Extremities	**9**
Total FY12 Level I ALARA Exposures 4 falsely elevated due to improper use)		**19**

 # Reports Exceeding ALARA Level II Action Levels

Whole Body Deep Dose Equivalent	Cardiology (improper use)	4
	Interventional Radiology (improper use)	2
	Total Level II Whole Body Deep	**2**

Extremities Dose Equivalent	PET Imaging Center	4
	Total Level II Extremities	**4**
Total FY12 Level II ALARA Exposures 4 falsely elevated due to improper use)		**6**

2. Internal Radiation Exposures

Thyroid Bioassays

- During FY12 EHS performed 154 thyroid bioassays. None of the thyroid bioassay results exceeded 10% of our 125 mrem committed effective dose equivalent ALARA limit.

Urine Bioassays

- During FY12, EHS performed 22 urine bioassays. None of the urine bioassay results exceeded 10% of our 125 mrem committed effective dose equivalent ALARA limit.

Airborne Radioactive Material Emissions

Scope: Regulations require the University to demonstrate that the atmospheric emissions from its radioactive materials operations will not result in a total annual exposure in excess of 10 mrem to members of the general public. To demonstrate compliance with this requirement EHS uses the Environmental Protection Agency's (EPA) COMPLY Program. The COMPLY Program is a dosimetrically conservative computer model that uses the University's total annual inventory of radioactive materials to calculate the potential airborne dose to the general public.

Activities and Accomplishments for FY12:

- Based on the University's total annual radioactive material inventory from 1/1/11 through 12/31/11, the COMPLY Program calculated an effective dose equivalent (EDE) of 0.7 mrem to the nearest potentially exposed individual residing outside the University's facilities. This result demonstrated that airborne emissions from the University's radioactive material usage did not exceed 7% of the 10 mrem/year regulatory limit.

Emergency Response and Preparedness

Scope: EHS serves as a resource unit for the UI, UIHC (including the Emergency Trauma Center (ETC)) and the Johnson County HazMat Team for emergencies involving sources of ionizing radiation.

Activities and Accomplishments for FY12:

- Members of EHS's Spill Group engaged in an 8 hour training course and meeting to review the procedures.

Health Physics Monitoring Support

Scope: EHS provides radiation monitoring of facilities in areas where radioactive materials are used or stored: (1) to evaluate user control of exposure and contamination; (2) monitor compliance with regulations and license conditions; and (3) prior to facility maintenance or equipment disposal.

Activities and Accomplishments for FY12:

1. Room Survey Program

- Performed a total of 617 area and equipment monitoring surveys for academic labs and the UIHC. Surveys include routine laboratory audits, after hours security checks, facility decommissioning, posting/de-posting, pre-maintenance, spill response and post-iodination activities. A comparison of the last three fiscal years is provided below.

Activity	FY 10	FY 11	FY 12
UI Surveys	602	522	545
UI After Hours Security Checks	464	181	62
UIHC Surveys	42	36	10
Total Surveys	**1,108**	**739**	**617**

2. Compliance Assessment Program

- Currently there are 183 UI labs posted for non-medical use of radioactive material, representing a 3% increase in the number of posted UI research labs from FY11. A total of 10 regulatory compliance violations were observed by the EHS during 607 surveys of non-medical use research labs conducted during FY12. The compliance violations occurred in 9 different labs under the use authorization of 8 out of the 102 active principal investigators (or 8%). The non-compliance violations consisted of 5 first time violations for radioactive materials security, 1 first time violation for a survey records deficiency, 3 first time contamination violations, and 1 first time eating/drinking violation. Violation notices were sent to the principal investigators and each of the violations were corrected. No second, or third violation/suspension notices were issued.
- Each lab in which a security violation was identified has had a follow-up security check performed and EHS is satisfied that the problem has been corrected in each case.

3. Decommissioning Activities

- Performed extensive radiation monitoring in support of the PET Imaging Center's cyclotron replacement project, which included decommissioning and shipment of the old cyclotron for disposal and shielding verification surveys following the installation of the new cyclotron.

Sealed Source Leak Testing Program

Scope: The sealed source leak testing program involves testing to ensure sealed source structural integrity; the performance of ambient radiation level surveys in areas where the sources are used and/or stored; and the performance of physical inventories to assure sealed source accountability and security.

Activities and Accomplishments for FY12:

- A summary of activity is given below.

Sealed Source Leak Tests	FY 10	FY 11	FY 12
UI	158	126	101
UIHC	443	287	268
Totals	**601**	**413**	**369**

- Performed 108 ambient radiation level surveys and 373 physical inventories.
- A total of 18 new sources were added to the inventory (6 UI & 12 UIHC) during FY12, while 11 sources were disposed of or returned to the original manufacturer (1 UI & 10 UIHC).
- All sources were accounted for and all leak tests were negative.

Instrument Calibration Program

Scope: Annual calibration is required for survey instruments used for quantitative radiation measurement. EHS continues to provide this service for the UI and UIHC.

Activities and Accomplishments for FY12:

- A total of 187 instruments were calibrated and 21 instruments were tagged out of service. A comparison of the last three fiscal years is given below.

UI Activity	FY 10	FY 11	FY 12
Compliance Calibrations	124	128	118
Tagged Out of Service	21	21	19

UIHC Activity	FY10	FY11	FY12
Compliance Calibrations	52	59	59
Tagged Out of Service	2	20	0

Machine-Produced Ionizing Radiation Safety Program

Scope: EHS maintains the registration of all sources of machine-produced ionizing radiation at the University with the Iowa Department of Public Health. In addition, EHS also performs radiation monitoring and machine compliance testing of each of these x-ray producing units to ensure operational safety and compliance with regulatory requirements. The x-ray inventory currently consists of a total of 193 units, which includes:

87 Diagnostic or Therapy Units
88 Dental Units
6 X-Ray Diffraction Units
5 Electron Microscopes
4 Bone Densitometer Units
2 Research X-Ray Units
1 Veterinary Unit
193 Total Units

Activities and Accomplishments for FY12:

- Conducted X-ray compliance inspection surveys of all medical and dental diagnostic X-ray units in-service as well as 16 research related X-ray units and 4 bone densitometer units in the University's X-ray inventory. Details for the past three years are as follows:

X-Ray Unit Inspections	FY10	FY 11	FY 12
Dental	79	85	88
UI	21	20	18
UIHC	98	88	87
Totals	**198**	**193**	**193**

- Identified 8 minor items of equipment non-compliance within the UIHC and 21 minor items with the units at the Dental College. Radiology Engineering and Patterson X-ray promptly investigated and corrected all UIHC and College of Dentistry items of non-compliance respectively.
- Streamlined reporting for compliance issues by logging findings into EHS Assistant database, which generates reports summarizing all findings.
- Dental College added over fifty additional dental x-ray units as part of their building addition which will be included in the upcoming round of inspections.
- Performed compliance testing for all clinical and research CT units at UIHC.
- Provided mammography physicist services to the UIHC to include MQSA equipment compliance checks for the two digital screening units, one stereotactic breast biopsy unit, one computed radiographic unit, and a tomographic mammography unit.
- EHS mammography physicist completed required training for performing tomographic (3D) mammography unit compliance testing.

- EHS increased the frequency of administrative audits of both screening and stereotactic mammography operations to twice a year in response to a physician non-compliance issue with continuing education and experience noted on the 2011 IDPH inspection.
- The ACR completed an audit for two of the screening mammography units. No items of non-compliance were noted.
- Began training another EHS Radiation staff member to perform CT and mammography unit compliance surveys.
- Assisted Radiation Oncology in registering and obtaining authorization from the IDPH to treat patients with their new Intrabeam™ Intraoperative Radiation Therapy (IORT or electronic brachytherapy) x-ray unit.

Radiation Shielding Design and Construction Analysis

Scope: EHS provides radiation shielding evaluations for new construction planning and existing facilities to assist in assuring that all facilities designed for radiation producing machines and radioactive material use and storage meet applicable standards and regulations.

Activities and Accomplishments for FY12:

- Provided shielding plans for the Veterans Administration Medical Center's Nuclear Medicine remodeling project.
- Provided shielding evaluations and dose measurements in support of Radiation Oncology's use of their new Intrabeam™ Intraoperative Radiation Therapy (IORT or electronic brachytherapy) unit in the UIHC's Ambulatory Care Surgical Suite.
- Provided shielding evaluations and dose measurements following the installation of the UIHC PET Imaging Center's new cyclotron.
- Consulted on remodeling and new construction projects regarding required shielding for the UIHC's Departments of Radiology and Radiology Engineering, and the UI Dental College. Performed post-construction shielding verification measurements for each area.

Radioactive Materials Procurement and Shipping Program

Scope: This program oversees the receipt, distribution and documentation for all radioactive materials delivered to the University. The shipment of radioactive material is controlled and regulated by IDPH, the DOT and the International Air Transportation Agency. These regulations specify that documented training is required for any persons involved in the shipping of radioactive material. As such, EHS provides shipping services for UI and UIHC to minimize the burden on users of radioactive materials. Shipping services involve: completing required documentation; obtaining copies of recipient's radioactive materials licenses; preparing and packaging radioactive materials for shipment; providing training to individuals when required; and maintaining records.

Activities and Accomplishments for FY12:

- Radioactive Materials Receipt and Delivery: a total of 570 items of radioactive material were processed and delivered to UI or UIHC facilities. Receipt totals from previous years are provided below for comparison.

# Receipts	FY10	FY11	FY12
UI	719	580	456
UIHC	143	65	114
Total	**862**	**645**	**570**

- Radioactive material inventories were maintained within the University's license limits.
- Radioactive Materials Shipments: 9 packages were shipped for UI (3) and UIHC (6) personnel.

Radiation Safety Education Program

Scope: Required radiation safety training is provided both initially and annually to individuals listed on an active radioactive materials use authorization in the basic sciences and to health care workers who receive an annual radiation dose equivalent greater than 100 mrem. Completion of initial radiation safety training is also required as a prerequisite to receiving a radiation dosimeter. Health care workers providing care to brachytherapy and/or radiopharmaceutical therapy patients at the UIHC are trained annually as required by regulation. Radiation safety training for ancillary personnel is provided on an as needed basis.

Activities and Accomplishments for FY12:

- A total of 1,189 radiation safety courses were completed during FY12; a total of 811 radiation safety courses were taken by UI employees and 378 courses by UIHC employees.

UIHC Therapy Patient Monitoring Program

Scope: EHS provides health physics support and radiation safety monitoring service for UIHC departments administering therapeutic amounts of radioactive materials to patients. Support services include post-administration radiation surveys; staff and family/visitor education and training; after hours on-call; facility decontamination; and radioactive waste collection.

Activities and Accomplishments for FY11:

- Therapy patient activities and historical comparison are provided below:

Therapy Procedure	FY10	FY11	FY12
I-125 Eye Plaque Brachytherapy	30	32	23
I-125 Prostate Brachytherapy	22	15	10
Ir-192 Brachytherapy	0	1	0
I-131 Radiopharmaceutical Therapy	55	54	44
Y-90 Radiopharmaceutical Spheres	15	12	12
Lu-177 Radiopharmaceutical Therapy	-	-	3
Intraoperative Radiation Therapy (IORT) -	-	-	11
TOTAL Therapy Procedures	**122**	**114**	**103**

- No reportable medical events occurred during FY12.
- Nuclear Medicine began a new IRB/MRPC approved Lu-177 radiopharmaceutical therapy research protocol.
- Radiation Oncology began treating patients with their new Intrabeam™ Intraoperative Radiation Therapy unit (IORT or electronic brachytherapy).

Laser Safety Program

Scope: EHS provides laser safety support to UI and UIHC laser users. The program includes training, consultation, unit registration, and safety audits. Currently there are 64 research lasers registered with 26 investigators at the UI and 23 medical lasers registered to 7 departments at UIHC.

Activities and Accomplishments for FY12:

- Served as University's & UIHC's Laser Safety Officer.
- Served as a member of the UIHC Laser Safety Panel.

- Approved the purchase of new medical use lasers for Ophthalmology, Urology, and the Cardiac Catheterization Lab in conjunction with the UIHC's Laser Safety Panel.
- Performed laser safety audits of 16 UI research groups utilizing 26 lasers and 9 UIHC laser use departments utilizing 22 lasers. Several UI laser labs are still inactive as a result of the 2008 flooding in IATL.
- Authored a new policy for the procedural control of laser use in low usage rooms at the UIHC.
- Continued to work with UIHC Maintenance to correct problems with laser area entryway controls in the sterile core and operating room in OR.
- Worked with the UIHC's Department of Otolaryngology to correct area entry control deficiencies in both of their laser use rooms.
- Provided equipment and area audits for new and trial use lasers.

Radioactive Waste Management Program

Scope: The EHS manages the Radioactive Waste Management Program for the UI and UIHC. The program includes: (1) collection, transportation, processing, storage and disposal of radioactive waste materials; (2) the management of required program records; (3) facility and environmental monitoring of its operation; and (4) educational support services regarding hazardous materials waste handling.

Activities and Accomplishments for FY12:

EHS dedicated 0.69 FTE to the management of radioactive waste during FY12. This effort is broken down as follows:

UI	0.26 FTE
UIHC-Pathology	0.02 FTE
UIHC-Radiology	0.39 FTE
VAMC	0.02 FTE

A summary of the radioactive waste management program is provided below with data from the previous 2 fiscal years included for comparison.

Summary (UI & UIHC)	**FY10**	**FY11**	**FY12**
# Pick-Ups	317	215	242
# Items Radioactive Collected	1,052	874	767
# Pieces Lead Shield Collected	2,350	2,444	2,149
Activity Collected – Curies	1.362	1.026	0.690

Summary (UI & UIHC)	**FY10**	**FY11**	**FY12**
# Containers Shipped Off-Site	23	32	21
# Liquid Barrels Discharged	11	12	4
Activity Discharged to Sewer (Curies)	0.098	0.041	0.040

# Shipping Containers Generated*	**FY10**	**FY11**	**FY12**
Animal Carcass	7	2	3
Dry Waste	23	24	17
Liquid Waste, Aqueous	12	10	8
Liquid Waste, Mixed	1	0	1
LSC Vials (Hazardous)	8	7	2
LSC Vials (Non-hazardous)	22	20	14
Other	2	1	0
Sharps	1	0	0
Total Containers	**76**	**64**	**45**

* Shipping containers may be 55-gallon drums, 30-gallon drums, pails, or yard boxes.

Any reductions in numbers are attributable to several factors, including:

- Intensive in-house processing of various waste streams;
- A reduction in the use of long-lived radioactive materials;
- Users ordering less activity for the same experimental protocols due to vendor improvements in radionuclide purity and methodologies;
- EHS involvement with researchers during audits, training and renewals which encourage ordering only the amount of activity needed and correct identification of radioactive waste;
- A shift towards research using biochemical alternatives rather than radioactive materials.

EHS processes some radioactive waste via in-house methods to reduce disposal costs charged back to the University due to disposal at a low-level radioactive waste burial site. A summary of the number of containers processed by in-house methods and the number of drums eliminated from radioactive burial is shown below. Cost savings resulting from in-house processing and/or material segregation of radioactive materials is listed below.

# Processed	**FY10**	**FY11**	**FY12**
Patient Linens Decay-In-Storage (containers)	4	0	7
Sharps Decay-In-Storage (containers)	82	62	63
Dry Waste Decay-In-Storage (drums)	0	14	52
Dry Waste Incineration (containers)	48	75	43
TOTAL	**134**	**189**	**165**

# of Drums Eliminated from Radioactive Waste Burial	**FY10**	**FY11**	**FY12**
Dry Waste Decay-In-Storage	0	14	52
Sharps	5	4	4
Dry Waste Incineration	5	8	4
Total	**10**	**26**	**60**

Waste Processing Cost Savings	**FY10**	**FY11**	**FY12**
Dry Waste Decay-In-Storage	0	$ 16,800	$ 62,400
Sharps Decay-In-Storage	$ 10,000	$ 14,000	$ 14,000
Total Savings	**$ 10,000**	**$ 30,800**	**$ 76,400**

Radiation Safety Program Goals for Fiscal Year 2013

- Renew the University's broadscope radioactive materials license. The current license expires April 30, 2013.
- Provide health physics support for the UIHC's new River Landing Clinic.
- Provide shielding analysis and design input for the UIHC's Operating Suite remodeling project regarding x-ray and laser safety requirements.
- Provide health physics support for Radiation Oncology's Proton Therapy project planning.
- Work to improve physician participation in laser safety training.
- Continue work towards implementing customized reporting and on-line functions for the HP Assist database.
- Continue the transfer of paper radiation safety records and files to an electronic, searchable format.

Chemical Safety Section

Chemical Hazard Assessment Program

Scope: This program provides services for monitoring chemical exposures and, where possible, applying the knowledge gained from these assessments to "similar" exposures in other areas of the institution. Services are also provided for assessing safe material handling practices and providing guidance on minimizing or eliminating exposures to hazardous chemicals.

Activities and Accomplishments for FY12:

- Numerous hazard assessments were conducted throughout the year to evaluate safe material handling, review chemical use with animals, or investigate an individual or area concern. Examples include assessments for toxic materials of biological origin including ricinine, Mitomycin C, and Streptolysin O; volatile organics/organic solvents including HPLC solvents; acrylamide; hazardous drugs including antineoplastic agents and cancer-inducing agents; safe management and use of a neurotoxic chemical, nanomaterials including carbon nanotubes, metal and metal oxide powders, and materials and issues associated with nanomaterials for targeted drug delivery; formaldehyde; powdered solid lab chemicals including silica gel, nutrient powders for growth cultures and sodium dodecyl sulfate; and PCBs.
- Approximately 46 chemical hazard assessments were conducted as part of the formal ACURF Hazardous Agent Review process.
- Conducted personal and area chemical monitoring in department areas to assess exposures during specific work tasks or processes, for individuals expressing exposure concerns, or to assess environmental conditions in a lab space.
    - Formaldehyde was monitored in research labs. Seven personal samples were collected, analyzed and interpreted.
    - Sound level measurements were taken in one laboratory.

Chemical Inventory System

Scope: Implement a university-wide chemical inventory system using a web-based software system. The goal of the project was to have accurate inventory data online for research investigators in 102 departments and other chemical use areas. Implementation has been expanded to other campus areas where chemicals are used and stored. The inventory data is available to emergency responders as needed.

Activities and Accomplishments for FY12:

- The new chemical inventory system, OnSite's Chemical Safety Assistant (EHSA) was used throughout FY12. The following is a breakdown of some EHSA data categories.
    - Number of chemical owners/PIs ~530
    - Number of total Users ~1400 [#]
    - Number of buildings ~150
    - Number of rooms ~1200
    - Number of inventory items ~103,000 [@]

[#] Total number of users includes labs, non-labs, 15 BET groups and 2 emergency responder groups

[@] Number of inventory items is actually the number of line items. The total number of chemicals tracked is actually higher because the system allows grouping of multiples of the same items on one line (e.g. five 4-Liter bottles)

- High-traffic website stability issues experienced in FY11 continued to be addressed for the early part of FY12; EHS worked with the vendor, OnSite, to address these issues. The system stability finally improved after numerous iterations.
- Six group classroom training sessions were provided.
- Developed an updated user guide for the new EHS web site.
- Developed an internal administration SOP for EHSA.
- Progress continued on assuring newly entered and existing chemicals listed in the chemical inventory also appear in the associated EHSA Chemical Inventory Catalog. This is necessary to ensure that all COI chemicals and TIER II chemicals can be included when running the appropriate reports.
- Created multiple chemical inventory reports, including some in Excel format, for both EHS internal use and for campus inventory system users.

Laboratory Assessments

Scope: This program was developed for the purpose of supporting the UI's research goals by promoting safe research and assuring sound laboratory safety, health and environmental management. This is accomplished by providing oversight of occupational and environmental safety programs with emphasis in the areas of biological, chemical, and radiation safety and waste management. As recommended by the University's Internal Auditors, the program is also intended to implement a more comprehensive assessment of programs and practices within the research community. Each principal investigator's (PI's) research area is reviewed in order to build a comprehensive picture of laboratory research operations, assess the current status of their safety programs, and build additional resources to assist the research community in implementing best safety practices and compliance-based programs, such as those required by the University, state and/or federal regulations.

Activities and Accomplishments for FY12:

Safety Advisor Team (SAT) Accomplishments

- Provided direction on how the team would consistently assess and record findings on items from the lab review checklist. Provided technical guidance to address issues and concerns arising from the lab review process.
- Regular team meetings were held to discuss unique lab review findings and subsequent resolution, where applicable.
- The newest advisor completed the Biological and Chemical Safety internships.
- The team was utilized to collect and disseminate information throughout the year. The team distributed information about the need to register human stem cell use. Team members prepared and distributed a useful document explaining where to report in the case of workplace lab injuries. The team continued to collect information on new or changed departmental ECOs, changes in recombinant DNA use, BSC serial number/certification date/location, and activities where respirators are used in labs. Team members are asking if labs have USDA permits and collecting copies of the permit when applicable. SAT informed appropriate labs about the switch to Econo-Safe (non-biodegradable) scintillation fluid on campus and the need to obtain Radiation Safety Committee approval for use of non-biodegradable fluid.
- Lab Safety Rounds were re-initiated and all advisors are currently conducting safety round visits.
- Reviewed mobile lab auditing/review processes at other selected institutions. Evaluated several tablet computers for possible use with the field portion of the lab review process.

- Safety seminars were presented to the Biosciences Graduate Students, Microbiology students, and Chemical and Biochemical Engineering students.
- On-campus training opportunities were arranged for the team including the following webinars: *Lab Accidents in the News-Institutional and Individual Risks, Roles and Responsibilities (CSHEMA), Bacteria (including Legionella and MRSA), Allergens, and Risk Communication (EMLab P&K), Mold: Health Effects, Sampling, & Data Interpretation (EMLab P&K), A collaborative approach to lab safety training (CSHEMA), Best Practice Strategies for Laboratory Safety Programs (EH&E), Basic Disinfection practices for tissue culture labs (Eagleson Institute), Application of Fire Codes for Labs (CSHEMA), Laboratory Explosive Safety (CSHEMA), Nanosafety Overview (Dr. P. O'Shaughnessy), Stem Cell Information (C. Ross), Experimenting with Danger –Severe Lab Accident Cases Video (Chemical Safety Board), and Texas Tech Lab Accident Case Study webinar (CSB)*
- The 2012 lab self-audit underwent the following revisions: organizational changes, addition of the CDC/USDA Permit checkbox, removed reference to the "flip chart" in the emergency plan section, clarification of the requirement of lab coat/PPE when working with hazardous materials, addition of the statement that PPE is removed prior to leaving the laboratory, requesting the manufacturer model number be listed when respirators are used, and addition of space to note lab questions/concerns/issues at the end of the document.
- Updates were made to the Excel tracking spreadsheet to correlate with the audit checklist and to incorporate findings of the Lab Safety Rounds.
- The safety advisors conducted 358 bio/chemical lab reviews. In addition, 17 new PI orientations were completed. The team also conducted radioactive materials user inspections for labs as described in the Radiation Safety Programs section of this report. Forty-seven (47) possible individual audit/review findings (areas that need improvement) were tracked for the bio/chemical lab reviews. In addition to being tracked individually, lab review findings were placed into eight general categories and tracked to help correlate problems within general health and safety programs or areas. Of the eight categories, the highest numbers of findings were in areas that included training, PPE programs and chemical management.
- The top three findings were: Incomplete training, PPE hazard assessment training not reviewed and signed by all staff, and inadequate chemical hygiene plan (CHP) annual review documentation. There was a significant decrease (from 34% to 22%) in incomplete training records.
- Another significant decrease was in the need for respirator use evaluations. It went from 19% to 9%, following the emphasis placed on this during lab reviews.
- Other notable reductions in FY12 include:
    - 'Fume hood blocked and being used for experiments', decreased from 11% in FY11 to 5% in FY12;
    - 'Call the exposure control officer for the location or last update of the exposure control plan', decreased from 12% in FY11 to 8% in FY12;
    - 'Chemical inventory not updated in the last 60 days', decreased from 12% in FY11 to 7% in FY12 (likely due to increase lab familiarity with the new EHSA chemical inventory system);
    - and 'PPE hazard assessment and certification not reviewed and signed annually', decreased from 8% in FY11 to 3% in FY12.
- 66% of the labs reviewed had at least one finding. This is a reduction from 77% in FY11.
- Of the labs reviewed in FY12, the most common number of findings per review was one (42%), two (26%), and three (15%) respectively.
- Safety advisors actively followed-up on a specific set of lab findings (including training and documentation) to ensure the outstanding items were completed after the lab review. Of the labs in this category, 87% completed all the outstanding items found during the lab review.

Laboratory Chemical Safety and Chemical Hygiene Program

This program applies to all laboratory chemical use under normal working conditions or during a foreseeable emergency. This includes approximately 50 major departments with labs in research, medical and academic activities.

Occupational Health & Safety Support for Research Grant Submissions

Scope: Beginning in 2001 the US Army Medical Research and Material Command (USAMRMC) required two safety submittals for grants: an institutional facility safety assurance which is completed by EHS, and a safety assurance from the principal investigator.

Activities and Accomplishments for FY12:

- Completed the annually required Facility Safety Plan Status report to USAMRMC; EHS provided site visits, follow-ups, and coordinated USAMRMC safety plan information for 18 UI investigators sponsored by USAMRMC or other DOD organizations.
- Submitted a renewal Facility Safety Plan for the University of Iowa that was approved by USAMRMC for a new 5-year period 2011 – 2016.

Support and Services for Research Laboratory Contacts and Department Health and Safety Coordinators

Scope: EHS provides support services to voluntary department personnel who serve as the primary administrative liaisons (coordinators) between EHS and their respective units. EHS works with and through these coordinators to implement safety programs, e.g., lab standard, respiratory protection, PPE, and exposure assessment and lab unit assessments of compliance in these areas. EHS also works directly with research laboratory investigators and their staff to provide consultation and assessment services, education, and laboratory site reviews to assess health and safety practices and compliance.

Activities and Accomplishments for FY12:

- A nanomaterials safety training module was developed and made available in ICON to provide information research users of nanomaterials.
- A DEA Controlled Substance Guidance document was developed for managing research use of controlled substances. It is available through the EHS web site and through ICON.
- Formaldehyde safety training was revised to include Globally Harmonized System-based chemical hazard information.
- All remaining chemical safety training modules were reviewed/revised.
- Reviewed the Hazard Communication regulation 2012 revision and provided input to development of training required in upcoming months by that regulation.
- Developed resources and contributed to Lab News articles distributed to the research community. Topics included: new chemical fume hood training module notification, storage reminders for gas cylinders, several articles on lessons learned from injuries or incidents that occurred at other institutions, lab safety rounds announcement, required documentation for mask or respirator use in labs, announcement of the U.S. Chemical Safety Board's release of a laboratory safety video, how to complete the chemical inventory system's chemical review statement, new EHS Assistant report available, reminder to become aware of mercury-containing equipment in labs, how to determine gas volume in gas cylinders for chemical inventory as well as how to enter the information in EHSA, and chemical safety label awareness.

- Other resources include several OSHA documents and fact sheets as well as a NIOSH publication made directly available to users through the EHS web site. Topics include Lab Nanomaterials Safety, the OSHA Lab Standard and the Chemical Hygiene Plan, Bulletin for First Time Respirator/Mask Users, and Laboratory Safety Guidance.

- Provided support for the redesign of the new EHS web site.
- Provided chemical consultations and/or assessments for the research laboratory community upon request. Assisted with issues such as safe handling and controls for toxic or hazardous chemicals, review of lab experiment protocols for chemical safety issues, chemical reaction products related to safety and exposure, safe chemical segregation, grant application safety issues/questionnaires, formaldehyde use assessments, post-incident evaluations, chemical use in the Office of Animal Resources facilities, and moving lab chemicals.
  Examples of issues for which support was provided for FY12 included:
  - Assistance was provided with safely weighing small quantities of hazardous solid chemicals without compromising accuracy. Improved technique can minimize potential exposure and reduce the need (or perceived need) to use a dust mask for these tasks.
  - Input was provided for safe handling of an air and water-sensitive material that initiated an uncontrolled reaction inside a fume hood.
  - Provided guidance for managing a concern about widespread contamination of a lab with ethidium bromide.
  - General review of eating and drinking prohibition for labs.
  - Investigated construction work odor in Main Library.
  - Consulted with a researcher moving from MTF to main campus about locations for equipment placement and chemical storage to minimize exposure and safety concerns; also included a review of possible residual solvent vapors evolved from equipment once in use.
  - Chemical safety and management issues were reviewed in 358 labs as part of the annual biological/chemical lab review process. Also reviewed chemical handling and safety issues during Lab Safety Rounds unannounced walk-throughs.

Respiratory Protection Program for Laboratories

Scope: Implement a Respiratory Protection Program in research laboratories where respirators are available for use. See the Respiratory Protection Program report section for additional information.

Activities and Accomplishments for FY12:

- The campaign to renew awareness that respirator or mask use in labs requires a documented hazard assessment continued in FY12. Approximately 75 new lab respirator use evaluations were completed in FY12. On the date of this report, there are currently approximately 140 known respirator use labs in EHS records.
- Written respirator programs for required respirator use were prepared for two investigators.
- Dust mask fit testing was provided for five research lab personnel.

Personal Protective Clothing and Equipment (PPE) Program for Laboratories

Scope: This program is a component of the overall PPE Program and includes departments with research laboratories where PPE is used for hazard protection.

Activities and Accomplishments for FY12:

- Assisted investigators with completing the written PPE hazard assessment form and certification, whenever needed. Utilized the EHS Safety advisor team to provide support for the PPE program in

research labs. Safety advisors reviewed PPE hazard assessment and training documents at each EHS bio/chemical lab review.

- Provided personal consultations/education for individual laboratories on selection and use of PPE specific for particular materials handled.
- PPE was routinely reviewed or recommended as part of several hazard evaluations, spill consultations, and post-incident follow-ups.

Ventilation and Fume Hood Program

Scope: This program focuses on the fume hood as the major engineering control for chemical use in laboratories. Annual airflow performance checks are performed on chemical fume hoods to assess inflow velocities. Results are communicated to users, departments, and Facilities Management. Support is provided to Research and Facilities Management for laboratory ventilation issues pertaining to new installations and renovations.

Activities and Accomplishments for FY12:

Fume Hood Program

- The annual summer test cycle of all fume hoods on campus was completed and the report was issued in October 2011 to 20 departments and colleges, as well as to Facilities Management and UIHC.
- 863 chemical fume hoods were evaluated, including measurement of hood face velocity:
  - 737 hoods passed
  - 100 hoods were restricted use
  - 26 hoods failed
- One hundred twenty-six (126) referrals were made to maintenance (FM Work Control Center and UIHC) for issues such as failed hoods or other airflow problems, problems with lights, sashes or monitors.
- Smoke tests were performed on approximately every 5th conventional-type hood and each low flow high performance hood.
- Fume hoods were assessed during the rest of the year upon request or were re-assessed following notification that maintenance was complete.
- A plan was developed to transition fume hood testing from an annual summer 4 to 5 month schedule to a full year schedule with testing distributed throughout the year. This was planned to assist Facilities Management with their ability to perform maintenance over a longer timeframe instead of compacted in a few months. The new schedule was implemented in spring 2012.

Fume Hood Program Report	10/2011
Number of departments receiving report	20
Total number of hoods tested	863
Number of hoods passed	737
Number of hoods failed	26
Number of hoods restricted	100
Number of referrals made to FM	126
Number of hoods under construction	4
Number of hoods initially inaccessible	23
Number of hoods not in use	31
Number of hoods removed since previous year	9
Number of hoods requiring lab action prior to testing	1

Research and Facilities Management Project Support

The number of projects involving issues with laboratories grew significantly in FY11 but remained somewhat more even in numbers in FY12. The Chemical Safety section continued to provide EHS support to both Facilities Management and Research staff for the various projects. The majority of projects involve management of air flow in laboratories and, in particular, methods to reduce air exchange rates in labs to control cost or to directly reduce cost by managing the cost of conditioning lab air. The following projects were supported. Some were a continuation from FY11:

- BSB Retro-commissioning study
    - Retro-commissioning studies involved EHS review of multiple technology approaches to reducing or improving ventilation affecting laboratories and are specific to each building
- Trowbridge Hall Retro-commissioning study
- Evaluate Aircuity demand-controlled ventilation system's dashboard to view current ventilation system data in real time
- Review of another heat wheel technology presented to FM and others
- Evaluation of fume hood retrofit conversion kits (conventional hood to low flow conversion)
- CBRB Demand-Controlled Ventilation, review of current sensor locations related to future use of sensors in remaining building areas
- EMRB DDC Controls and Auto Sash Closures for Fume Hoods
- IATL Total Energy Recovery Wheel
- Ventilation and Fume Hood Study (to reduce energy use by fume hoods in multiple buildings)

Materials Management - Regulatory Reporting

Scope: The Tier II and Emergency Response Right-To-Know (ERRTK) reports on hazardous materials locations within the institution are required to be submitted annually. EHS produces the reports and distributes them to the appropriate agencies. There are also reporting requirements for the Department of Homeland Security (DHS) Chemical Security Anti-Terrorism standards for chemicals-of-interest (COIs).

Activities and Accomplishments for FY12:

ERRTK

- Completed the ERRTK report and distributed to local and state emergency authorities.
- As building floor plans/maps were updated by Design & Construction (D&C), they were incorporated into the collection for ERRTK. Examples of changes include building names and numbers as well as building addresses.
- Maps for all buildings currently in AutoCAD® were converted into Adobe pdf format in FY12. These maps are accessible to all EHS staff on the EHS shared drive. The 2011 ERRTK report was distributed to ICFD, JCHMT, CFD, Public Safety and Mike Valde via a flash drive containing the full ERRTK including emergency contact numbers and building table of contents.
- University buildings containing hazardous materials and those that have undergone renovation/reconstruction were inspected for this reporting period (reported in early FY12). This included approximately 200 buildings and included 1000+ maps. In addition, all new building added to university lists were inspected and included in this report.
- Work was undertaken for the ERRTK report to be issued in early FY13. This report will include all University buildings. Began to field test a new Apple iPad to update maps and record notes during building audits using the AutoCAD WS program.

- Continued to improve the quality of the information used for chemical reporting by reviewing ERRTK map information as well as chemical inventory system data to assure they match as much as possible.
    - Areas with inventories in the EHSA system but not marked as hazardous materials areas on ERRTK maps were identified. These rooms were then inspected to determine if they meet the criteria to be designated as hazardous areas on the ERRTK maps.
    - Areas identified as hazardous material areas on ERRTK maps were then checked against the chemical inventory system to locate areas that may not be listed in the inventory although they have presently have stored chemicals.

Tier II

- Completed the Tier II report; copies were provided to local, county and state emergency and disaster service organizations.
- Prior to submitting the report to IDNR, the current EHS Tier II internal database was cross-checked for accuracy with the EHSA database and ERRTK building floor plans.
- Used information from the chemical inventory system to verify locations and amounts listed in the Tier II inventories.
- Used information gathered from the ERRTK and updated chemicals inventories, so an additional forty inventories of reportable chemical quantities were added to the Tier II report.
- There are currently 59 active participants who routinely provide updated chemical data for Tier II reporting.

	# Buildings Containing TIER II Inventories	TIER II Reportable Chemicals for calendar year 2011
Main Campus	84	307
UI Research Park	15	52
Totals	99	359

DHS Chemical Facility Anti-Terrorism Standards (CFATS)

- Utilized chemical inventory system as the primary compliance tool for this regulation. Worked with users to maintain and update the chemical inventory and track any change in amount of chemicals of interest (COIs) at the University.
    - Maintained a Listserv of chemical owners/users. The Listserv functions as a means to regularly distribute reminders to chemical owners to update their chemical inventories every 60 days. The 60-day periodic updates allow us to report, when required, within the regulation's 60-day reporting window.
- In addition to sending routine periodic reminders to chemical inventory system users, worked to ensure the University remains compliant with current DHS regulations by checking user 'last inventory review' dates in the chemical inventory system, checking for chemical inventory updates during the bio/chemical lab reviews, and completing regular periodic surveys of the EHSA database for COIs.
- Improved search efficiency in chemical inventory system for DHS-listed COIs.
    - Worked with the EHSA chemical inventory vendor to create a custom report that will produce the results of a search of the database for the 325 chemicals-of-interest, sum the quantities by building and chemical owner, compare to DHS threshold reporting quantities, and flag materials at or above the reporting threshold. This work is approximately 90% complete. In the interim these calculations are being done and/or checked by hand in many cases to assure accurate reporting.

- No material was determined to exceed a threshold reportable quantity in FY12.
- Contacted DHS for consultation on a reporting issue. DHS verified that COIs list with the threshold reportable quantity of "Any Placardable Amount, APA" that are shipped out as hazardous waste do not trigger the reporting requirements unless the chemical is also classified with a U or P waste code in EPA RCRA regulations. This is positive news for UI because there are approximately 50 chemicals with APA reporting thresholds. Now only about 4 of them will trigger reporting if shipped out as waste whereas, according to our original interpretation of the regulation, we believed any of them would trigger such reporting.

Emergency Preparedness

Scope: To improve the hazardous materials management practices and emergency preparedness for departments and assess the expanded use of the Emergency Preparedness Plan (EPP) for a broad range of incidents. EHS works with volunteer building occupants to establish and maintain Building Emergency Teams (BETs) who can coordinate building and response issues related to incidents involving hazardous materials.

Activities and Accomplishments for FY12:

- To date, 15 Building Emergency Teams have been established representing 21 campus buildings.
- Two new BETs were established in College of Medicine buildings in FY12. The MMM BET includes ML, MRC and MRF. The CEM BET includes CBRB, EMRB and MERF. Both BETs have met with a representative from ICFD/JCHMT. Both BETs have completed their respective written emergency preparedness plans and Go kits. This was a success because many research laboratories are located in these buildings.
    - Three spill carts were provided to each newly formed College of Medicine BETs, one for each building represented by the individual teams. Both new teams also received training in the use of the spill carts.
- Worked with individual BETs throughout the year, as issues arose.
- Individual meetings were held with BETs to review the past year's incidents, discuss learning opportunities, and promote idea sharing.

University Spill Resource (USR) Group

Scope: The University Spill Resource Program (USR) was instituted in 1993 to be a resource unit and provide coherent support services within the University's Emergency Preparedness Program. The nine members of the Spill Resource Group provide consultation and advice to spillers on safe and appropriate response actions. The Iowa City Fire Department and Johnson County HAZMAT Team provide campus emergency response services.

Activities and Accomplishments for FY12:

- Administration of the spill resource group was maintained, e.g., written guides, appropriate levels of equipment and supplies, and annual refresher training.
- Spill resource members provided consultation services for 11 campus incidents/inquiries. Five incidents involved chemicals, including one with mercury, two incidents involving sodium hypochlorite, one involving HCl, and one for radioactive materials measurement. Five incidents involved odors, three from construction work, one to check levels of mercaptoethanol and one of unknown origin. The eleventh incident was due to two laboratory gas Bunsen burners left unattended in a lab; one was lit and the other one had no flame but the gas valve was on. SRG personnel met with building, custodial and FM representative to discuss the situation. Six of the

incidents involved research laboratories or buildings, two were at water treatment plants, and three were in other UI buildings undergoing renovation.
- Maintained and revised Resource Unit Contact Information provided to Public Safety.
- Continued to foster lab management of spills by reviewing lab preparedness supplies and sharing guidance and information on spill preparedness during the annual lab reviews.
- Spill resource group members observed a WMD response exercise at Carver Hawkeye Arena. The exercise was sponsored by Iowa National Guard and JC LEPC. Members also met to review and discuss spills and concerns that occurred in FY11 and 12.

Chemical Safety Section Goals for FY13:

- Provide timely guidance to users and support groups on chemical health and safety issues and develop new chemical safety and health resources for the EHS web site as needs arise.
- Conduct site reviews for USAMRMC-funded principal investigators; submit annual Facility Safety Plan Status report to USAMRMC.
- In support of the animal care and use review process, provide chemical assessment services for review of projects using hazardous chemicals with animals.
- Work to assure research staff complete training required by the newly revised OHSA Hazard Communication regulation.
- Transfer the fume hood database from UIRIS to EHSA and implement the Hazard Assessment Tool (PPE) in EHSA if department priorities allow.
- Continue to improve the quality of chemical inventory data entered by researchers through EHS administrative methods. There is a need to review data entered to assure it appears in or matches chemical information in the associated chemical catalog. This allows us to capture materials when searches are conducted and/or regulatory reports generated that might otherwise be missed due to spelling or other errors.
- Continue to use the EHSA inventory system to remain compliant with DHS COI 60-day reporting requirements and complete custom COI report development by working with OnSite.
- Develop guidance for chemical users about DHS CFATS, including how to track COIs in their inventories, and when they should report COI purchases and other issues to EHS; publish on the EHS web site.
- Continue to support the laboratory ventilation and energy reduction projects initiated by FM.
- Utilize the Safety Advisor Team to provide more comprehensive chemical hygiene support to researchers.
- Inspect all buildings for ERRTK FY12-13.
    - Provide building emergency contact information for each building on the actual map to make it more user friendly to personnel using the map for emergency response.
    - Review each building map/floor plan available from FM for changes prior to conducting physical audits of building for 2013 RTK Report.

Laboratory Assessments/ Safety Advisor Team Goals for FY13:

- Complete Radiation internship for field safety advisor(s).
- Prepare a new advisor to complete the Biological and Chemical internships.
- Initiate the training of the new Radiation Safety Specialist to serve as a member of the safety advisor team, following section specific training.
- Continue unscheduled lab visits (Lab Safety Rounds) for the purposes of both improved lab follow-up and to create opportunities for questions from researchers.

- Continue to evolve the Excel spreadsheet used for tracking; assess and modify tracked deficiencies as needed.
- Utilize the safety advisors to provide lab safety and health review services to research and support needs and requests from sections within EHS.
- Evaluate the possibility of additional follow-up for items found during lab reviews beyond documentation.
- Evaluate the possibility of adding a required periodic self-review for laboratories in addition to the annual lab review by EHS.
- Complete applicable training opportunities as they become available.

Administrative Services Section

The Administrative Services Section provides information management and administrative support for all EHS program areas.

General Administrative Activities

Scope: The purpose of the General Administrative Activities Program is to provide budgetary, human resource, and administrative support to all EHS programs. These activities are performed by the HR Unit Rep and Administrative Services Coordinator with oversight provided by the OVPR Compliance Unit Business Manager.

Activities for FY 12:

Approximately 4,020 hours were expended on general office support for EHS staff. The breakdown of activities and approximate time required for each is listed below.

- **Biosafety Cabinet Program Support.** Approximately 181 hours were spent on support for the biosafety cabinet certification program. Activities include scheduling appointments with investigators and serving as a liaison between laboratory staff and an outside contractor.
- **Financial Accounting.** Approximately 401 hours were spent on budget and accounting activities. These included reconciling monthly financial statements, performing billing functions, tracking expenditures, initiating transactions, processing vouchers and assisting with budget preparation.
- **General Clerical.** Approximately 1,727 hours were spent on general clerical support activities. These activities included directing incoming telephone calls, assembling reports, correspondence, copying, maintaining files, initiating forms, desktop publishing, personal computer data management, office equipment maintenance, office supply inventory management, and mail distribution.
- **Human Resources.** Approximately 443 hours were spent on human resources activities. These activities include maintaining confidential employee records, reconciling monthly leave records, initiating workflow transactions, communicating information to staff, search administration, attending HR Unit Rep meetings, initiating and participating in rewards and recognition program, problem resolution, and professional development.
- **Special Projects.** Approximately 910 hours were spent on special projects. These activities include collecting statistical information, producing specialized reports, editing publications, attending meetings, participating in EHS internal committees, professional development, and providing support to Director and Business Manager.
- **Publications.** Approximately 188 hours were spent on production and distribution of the bi-monthly Lab News newsletter and other publications.
- **Staff Training Records Program.** Approximately 170 hours were spent on the administering of internal training and professional development records for EHS staff.

Activities and Accomplishments for FY12:

HR Unit Rep

- Continued to refine the billing system for the biosafety cabinet certification program and assumed responsibility for verifying contractor billing.
- Reviewed and revised the EHS Policies and Procedure manual.

- Participated in the successful recruitment of a new Associate Biological Safety Officer.
- Provided recruitment assistance to the Office of Animal Resources and Human Subjects Office.
- Reconciled monthly leave records for the Office of Animal Resources.

Administrative Services Coordinator

- Completed Drupal courses in Lynda.com to apply to the new website
- Assisted Biosafety staff with the BSC scheduling
- Created a master listserve to correspond with over 2,000 faculty & staff on campus
- Assisted the Occ/Bio house in cleaning their basement and discarding of old equipment through Surplus.

Web Information Hosting and Publications

Scope: The purpose of web information hosting and publications is to provide Web hosting services to EHS's program activities. The activities are performed by the Web/Training Administrator.

Activities and Accomplishments for FY12

Approximately 1,301 hours were spent on web information hosting, publications, and web-based training. These activities include development and maintenance of EHS's web site, implementing and maintaining ClarityNet training and maintaining ICON training by updating/adding new courses.

- Maintained three (3) VAMC training courses; 125 radiation courses were taken by VAMC staff.
- ICON Training Course Activities
  - 9,988 courses were completed.
  - 74 courses are available.
  - Reset 74 course grade books on January 1, 2012 to provide proper course completion date stamping in the individual's HR Training record.
- ClarityNet Activities
  - 3,609 courses were completed.
  - 47 courses are available.
  - Coordinated with 9 Departmental Administrators.
  - The following departments have access to the training courses.
    - Facilities Management
    - University Housing
    - Iowa Memorial Union
    - Business Services
    - Risk Management
    - 24 other small groups – managed by EHS

Administrative Section Goals for FY13:

HR Unit Rep:

- Assist with developing competencies and creating updated job descriptions in the new Comp/Class system.
- Facilitate staff participation in the third Working at Iowa Survey anticipated in October.
- Continue to improve the biosafety cabinet service billing process.
- Continue to periodically attend EHS section staff meetings.
- Continue to provide assistance with HR transactions for other VPR compliance units.
- Update and maintain documents under the sub-certification HR & Financial processes.

Administrative Services Coordinator:

- Continue to assist with the BSC certification scheduling.
- Continue to assist other VPR compliance units with monthly leave reconciliation.
- Assist the web administrator with document transfer.
- Serve as Wellness Ambassador for EHS.
- Continue to look for green opportunities within the department.
- Identify professional development opportunities that might be of interest to EHS staff.
- Identify professional development courses to develop administrative skills in accounting and HR.

Web/Training Administrator:

- Continue work on website redesign process with the OVPR Webmaster.
- Attend web liaison meetings organized by OVPR Webmaster.
- Assist with the ClarityNet to ICON course conversion project.
- Work with EHS staff to identify and create additional forms in DRUPAL.

Training and Education Program

Scope: EHS's training and education program addresses the University community's need for regulatory compliance and professional development in the areas of hazardous materials, emergency preparedness, health and safety and use of personal protective equipment enabling staff to perform their respective jobs safely. See the tables below for statistical information.

Type	FY12	FY11	FY10	FY09	FY08	FY07	FY06	FY05	FY04	FY03	FY02	FY01
Classroom						408	589	552	484	684	1,719	2,002
CD						0	0	121	187	137	59	NA
Self-Instruction						620	424	394	712	907	408	729
VA Self-Instruction	97	103	118									
VA In-Service	28	141										
Web - ICON	9988	9337	10519	9714	7599	7840	6461	4692	4052	2632	2436	1453
Web -ClarityNet	3609	3963	3141	4979	4518	2441						
Total	**13722**	**13544**	**13778**	**14693**	**12117**	**11309**	**7474**	**5759**	**5717**	**4360**	**4622**	**4184**

The following table summarizes the training statistics for each EHS course.

ICON Courses	Number	ClarityNet Courses	Number
Advanced Biological Safety	64	Accident Investigation	0
Analytical X-Ray Equipment	18	Aerial Lifts	0
Bactec 460TB Operators	2	Arc Flash: Safety Awareness	4
Basic Biological Safety	782	Asbestos Awareness	311
Bloodborne Pathogen Refresher	1210	Back Safety (Video)	296
Bloodborne Pathogens, CPH	60	Bloodborne Pathogens	174
Bloodborne Pathogens, Lab	557	Bloodborne Pathogens for Custodians	477
Bloodborne Pathogens, Non-Lab	280	CHE6- Chemical Handling Safety - Flammables	0
Bone Densitometers Operators	12	Chemical Handling Safety - Basic Principles	0
Chemical Storage Safety	159	Chemical Handling Safety: Corrosives	0
Compressed Gas Safety	121	Confined Space Entry	61
Confined Space Non Permit	2	Defensive Driving	264
Confined Space Prohibited	1	Defensive Driving: 15-Passenger Vans	334
Diagnostic X-ray - Limited	4	Disposable Respirators: Exposure Control	10
Diagnostic X-ray Staff	59	Electrical Safety	53
Electron Capture Detector	14	Eye Protection: See the Whole Picture	0
Ergonomics - Back Safety	68	Fall Protection	80
Ergonomics - Computer Use	97	Fire Safety	24
Excavating and Trenching	**3**	Fire Safety:There's No Second Chance	10
Fall Protection	19	Forklift Certification	39
Fire Extinguishers	195	Forklift Safety	1
Forklifts	15	Groundskeeping Safety: Be A Pro!	5
Formaldehyde Safety	390	Hand Safety: It's in Your Hands	125
Fume Hood Training	102	Hazard Communication: Identifying the Dangers	87

ICON Courses	Number	ClarityNet Courses	Number
Gammacell-3000 Operators	8	Hazard Communication: The Road to Safety	256
Hazardous Waste for Labs	946	HAZWOPER First Responder: Operations Level	1
Hazardous Waste for Non-Labs	26	Hearing Protection	134
HazCom	151	Indoor Cranes	7
Hearing Conservation	85	Ladders	133
Lab Chemical Safety	863	Lead Safety	2
Ladders and Stairs	114	Lockout/Tagout	54
Laser Safety - Research	97	Machine Guarding	73
Laser Safety - UIHC	29	Office Ergonomics	11
Lead Safety Awareness	3	Office Safety	3
Lockout/Tagout Safety	39	Oxyfuel Gas Cutting: The Sure Cut	3
Machine Guarding	123	Personal Protective Equipment	86
Nanomaterials Research Safety	16	PPE: Don't Start Work Without It	70
Nuclear Medicine Staff	0	Respiratory Protection	77
Office Safety	20	Scaffold Safety	17
P.E.T. Imaging Staff	1	Slips, Trips and Falls: Taking the Right Steps	208
Pandemic Influenza Dust Mask	1	Small Spills and Leaks	0
PPE Awareness for Labs	865	Target Zero: Pro-Active Safety Attitudes	67
PPE Awareness for Shops	121	Walking and Working Surfaces	1
Rad Safety 3JPP Staff	77	Welding Safety: Safe Work With Hotwork	1
Rad Safety CRC Staff	2	Working Safely With Power Tools	50
Rad Safety for 3RCP	122	**Total**	**3,609**
Rad Safety OR Staff	6		
Radiation Oncology Nurses	0		
Radiation Oncology Staff	38		
Radiation Safety - CS Staff	2		
Radiation Safety, Basic	173		
Radiation Safety, Refresher	411		
Radioactive Materials Shipping	5		
Radioactive Waste Management	17		
RDNA Research, NIH Guidelines	370		
Respirator Dust Mask	46		
Respirator PAPR Hood or Helmet	29		
Respirator PAPR Tight Fit Face	11		
Respirator Tight Fit Facepiece	21		
Respirator Voluntary Use	197		
Safety Procedures for UI	49		
SAIC Radiation Safety	2		
Sealed Sources Radiation Safety	11		
Shipping Infectious Substances	159		
Shipping with Dry Ice	141		
SPCC: Oil Spill Prevention	9		
Spill Preparedness Response	118		
Stem Cell Research	11		

ICON Courses	Number	ClarityNet Courses	Number
Tool Safety	30		
Toxins, Select Agent Quantity	43		
UIHC Radiation Awareness	1		
Walking and Working Surfaces	20		
Welding and Cutting	31		
X-ray Safety - Diagnostic	25		
X-ray Safety - Limited	5		
X-ray Safety for Fluoro Users	35		
X-ray Safety for Nursing Staff	1		
X-ray Safety, Anesthesia Staff	5		
Y-90 Microspheres Rad Safety	23		
Total	**9,988**		

EHS Committee Activities

EHS staff members are involved in the following campus committees, subcommittees, and workgroups:

Animal Care and Use Committee

Basic Science Radiation Protection Committee

Business Model for Research Facilities and External Research Entities Task Force

Compensation and Classification Re-Design: Expert Panel

Emergency Preparedness Planning Committee

Employee Health and Safety Work Group

Facilities Design Center Committee

Fire Safety & Emergency Management Advisory Group

Flood Emergency Response Team

FM Safety Steering Committee

Hospital Radiation Safety Review Group

Institutional Biosafety Committee

Integrated Health Management Advisory Group

Medical Radiation Protection Committee

Minors on Campus Committee

Pharmaceutical Safety Committee

Radiation Protection Executive Committee

Radioactive Drug Research Committee

UI Medical Surveillance Workgroup

UI Pre-Disaster Mitigation Plan Steering Committee

UIHC Environment of Care Committee

UIHC Ergonomics Patient Subgroup

UIHC Hazardous Materials Workgroup

UIHC Indoor Air Quality Workgroup

UIHC Laser Safety Panel

UIHC Safety Education Workgroup

UIHC Staff Safety & Health Council

UIHC Falls-Skin-Safe Patient Handling Committee

Staffing

A summary of staffing associated with each section for FY12 appears below. The organizational chart for EHS may be found in the attachment section.

Occupational Safety

The section was staffed by the following individuals: Kate Kendall – Occupational Safety Manager; David Hackbarth – Occupational Safety Compliance Specialist; Robin Lindenboom and John Anderson – Occupational Safety Specialists. The section has a total of 4 FTEs.

Administrative Services

The section was staffed by the following individuals: Carol McGhan –Director; Sarah Tallman – Compliance Unit Business Manager (0.5 FTE); Andrea Domsic – Administrative Services Coordinator; Merry Ibsen – Secretary III/HR Unit Representative; and, Christal Quigley – Clerk IV/Web - Training Administrator. The section has 4.5 FTEs.

Environmental Programs

The section was staffed by the following individuals: Jim Pyrz – Environmental Safety Program Manager; Michelle Kempf – Secretary III (0.5 FTE); Jeff Montgomery – Environmental Safety Specialist; William Murray – Environmental Safety Compliance Specialist; Tim Weber – Senior Environmental Safety Coordinator; Justin Swafford and Jeff Olson – Environmental Safety Coordinators. The section has a total of 6.5 FTEs.

Radiation and Hospital Safety

The section was staffed by the following individuals: Joe Graves – Assistant Director/Radiation Safety Officer; Gordon Axt – Assistant Radiation Safety Officer; Laurie Scholl and Joey Michael – Health Physicists; Joe Hawk – Radiation Safety Specialist; Mitchell Wiese – Radiation Safety Assistant; Barb Vitense – Clerk IV; and Christina Smith – Student Office Assistant. The section has a total of 7.0 FTEs.

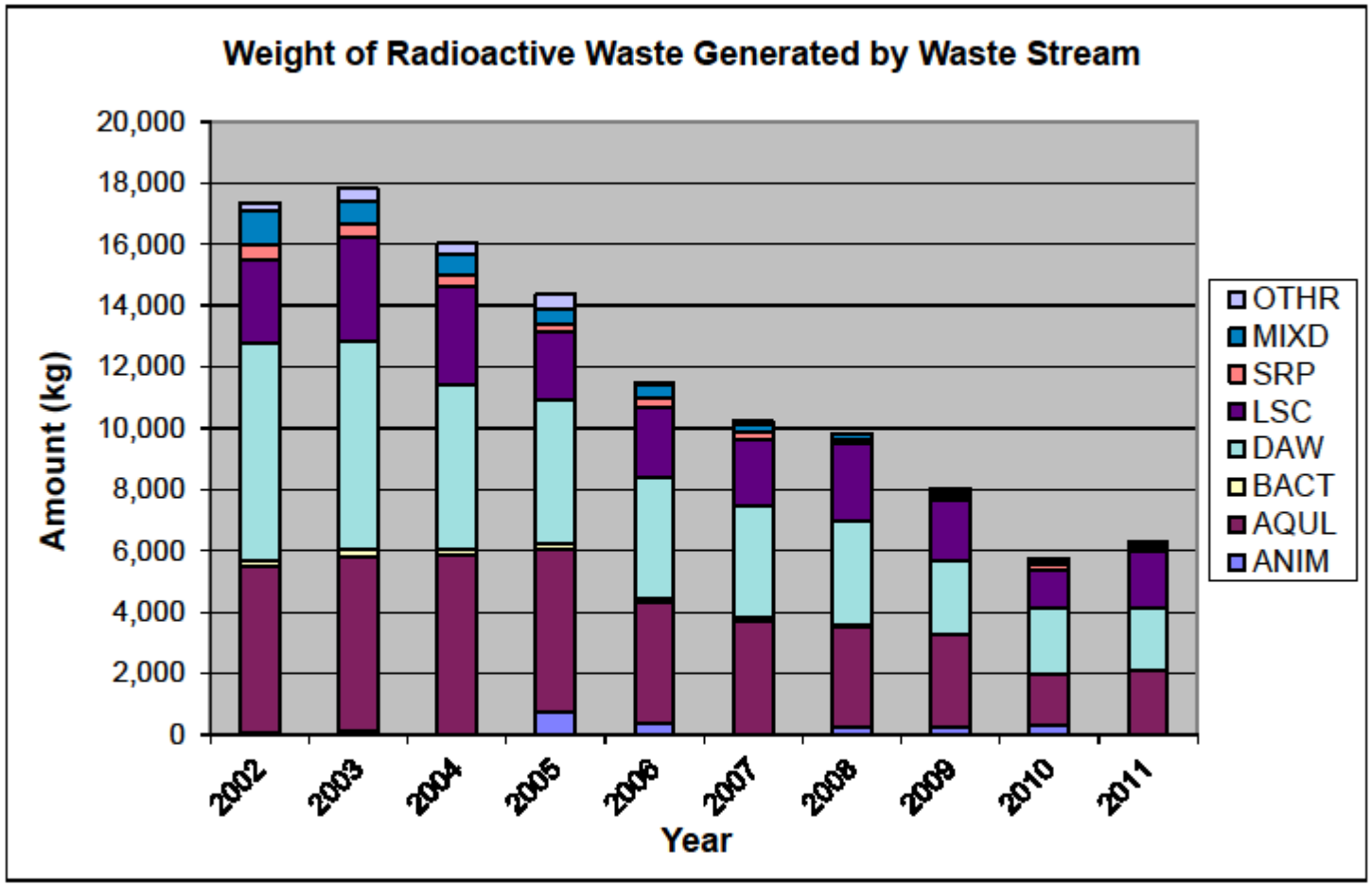
Chemical Safety

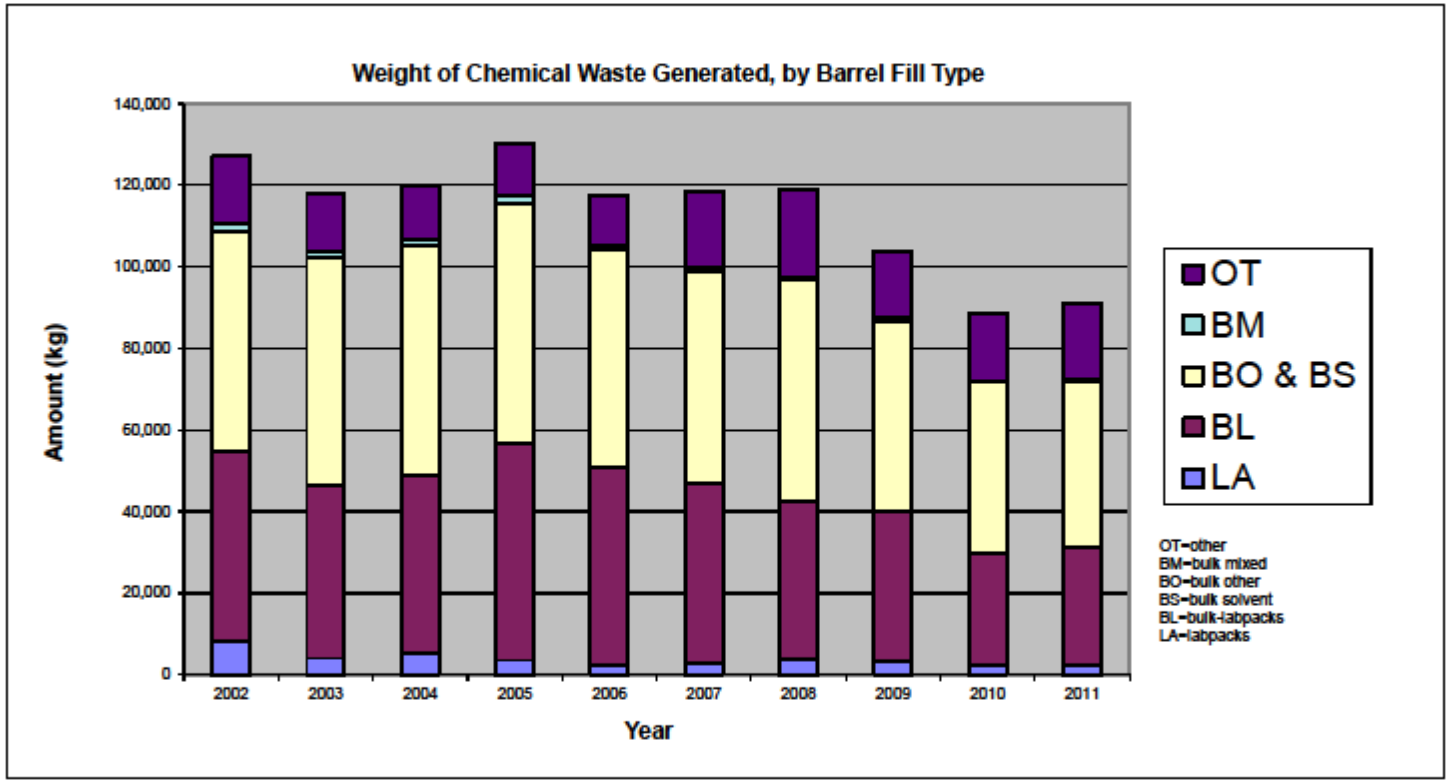
The section was staffed by the following individuals: LuAnn Hiratzka – Chemical Hygiene Officer; Rick Byrum – Emergency Preparedness Specialist; Periyasamy Subramanian – Senior Chemical Safety Specialist, Industrial Hygiene; Rachelle Justice – Senior Chemical Safety Specialist; Laurie Taylor – Chemical Safety Specialist (0.75FTE); The section has a total of 4.75 FTEs.

Biological Safety

The section was staffed by the following individuals: Haley Sinn – Biological Safety Officer/Responsible Official; Caitlin Ross – Associate Biological Safety Officer; Deborah Kratz – Senior Biological Safety Specialist. The section has a total of 3 FTEs

ATTACHMENTS


Weight of Radioactive Waste Generated by Waste Stream
Amount (kg)
20,000
18,000
16,000
14,000
12,000
10,000
8,000
6,000
4,000
2,000
0
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
Year
OTHR
MIXD
SRP
LSC
DAW
BACT
AQUL
ANIM


Weight of Chemical Waste Generated, by Barrel Fill Type
Amount (kg)
140,000
120,000
100,000
80,000
60,000
40,000
20,000
0
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
Year
OT
BM
BO & BS
BL
LA
OT=other
BM=bulk mixed
BO=bulk other
BS=bulk solvent
BL=bulk-labpacks
LA=labpacks

Radioactive Waste Generation Statistics - University of Iowa Environmental Health & Safety

Units = Drums (Unless Otherwise Noted)

Waste Type	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Animal	375	303	329	325	322	210	183	161	210	153	87	68	45	3	11
Ash							43	78	4	3	7	5	5	5	2
Bactec Vials															
Dry (Box) - 0.1 Yard Box													115	105	131
Dry (Box) - Yard Box															
Dry (Drum)-Long	143	177	150	160	192	184	121	78	66	49	38	30	18	11	12
Dry (Drum)-Short	2	5	11	35	5	6	90	148	153	139	122	105	97	88	87
Dry (Drum)-Total	145	182	161	195	197	190	211	226	219	188	160	135	115	99	99
Liquids-Aqueous					133	163	191	188	81[a]	48	53	45	36	42	34
Liquids-Mixed					26	11	9	17	14	18	20	17	12	15	10
Liquids-Total					158	174	200	205	95	66	73	62	48	57	44
LSC (Vials)							117	114	122	107	92	74	58	51	37
Sharps-Long							26	25	18	10	3	3	2	1	3
Sharps-Short							0	0	8	0	5	3	3	2	2
Sharps-Total							26	25	26	10	8	6	5	3	5
Sealed Source										1	0	2	3	3	2
Total							**778**	**808**	**676**	**528**	**428**	**353**	**394**	**326**	**331**
Waste Containers (excludes lead)										6,282	5,265	4,738	4,153	3,703	3,373
Lead shielding (pieces)										61	2,120	3,651	4,283	2,843	3,333
Incoming Packages								4,238	3,776	3,932	3,693	3,329	3,417	3,424	3,284

Waste Type			2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Animal			1	9	2	4	0	17	7	0	5	7	5	5
Ash			0	2	0	0	0	0	0	0	0	0	0	0
Bactec Vials									2	1	0	1	0	1
Dry (Box) - 0.1 Yard Box			90	123	129	103								
Dry (Box) - Yard Box						2	15	8	7	5	6	5	4	5
Dry (Drum)-Long			7	9	7	3	3	5	3	5	5	4	3	3
Dry (Drum)-Short			61	63	48	45	42	36	29	30	20	20	13	13
Dry (Drum)-Total			68	72	55	48	45	41	32	35	25	24	16	16
Liquids-Aqueous			29	37	28	26	35	25	21	18	17	16	11	8
Liquids-Mixed			9	10	8	5	6	6	4	1	1	0	1	0
Liquids-Total			38	47	36	31	41	31	25	19	18	16	12	8
LSC Vials (Mixed)			28	20	18	15	13	13	14	13	8	8	3	9
LSC Vials (Nonhaz)												19	15	19
Sharps-Long			2	2	3	1	2	3	3	2	1	1	1	0
Sharps-Short			1	6	1	2	1	1	0[b]	0	0	0	0	0
Sharps-Total			3	8	4	3	3	4	3	2	1	1	1	0
Sealed Source			1	1	2	1	1	2	1	1	0	1	0	0
Total			**229**	**282**	**246**	**207**	**118**	**116**	**91**	**76**	**63**	**82**	**57**	**63**
Waste Containers (excludes lead)			2,745	2,186	2,523	2,092	1,904	1,812	1,468	1,366	1,255	1,129	925	865
Lead shielding (pieces)			2,629	3,198	3,270	2,356	2,818	3,532	2,386	2,097	2,444	2,192	2,061	2,532
Incoming Packages			3,008	2,308	2,137	1,843	1,442	1,207	1,254	1,147	1,001	817	766	385

a = Converted from 30 gallon to 55 gallon drums in 1993. b = short-lived sharps are now being held for decay, and subsequently shipped to Stericycle

University of Iowa Environmental Health & Safety Historical Waste Collection Statistics Summary

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Chemical Waste											
Stops	1,931	2,541	2,992	2,728	2,831	2,786	2,819	3,026	3,277	3,454	3,511
Containers	11,893	12,326	13,556	12,556	15,913	18,853	21,054	21,198	22,077	25,519	25,275
Weight (kg)	52,868	60,259	62,531	75,810	70,768	77,162	66,444	86,113	103,611	121,134	119,960
Radiation Waste											
Stops	2,533	2,756	2,596	2,104	1,816	1,581	1,358	1,177	1,117	942	934
Containers (excludes lead)*				6,283	5,259	4,738	4,153	3,703	3,373	2,745	2,786
Lead shielding (pieces)				61	2,120	3,651	4,283	2,843	3,333	2,629	3,198
Total containers	7,759	8,159	8,578	6,344	7,379	8,389	8,436	6,546	6,706	5,374	5,984
Weight (kg) (excludes lead)	57,667	58,654	62,324	38,951	33,577	28,787	26,526	22,102	21,648	20,802	19,811

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Chemical Waste										
Stops	3,633	3,464	3,735	3,593	3,324	3,702	3,517	3,783	3,903	4,039
Containers	29,211	22,108	26,047	26,872	24,216	27,543	28,950	26,847	21,739	27,166
Weight (kg)	127,095	118,038	119,888	130,177	117,494	118,446	118,192	103,980	88,744	90,974
Radiation Waste										
Stops	798	659	644	556	451	412	365	336	292	249
Containers (excludes lead)*	2,523	2,092	1,904	1,812	1,468	1,366	1,225	1,129	925	865
Lead shielding (pieces)	3,270	2,356	2,818	3,532	2,386	2,097	2,444	2,192	2,061	2,532
Total containers	5,793	4,448	4,722	5,344	3,854	3,463	3,669	3,321	2,986	3,397
Weight (kg) (excludes lead)	17,163	17,560	15,830	14,194	11,502	10,178	9,886	8,017	5,766	6,174
Biohazardous Waste"										
Total Containers							28,846	27,873	27,671	26,417
Total Weight (lb)							1,018,432	930,921	842,858	783,722

*Collection and accounting method changed in 1995. Lead shields are accounted for separately.
"EHS assumed responsibility for the biohazardous waste program in mid-year 2007

\\Owaste section\Jim_Shared\Reports\Annual Reports\historical waste collection statistics summary

Annual Statistical Summary of Radiation Safety Program

	FY 99	FY 00	FY 01	FY 02	FY 03	FY 04	FY 05	FY 06	FY 07	FY 08	FY 09	FY10	FY11	FY12
Investigators														
Non-Human Use	210	206	199	193	175	162	167	147	134	139	138	125	114	102
Human	154	162	120	95	95	101	120	111	116	119	125	122	90	96
Applications														
Non-Human Use	210	206	199	193	175	162	167	147	134	139	138	131	114	102
Human Use	380	323	230	164	164	181	197	205	207	202	222	228	101	122
# of PIs Ordering Packages	164	161	151	148	136	120	130	127	104	100	90	82	79	70
Package Delivery (*item count)														
UI	3025*	2994*	2531*	2032*	1822*	1458*	1226*	1172*	1025	953	750	719	580	456
UIHC	198	299	385	212	210	173	157	173	139	136	161	143	65	114
Total	3223	3293	2916	2240	2032	1631	1383	1345	1164	1089	911	862	645	570
Routine Surveys	1898	1668	1848	1834	1762	1415	1241	1296	1587	902	1277	1108	739	617
UI	1731	1603	1794	1776	1645	1252	1184	902	784	695	690	602	522	545
UIHC	167	66	54	58	62	55	47	51	44	38	40	42	36	10
Non-routine Security Checks	0	0	0	63	55	108	10	343	759	169	547	464	181	62
Total Radiation Labs	459	445	380	336	338	326	299	285	264	264	236	198	177	183
Badges														
Per Year	26033	25619	25986	25681	26463	24,273	23640	22,621	18,430	18,420	18,117	17,075	16873	17,678
Per Month (UIHC)	2170 (911)	2135 (903)	2166 (1039)	2140 (990)	2122 (1131)	2023 (1246)	1970 (1284)	1885 (1287)	1536 (1280)	1535 (1284)	1510 (1298)	1423 (1249)	1406 (1264)	1,473 (1,347)
Badge Participants														
Per Year	16784	16478	16372	15874	15120	13824	13752	12588	10320	10044	9840	9564	9864	10,152
Per Month (monthly average)	1399	1373	1364	1323	1260	1152	1146	1131	860	837	820	797	822	846
Staff Trained														
UIHC	1039	982	1319	719	1255	1302	841	983	964		160	414	404	378
UI	1129	1225	1032	1849	1243	1161	1101	1318	1319		506	712	790	811
VAMC	68	53	56	56	63	53	46	29	12		253	180	244	125
Instrument Calibrations	280	249	296	287	279	255	248	222	189	188	180	176	187	177
UI	199	175	216	210	209	171	165	147	133	129	125	124	128	118
UIHC	55	48	53	49	49	55	55	57	56	59	55	52	59	59
Repairs	14	2	3	6	8	4	2	0	0	0	1	0	0	0
ALARA Evaluations														
Operational Level	48	64	111	97	121	138	130	119	138	132	---*	---*	---*	deleted
Level 1	9	4	10	11	15	21	26	17	22	11	18	14	14	19
Level 2	0	4	4	7	4	9	21	4	3	7	5	7	9	6

ALARA Levels changed beginning FY09 – Operational levels discontinued. --- Information no longer available.

	FY 99	FY 00	FY 01	FY 02	FY 03	FY 04	FY 05	FY 06	FY 07	FY 08	FY 09	FY10	FY11	FY12
Sealed Source Leak Tests Total	265	207	169	198	247	236	238	235	248	317	382	601	413	369
UI	158	99	93	104	107	103	111	122	118	129	116	158	126	101
UIHC	107	108	76	98	140	133	127	113	130	188	266	443	287	268
VAMC	0	0	0	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
X-ray unit compliance tests Total	211	213	153	160	183	183	183	181	187	183	181	198	193	193
UI	54	40	57	71	82	84	86	80	82	80	80	100	105	106
UIHC	156	131	96	89	101	99	97	101	105	103	101	98	88	87
VAMC	1	0	0	0	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Laser Safety Audits														
UI/UIHC						35/56	27/28	32/30	45/32	38/28	43/24	35/21	35/22	26/22
Bioassays Total	314	246	196	115	277	239	248	174	186	170	159	92	151	176
Urine/Thyroid	110/204	90/156	56/140	46/69	73/198	44/195	65/183	26/154	28/158	21/149	11/148	15/77	18/133	22/154
UIHC Activities														
Total Patient Surveys	175	141	116	164	152	153	145	125	138	136	142	122	114	103
Cesium –137	61	61	44	33	36	39	23	3	0	0	0	0	0	0
Cs-137/Ir-192	1	3	1	1	5	0	0	0	0	0	0	0	0	0
Iodine-125 (total)	10	16	10	18	54	51	42	51	73	51	57	52	47	33
Iodine-125 (prostrate)											28	22	15	10
Iodine-125 (eye plaque)											29	30	32	23
Iodine-131	32	24	31	51	49	50	59	57	60	70	73	55	54	44
Iridium-192	27	9	4	10	5	0	0	0	3	2	0	0	1	0
Gold-198	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Phosphorous-32	0	0	1	2	2	0	0	0	0	0	1	0	0	0
Palladium-103	43	24	24	25	0	0	0	0	0	0	0	0	0	0
Sm-153	1	4	1	2	0	0	2	0	0	0	0	0	0	0
Strontium-89	0	0	0	2	1	0	0	0	1	0	0	0	0	0
Tc99m	0	0	0	18/2	0	0	0	0	0	0	0	0	0	0
Y-90						13	18	14	1	13	11	15	12	12
Re-188						NA	1	0	0	0	0	0	0	0
														3
														11

EHS Metrics:
Biosafety, Chem Safety Occupational Safety

	FY08	FY09	FY10	FY11	FY12
Biological Safety Program Summary					
Biosafety Cabinet (BSC) Certifications				442	506
Horizontal Flow Cabinets Tested				20	22
BSC Decontaminations				55	62
BSL3 Room Decontaminations				2	1
Bio exposure/needle stick injury evaluations	4	8	22	27	12
New Non-exempt rDNA Protocols IBC Approvals	186	206	179	158	170
Non-exempt Protocols Reviewed	216	236	199	241	297
Annual review of RDNA protocols	364	323	321	311	292
Exempt Protocols Reviewed	170	196	150	109	86
Reports to NIH/CDC – potential exposures	2	2	2	3	3
USDA permit application inspections				2	2
BSL3 Protocols reviewed	16	15	14	12	14
hPluripotent Stem Cell protocols reviewed/approved*				1	2
Occupational Safety & Health Program Summary					
Departmental OS Reviews Conducted	45	45	45	72	89
Departmental Reviews – Student Use of Machines (Machine Shops) **					17
Departmental Reviews – Required Respirator Programs				13	13
Departmental Reviews – Confined Space Programs		3		7	0
Incident Reports Reviewed	1785	1821	1534	1426	1,499
Formal Incident Investigations	6	5	112	134	82
Ergonomic Evaluations	358	305	256	249	247
Indoor Environmental Quality Investigations	18	25	17	17	25
IEQ samples collected			20	20	42

EHS Metrics:
Biosafety, Chem Safety Occupational Safety

Office reviews completed**					144
Fits tests completed			52	41	47
Quantitative			38	33	32
Qualitative			14	8	15
Asbestos Programs reviewed			3	6	6
IH evaluations performed			18	56	61
Samples collected/interpreted			61	61	79
Noise Monitoring Exposure/level Assessments	17	14	20	53	66
Chemical Safety Program Summary					
Hazard Assessments Conducted	40	29	29	40	46
Personal and Area Chemical Monitoring (samples/measurements taken)	5	21	16	22	7
Chemical Inventory System (# of PIs/users)	400			590/1030	530/1400
No. of inventory items				83,000	103,000
Fume Hood Evaluations	773	764	664	892	863
# of hoods referred to FM	112	65	45	163	126
Bio/Chemical Lab Reviews Conducted (Safety Advisor Team)	388	384	364	379	358
Spill Response Consultations			11	18	11
# PIs sponsored by USAMRMC/DOD	16	17	17	17	18
Respirator Program lab use reviews new/current total users	124			100	75/140
*New program - 2011; ** new program - 2012					