Annual Report: FY 2019-2020

Environmental Health and Safety
Phone: 319-335-8501
ehs.research.uiowa.edu

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Environmental Health & Safety Office

Mission Statement

The mission of the Environmental Health & Safety Office (EHS) 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, and compliance with federal, state, and local regulations and laws governing the activities of the institution.

Responsibility Statement

The Environmental Health & Safety Office 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 of Iowa (UI) community. EHS program activities are organized into five sections that are supported by an administrative group. These sections are: 1) Biological Safety, 2) Chemical Safety, 3) Environmental Programs, 4) Occupational Safety, and 5) Radiation Safety.

Executive Summary

This fiscal year (FY) has provided several challenges, some that were expected and many that were not. In addition to routine business activities, EHS focused on the following areas during this last FY20:

- **Balancing the operational budget:** The EHS department has been deficit spending the operational budget for several years. A charge this past FY was to balance the budget; as such, several difficult changes were implemented. The most significant change was the elimination of a Clerk IV position in the department. This loss required remaining EHS staff to absorb additional duties to cover the responsibilities previously assigned to this position. Staff also reviewed services provided to non-University entities that could provide an income source and areas of monetary support that could be reduced.
- **Rewards and Recognition Program:** In collaboration with the Laboratory Safety Committee, EHS initiated a Rewards and Recognition Program for campus. Four award categories were proposed in the areas of Research Laboratory, Individual, Innovation in Safety (through the Office of the Vice President for Research), and Teaching Assistant. EHS safety advisors were able to pilot the Teaching Assistant award in both the Fall 2019 and Spring 2020 semesters. A sub-committee of the Laboratory Safety Committee awarded the Innovation in Safety Award and several Individual and Teaching Assistant Safety awards this past FY. Due to the University shutdown in response to the COVID-19 pandemic, safety advisors were unable to evaluate labs for the Research Laboratory award.
- **Covid-19 Response:** EHS continually modified operating procedures in response to the pandemic and the University's subsequent response. Staff that could work remotely continued to provide several services, including protocol review and approval, biosafety cabinet scheduling assistance, and consultation services from off campus. Other EHS staff were required to remain on campus and provide essential services of radiation patient monitoring, hazardous waste pick-up, and respirator fit testing. EHS staff were involved in the campus-wide

response as well as assisting University of Iowa Hospitals and Clinics (UIHC) staff, as needed. Programs that required in person meetings were temporarily suspended during the University shutdown, including the audit program, and will resume when conditions allow.

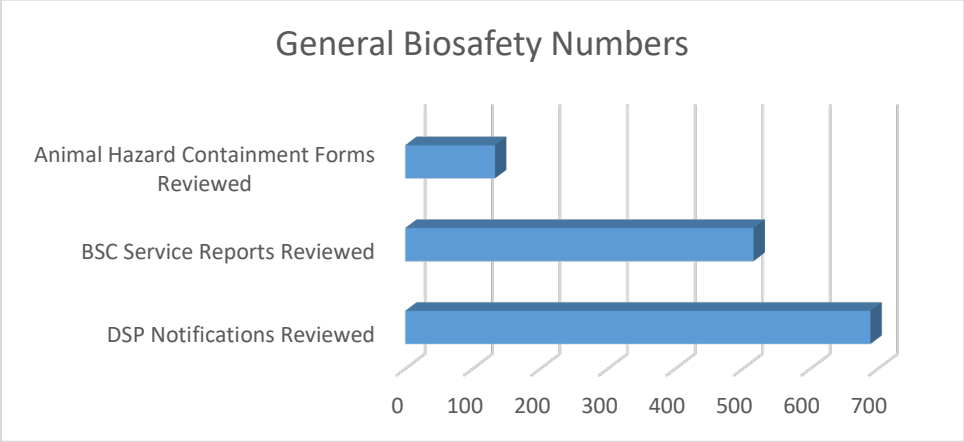
Biological Safety Section

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. Administration 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, outlined below, as well as exercising surveillance and enforcing standards for health and safety within their jurisdiction.

Biological Safety Program

This program provides support to areas that work with biological materials or infectious agents, which primarily include clinical and research lab areas. The program consists of maintaining a biosafety manual and reference materials, providing health and safety consultation to University faculty and staff, reviewing procedures and practices where Risk Group 2 or 3 organisms are manipulated, providing biosafety signs, prescribing safe handling techniques, and conducting site visits for containment and/or regulatory assessments. The Biological Safety Officer (BSO) and Associate BSO (ABSO) also participate in laboratory inspections by USDA and other federal agencies, as required for permitting purposes. This fiscal year the BSO and ABSO participated in 2 USDA inspections of BSL2/BSL2-enhanced laboratories.

In order to ensure adequate oversight of incoming biological material/infectious agents, biosafety staff review notifications from the Division of Sponsored Programs (DSP) to ensure appropriate registration of material, if applicable, and that research staff are aware of any special hazards/handling procedures. As in the past, biosafety staff continue to coordinate review of the hazard containment form with the Institutional Animal Care and Use Committee (IACUC) when biological materials are used in animals. Additionally, biosafety staff review biosafety cabinet (BSC) service reports to confirm actively used cabinets are maintained and certified, as necessary. The number of DSP notifications, hazard containment forms, and BSC service reports reviewed are included in the graph below.



Bloodborne Pathogens Program

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 human material including blood, 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.

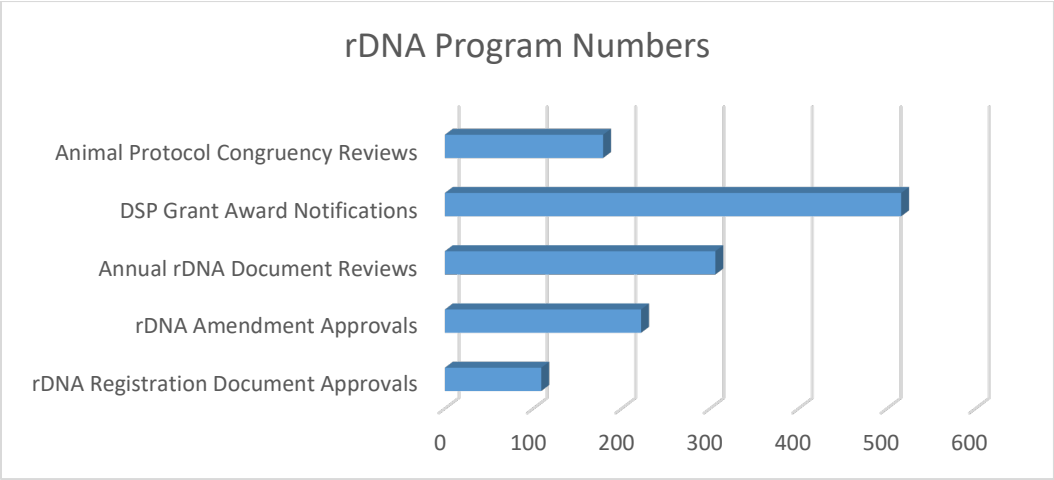
Biosafety staff works with each departmental/laboratory-specific Exposure Control Officer to create and maintain a compliant program in their area. The program covers Human Resources designation of staff as "At Risk" or "Not at Risk", annual training, annual review of the Exposure Control Plan, and offering the Hepatitis B vaccination. There are approximately 64 active programs over the course of a year.

DOT Transportation Compliance Program

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 receive training to ensure they have knowledge of and are thus able to comply with shipping regulations. Since these shipments often include dry ice, a hazardous material, information on shipping with dry ice is also required. Biosafety staff maintain several guidance documents and two training courses for individuals shipping such material.

Recombinant DNA Program

The Institutional Biosafety Committee (IBC) oversees compliance with the National Institutes of Health's *NIH Guidelines for Research Involving Recombinant or Synthetic Nucleic Acid Molecules (NIH Guidelines)*. EHS's Biosafety staff administer the rDNA Registration Document and coordinate the committee's review and approval process. Additionally, the BSO serves as a voting member on the committee. Biosafety staff also ensure registration of applicable rDNA research through annual review of all approved rDNA Registration Documents and review of submitted Animal Protocols and Division of Sponsored Programs (DSP) grant award notifications, see graph below.



Select Agent Program

This program provides 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 with the Federal Select Agent Program (FSAP), security risk assessments, suitability review, safety plans, security plans, emergency plans, training, transfers, record keeping, inspections and notifications to FSAP. The UI has designated the BSO, as the Responsible Official (RO) and the ABSO and EHS Director as the alternate ROs (AROs). These individuals oversee the University's registration with FSAP and ensure compliance through frequent laboratory inspections, document review, and revision and continual communication with federal agencies.

Principal Investigators are exempt from registering with FSAP if they possess toxins in quantities that are below the amount listed in the regulation (exempt quantities). Biosafety staff ensure compliance with the exemptions through annual review of toxin use on campus as well as visual confirmation of exempt toxin inventories. All new Principal Investigators are made aware of the exemptions and consequences if exempt quantities are not maintained, through use of the exempt toxin declaration.

Chemical Safety Section

The Chemical Safety Section is responsible for the administration of programs in the research and non-research community that involves the management of chemicals or chemically hazardous materials used at the University of Iowa. Hazard assessments are conducted to evaluate safe material handling practices and provide guidance on minimizing or eliminating exposures to hazardous chemicals. Administration 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, outlined below, as well as exercising surveillance and enforcing standards for health and safety within their jurisdiction.

Laboratory Chemical Safety and Chemical Hygiene Program

This program oversees all laboratory chemical use under normal working conditions and emergency preparedness. Promoting the safe use of chemicals is accomplished through developing, recommending, administering, and implementing policies and procedures. Continual oversight of chemical use involves: (1) annual review of the Chemical Hygiene Plan (CHP) is completed by the Laboratory Safety Committee (LSC); (2) review of chemicals hazard containment form in coordination with the Institutional Animal Care and Use Office; (3) additional standard operating procedures for the use of hazardous chemicals; and (4) investigation of all chemically related first report of injuries to ensure proper follow- up, when necessary, and identification of root causes.

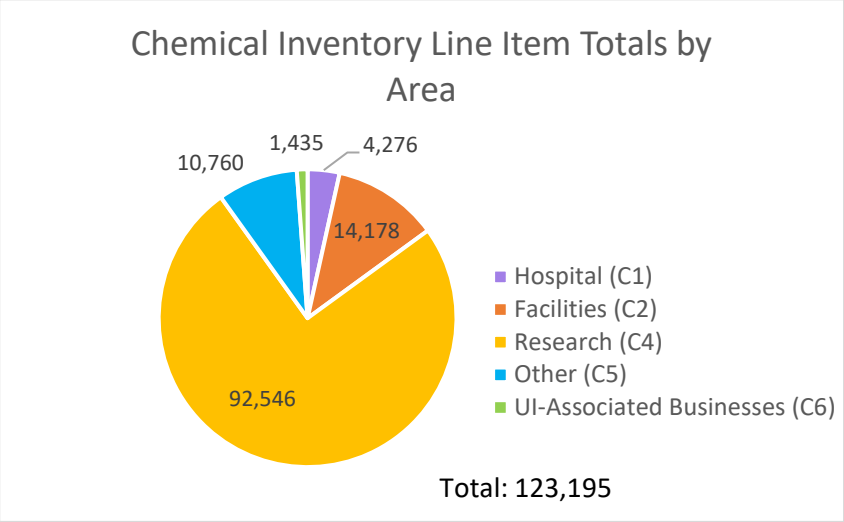
Chemical Inventory System

EHS Assist (EHSA) is used to manage the university-wide chemical inventory with the goal of having an accurate, online inventory for all chemical-use areas. The inventory is made available to emergency responders, as needed. There are 785 accounts, 2,945 locations tracked, and 1,888 users in the system. The graph below indicates use by area. In the summer 2019, UIHC began to expand the number of

departments and clinics maintaining inventory accounts in anticipation of joining the University's safety data sheet (SDS) database.

In March 2020, the University transferred management of its utility system to ENGIE. EHS staff met with ENGIE to ensure ENGIE chemicals (664 items) are tracked in EHSA and managed by ENGIE employees. ENGIE inventory items are incorporated into the UI-associated businesses section of the pie chart.

During the laboratory shutdown, which began in mid-March 2020, additional time was devoted to syncing items to the EHSA chemical catalog. Over 40% of the un-linked inventory items (6,500+ items) were successfully synced. Additionally, over 1,200 catalog entries were checked for accuracy.



Safety Data Sheet (SDS) Program

This program facilitates the collection, storage and upkeep of all required SDSs for the University of Iowa, as required by OSHA's hazard communication. The VelocityEHS SDS management program continued to be populated with SDSs by tracking chemicals through the chemical inventory. In FY20, 9,478 SDSs were added into the program brining the total to 63,802 unique SDSs, with an additional 1,565 uploads used. For SDS entry has been completed for 82% of the research laboratories and 74% of non-laboratory areas. UIHC has also decided to become a part of the University's eBinder this past fiscal year and steady progress has been made regarding adding their safety data sheets. Project completion is estimated at the end of the next fiscal year. EHS will be transitioning from the current program, VelocityEHS SDS, to Chemwatch in October 2020 due to fiscal issues with the current vendor.

Personal Protective Clothing and Equipment (PPE) Program for Laboratories

OSHA standard 1901.132(a) states, "Protective equipment, including personal protective equipment for eyes, face, head, and extremities, protective clothing, respiratory devices, and protective shields and barriers, shall be provided, used, and maintained in a sanitary and reliable condition wherever it is necessary." EHS Safety Advisors and chemical safety staff provide support for the PPE program in research labs. Safety advisors review PPE hazard assessments and training documents during each annual laboratory review. Chemical safety staff also provide personal consultations, coaching, and

education for individual laboratories on all manner of PPE assessments and use. Staff also routinely review and recommend types of PPE needed as part of hazard evaluations, spill consultations, and post-incident follow-ups. FY20 saw the continuation of a new policy concerning appropriate dress in labs regarding skin coverage and protection.

Ventilation and Fume Hood Program

The ventilation and fume hood program focuses on the fume hood as the major engineering control for chemicals used 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 (FM) for laboratory ventilation issues pertaining to new installations and renovations.

The ongoing COVID-19 pandemic, and the necessary precautions associated with it, forced a suspension of fume hood assessments in March 2020. Assessments resumed in June 2020 but have not yet been completed. Due to the incomplete assessment cycle, partial data garnered will not be provided.

Materials Management - Regulatory Reporting

Chemical safety staff are responsible for creating and distributing several annual reports on hazardous material located throughout the institution; reporting responsibilities are not limited to research laboratories. Various reports are detailed below.

Emergency Response Right-To-Know (ER-RTK)

The ER-RTK report outlines hazardous material locations for emergency responders both within and outside of the University. Due to layout changes, every floor plan and cover sheet was modified this year. Details on the FY20 report are included in the table, below.

Updated In AutoCAD	Number of Buildings	Number of Floor Plans**	Number of New Maps*
East Campus	74	400	400
Hawkeye Campus	26	36	36
Off Campus Coralville	13	20	20
Off Campus Iowa City	18	21	21
Off Campus Lake MacBride	9	10	10
Off Campus Muscatine	1	1	1
Off Campus North Liberty	3	0	0

University Research Park	37	72	72
West Campus	87	489	489
Residence	36	70	70
TOTALS for ER-RTK AutoCAD	304	1119	1119

*New maps could be newly acquired buildings, remodeled floors, etc.
**Does not include the "cover sheet" for each building.

Tier II

The Tier II report outlines large quantities of stored chemicals or extremely hazardous substances throughout campus. Currently 29 chemical inventory users (active participants) meet annual review criteria, of which, 26 had chemicals of reportable quantities. Forty-five Tier II reports were filed with Department of Natural Resources.

DHS Chemical Facility Anti-Terrorism Standards (CFATS)

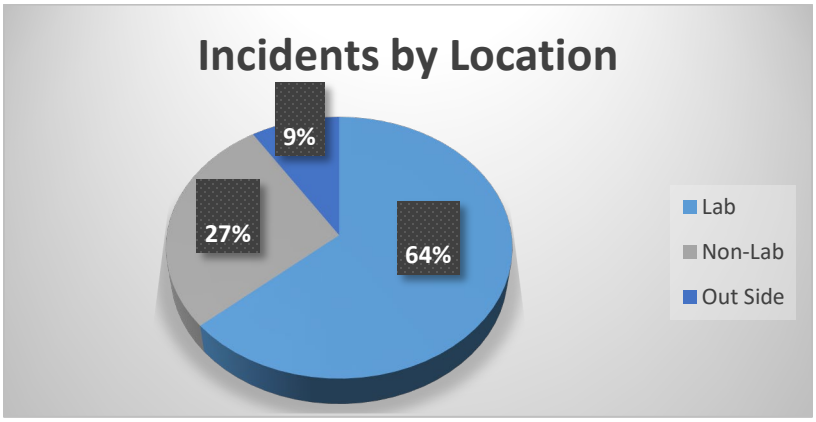
The Department of Homeland Security (DHS) regulates the use, storage, and shipment of 325 chemicals of interest (COIs). EHS tracks any change in amounts of COIs throughout the University by utilizing the chemical inventory system combined with a listserv of chemical users/owners. No material was determined to exceed a threshold reportable quantity in FY20.

Emergency Preparedness

Building Emergency Teams (BETs) were dissolved in FY19 to be replaced by the Emergency Action Plan (EAP) which will be implemented by the Office of Emergency Management (OEM) under the Department of Public Safety. Members of the former BETs may become incorporated into the EAP, once established. The Emergency Management Advisory Group is currently tasked with the creation and implementation of the EAP.

Spill Resource Group (SRG)

The University Spill Resource Program was instituted in 1993 as a resource unit to provide coherent support services within the University's Emergency Preparedness Program. The four members of the SRG complete an eight- hour HAZWOPER refresher training annually and provide consultation and advice on safe and appropriate response actions when spills are reported to EHS. EHS staff also work with other departments when spills could impact employee/student health and or the environment. There were a total of 11 incidents reported in FY20 with 9 of those being spills/leaks and 2 smell/incidents. The locations of the incidents are shown in the chart below.



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.

Operational Programs

Hazardous, Radioactive, and Biohazardous Waste Management Programs

These programs cover requirements that are imposed on the University by federal and state regulations, and the conditions imposed on the University in order to operate a permitted treatment, storage and disposal facility (TSDF) on the University of Iowa Research Park campus. 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-Bureau of Radiological Health (IDPH-BRH), Iowa Department of Natural Resources (DNR), and Iowa Occupational Health & Safety Administration (IOSH).

Waste Collection, Container Tracking, Transportation and Storage

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 clients that will then 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, decay in storage, and storage prior to contractor collection and disposal.

Biohazardous waste is collected and disposed of by a contractor at major UI research, academic and support facilities (~ 10-15 areas); EHS oversees contractor activities. EHS collects waste from the remaining facilities and subsequently disposes of those through contractor collection. EHS does not participate in the collection or disposal of biohazardous waste generated at University of Iowa Hospitals & Clinics.

Activities and Accomplishments:

- Hazardous chemical waste: a total of 31,496 containers were collected from 597 waste generators during 3,145 visits. Waste amounts varied in size from a few milligrams to 55 gallons.
- Radioactive waste: a total of 470 containers were collected from 50 waste generator sites during 106 visits. Waste consisted of liquids, solids, and patient therapy waste.
- Biohazardous waste: a total of 21,238 containers were collected (excludes waste generated at UIHC); 19,468 collected by contractor; 1,770 collected by EHS.
- Unknown analysis: 227 unknowns from 35 locations were analyzed and identified.
- Cleanouts: completed 84 laboratory cleanouts generating 11,759 items of hazardous chemical waste.

Waste Processing, Contractor Shipment and Disposal Activities

Hazardous chemical waste collected throughout the University is transported to the Environmental Management Facility (EMF) located at 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:

Hazardous Chemical Waste

- Processing:
    - Bulking – 20,374 items were commingled together into 456 drums last fiscal year.
    - The Environmental Section's recycling program, recycled 1,584 lbs. of mercury and mercury containing devices; 6,822 lbs of used oil; 418 lead-acid batteries weighing 4,453 lbs.; 4,921 other hazardous batteries weighing 1,866 lbs.; and 790 pieces of lead shielding weighing 1,202 lbs. Additionally 1,700 lbs. of hazardous waste were processed to recover and reuse solvents, and 41,626 lbs. of hazardous waste processed for energy recovery.

- DEA Controlled Substance destruction – 91 containers of controlled substances were disposed of through a DEA-approved method and completion of the required reports.

- Waste processing generates a large amount of regular trash to be disposed of at a landfill. Last year 22 truckloads containing such waste were taken to the Iowa City Landfill.
- Other:

	FY18		FY19		FY20	
Process	**Weight (kg)**	**Items**	**Weight (kg)**	**Items**	**Weight (kg)**	**Items**
Neutralization	943	915	1,052	751	1,124	744
Non-hazardous Gases Vented	170	74	151	84	117	70
Non-hazardous-to IC Landfill	1,371	1,660	1,259	1,268	1,172	1,088
Sewered	4,166	3,216	4,358	2,462	4,173	2,922

- Contractor Shipments and Disposal:
  - Eleven shipments of hazardous chemical waste were completed and sent to off-site EPA permitted facilities.
  - Seven shipments of bulk drums/labpacks totaling 768 drums.
  - One shipment of used oil totaling 18 drums.

Radioactive Waste

- Aqueous liquids are held for varying periods of isotope-dependent decay times prior to being discharged to the sanitary sewer. Last year, 130 containers commingled in 5 drums along with 12 individual smaller containers were discharged for a total of 250 gallons.
- Mixed wastes are stored on shelves, 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 large cost savings.
- Lead shielding is surveyed for contamination and recycled through the hazardous waste program if no contamination is present. Last year, 887 pieces were collected, a portion of which was recycled, as mentioned above.
- Refuse is created during the extensive processing of RWMP, which is disposed of through landfilling.
- A sorting station is used to sort dry waste for review and removal, if necessary, of inappropriate items prior to disposal in the Iowa City Landfill. Last year 16 drums of short- lived waste were processed.
- Completed one radioactive waste shipments of 9 shipping containers, including:
  - 1 – Animals containers;
  - 5 – non-hazardous scintillation cocktail vials;
  - 2 – dry waste in yard-boxes, and
  - 1 – sharps in yard boxes.

Monitoring Activities
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:

- 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 > 1,500 wipes.
    - Containers – surveyed > 800.
    - Lead shielding – surveyed prior to disposal – 887pieces.
- Environmental dosimeters – no significant doses were released in the facility operations.

Quality Assurance Activities
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:

- Daily review of data collected during waste collections and 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.
- Quarterly self-Resource Conservation and Recovery Act (RCRA) inspections.
- Barrel check and item inventory checks after every waste shipment.
- Reviewed drum contents for quality assurance.

Regulatory Compliance Programs

Environmental Reporting/Permit Management
The Environmental Section manages a permitted TSDF that allows the University to store hazardous waste at several locations on the University of Iowa Research Park campus. This permit dictates an extensive recordkeeping network of information that documents the condition of the facilities and requires 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 required regulatory reports to the appropriate agencies.

This FY, EHS in collaboration with the Office of the Vice President for Research and Facilities Management, began the process of Permit Closure for Oakdale Storage K (the Batcave). Closure is expected to be completed in the Fall of 2020.

EPA Compliance

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 Safety Data Sheets (SDS) 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 focuses on large quantity generators, groups targeted by EPA for inspection, and generators with disposal issues that have been identified during waste collection.

Activities and Accomplishments:

- Implemented additional procedural changes to meet compliance with EPAs electronic manifesting system.
- The Iowa Department of Public Health conducted an inspection of the facility as part of the University's annual radioactive materials license inspection. No violations were identified.
- 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.
    - Completed 142 audits of laboratories that generate hazardous waste.
    - Completed 168 audits of non-laboratory areas that generate hazardous waste.
    - Completed 180 audits of areas where Universal Waste is accumulated.
- SDS solicitations: over 1,000 SDS were solicited from manufacturers; currently, over 30,000 separate SDS are part of the EHS' collection of this information.

Laboratory Review Program

This program was developed to support the University'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, radiation safety, and waste management. Each principal investigator's (PI's) research area is reviewed annually 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.

The laboratory audit procedure is reviewed annually. Changes made this year include documenting audit deficiencies through the inclusion of photographs in the audit report and requiring documentation of compliance with the hepatitis B vaccination offer for at-risk lab workers. Staff developed a pathway for hepatitis B compliance data to upload into EHS Assist from Learning and Development and Ready Set in order to facilitate this review. The ongoing COVID-19 pandemic, and the necessary precautions associated with it, forced a suspension of laboratory safety audits in March

2020. The EHS Safety Advisor team did not resume laboratory safety audits in FY20. Due to the incomplete audit cycle, partial data garnered will not be provided. Staff will ensure all departments receive an annual review prior to the end of 2020.

Laboratory Close-Out Program

The purpose of the University Laboratory Close-Out Program is to allow EHS to track the closing and moving of laboratory spaces. This in turn ensures proper handling, disposal, transfer, or moving of hazardous materials or equipment during the closure procedures. It also enables EHS to track changes in personnel, chemical inventories and lab space assignments through meetings with lab and administrative personnel. Finalizing a laboratory close-out can take over six months of EHS involvement.

A total of 23 lab close-outs were submitted in FY20. Of these, twelve labs were closed and nine labs were internal moves; the remaining two are still being processed. Eight open close-outs from prior years were finalized in FY20.

Occupational Safety Section

The Occupational Safety (OS) section is committed to the promotion of a safe and healthy workplace for University of Iowa faculty, staff, and students through the development and implementation of programs and procedures designed to minimize occupational hazards.

The Occupational Safety Section provides services to a broad range of departments and staff on campus. The programs and services are designed to evaluate job hazards, help individuals and departments reduce or eliminate these hazards, and comply with state and federal occupational safety and health regulations.

Safety Reviews

As previously mentioned, the annual safety reviews were temporarily suspended during the University's shutdown. Due to the incomplete audit cycle, partial data garnered will not be provided. Staff will ensure all departments receive an annual review prior to the end of 2020.

Work-Related Injury and Illness Investigation Program

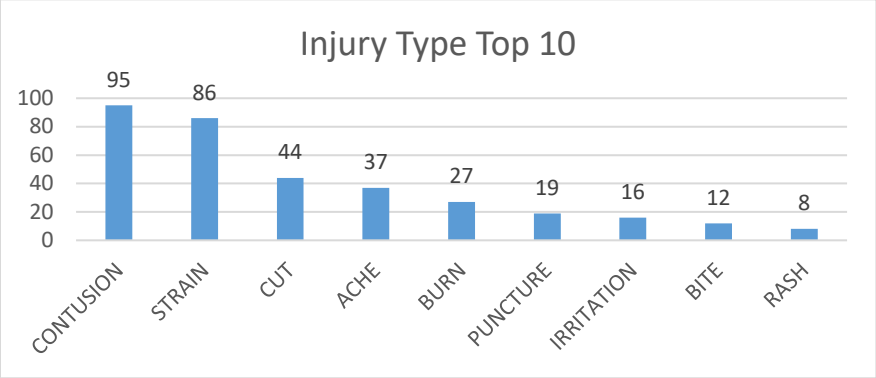
The goals of our work-related injury and illness incident investigation program are to:

- Reduce the number of work-related injuries and illnesses that occur;
- Reduce the likelihood that a similar incident will happen in the future; and
- Limit the severity of these incidents.

To accomplish these goals, the OS staff, with assistance from EHS staff in other sections, work with the supervisors of employees that have work-related injuries to ensure the incident that caused the injury is investigated. The purpose of the investigation is to discover the root cause and identify and implement effective corrective actions that will prevent a similar event from happening in the future. Starting in February 2020, the investigation form was changed from a PDF document to an online Workflow form. Some of the advantages of using Workflow are that it: (1) auto populates information

from the First Report of Injury (FROI); (2) streamlines and simplifies the investigation and approval process; and (3) stores the information long-term on the UI server. Implementing this change has reduced the time between when the injury occurs and when the investigation is fully completed, resulting in more accurate investigations, faster implementation of corrective actions and overall, a safer workplace. Additionally, since the Workflow process was implemented, 100% of all injuries have been investigated.

During a department's annual safety review, their injury records and trends are discussed. A positive trend shows that the department is effectively implementing their safety program. Listed below is a comparison of the most frequently reported types of injuries by UI employees (Note: UIHC uses a different investigation process and is excluded from the graph):

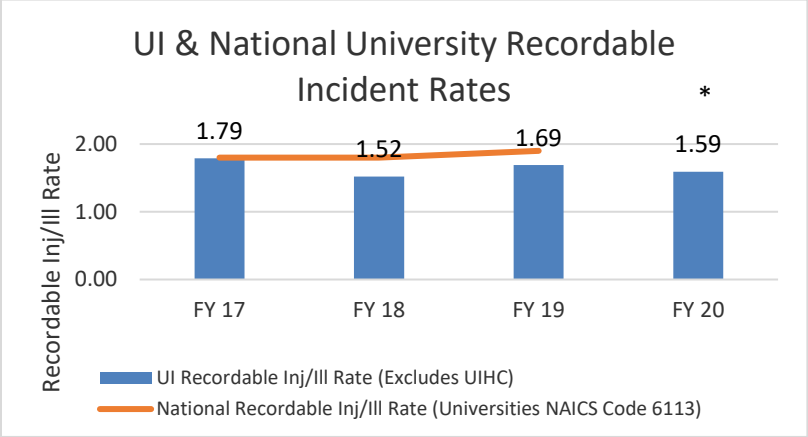


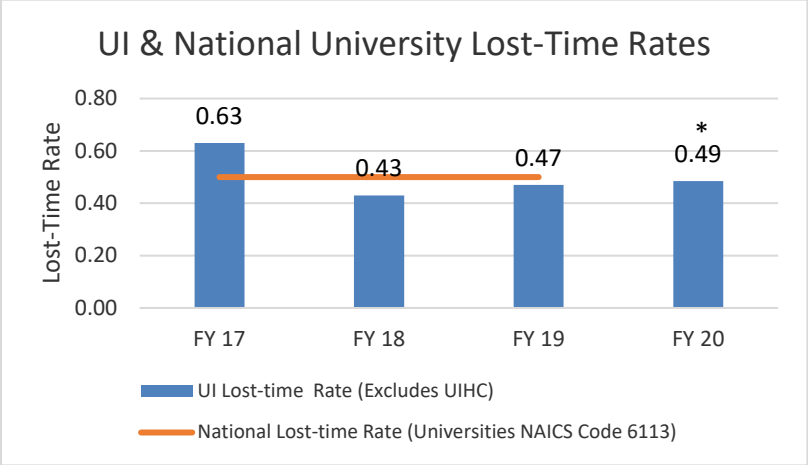
The number of OSHA recordable injuries by year was reviewed in comparison to the number of recordable injures with lost time only. These comparisons allow for the identification of trends over time and severity as well as a measure of the effectiveness of the current safety programs. The Recordable Incident Rate (RIR) represents the total recordable cases for a given year per 100 full-time employees (FTE). The incident rate is a metric to standardize the year's safety performance against the national average. The equation is as follows:

$$\text{OSHA Incident Rate} = \frac{\text{Total number of injuries x 200,000}}{\text{Number of hours worked by all employees}}$$

Lost Time Cases (LTC) represents the number of OSHA recordable injuries that resulted in lost time. The LTC rate is the number of cases in a given year per 100 full-time employees. The rate is calculated using the OSHA Incident Rate calculation outlined above; however, the total number of injuries are only those resulting in lost time.

The graphs below compare the Recordable Injury/Illness and Lost-Time Rates for UI to the average rates for universities nationwide (NAICS Code 6113).





**National Data was not available for FY20 at the time of this report*

While the University of Iowa's rate is below the national average, indicating an effective program, staff continually strive for improvement and decreasing these rates over time.

Lockout/Tagout Procedures

The OS section led a sub-committee from the UI Campus Safety Committee to improve lockout/tagout compliance across campus. The sub-committee accomplished the following:

- Created a Lockout/Tagout (LOTO) Procedure Template;
- Created an ICON course that explains how complete a LOTO Procedure; and
- Created a SharePoint page to store all completed procedures (280 procedures to date).

Industrial Hygiene

COVID-19 Response

The Certified Industrial Hygienist (CIH), who serves as a member in the Occupational Safety Section, was involved in several aspects of the University's response to the COVID-19 pandemic.

- Respirator fits tests were provided to 41 students and employees in the College of Dentistry and three College of Dentistry staff members were trained on how to perform the fit test. Additionally, the CIH and Chemical Safety Staff provided fit tests and fit test training for two weeks at the University Employee Health Clinic.

- The CIH served as a member of the COVID-19 Health and Safety Subcommittee and provided expertise on OSHA regulations, campus EHS policy, personal protective equipment (PPE), and engineering controls. The subcommittee created several recommendations for residence halls, PPE, building ventilation, and classroom practices.
- The CIH partnered with researchers from the College of Public Health to examine how aerosols spread in dental operatories and to evaluate the effectiveness of various control measures.

Chemical Sampling, Respirators, and Engineering Controls
The industrial hygiene program oversees all chemical air sampling on campus, respirator use evaluations, and evaluation of engineering controls (except fume hoods). Sixteen chemical exposure assessments were conducted with 82 collected samples. One department required periodic monitoring to comply with OSHA standards.

Nineteen respirator use assessments and 30 respirator fit tests were completed (in addition to the COVID-19 response). There are currently 13 departments/labs with required use respirators and more than 160 with voluntary use programs.

Three ventilation systems were evaluated with respect to controlling employee exposures.

Hearing Conservation Program
Sixteen noise investigations were conducted with 143 area samples and 12 personal samples collected. There are currently 11 departments in the University's hearing conservation program.

Indoor Air Quality Assessments
Seventeen air quality investigations were conducted in office areas. Two hundred-sixty-one samples were collected for indoor air quality parameters (temperature, relative humidity, carbon dioxide, carbon monoxide, dust as PM_{10}, and total volatile organic compounds) and 13 samples were collected for mold.

Confined Spaces
Thirty-four confined spaces were added to the inventory this year, and there are more than 1,350 spaces currently in use on campus.

Radiation Safety Section

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

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

Activities and Accomplishments:

- Approved new authorized users and medical physicists in Radiation Oncology and Nuclear Medicine. In addition, several additional Radiation Therapy technologists, and housekeeping staff were cleared for the Leksell Gamma Knife to help ensure adequate staffing to utilize and maintain this area.
- Continued cross-training of EHS staff related to their new roles within the section.
- Implemented the pandemic plan by adapting work schedules to ensure sufficient on-campus coverage while helping to ensure staff safety.
- Began development of electronic Medical Radiation Protection Committee (MRPC) forms with a goal to have at least one form in use by the end of the calendar year.

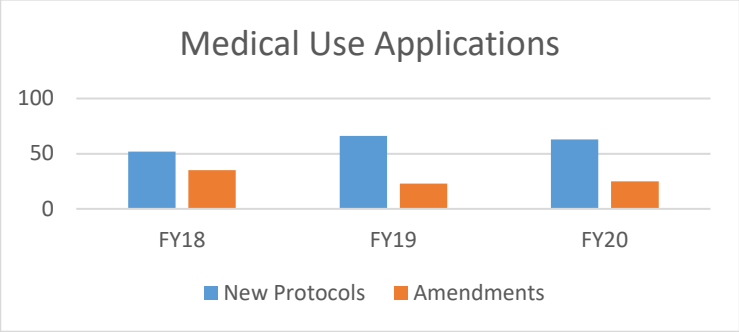
EHS Radiation Safety staff participated in the IDPH inspections of the University's radiation safety program and mammography operations. No violations were noted, and the inspectors commented that all issues raised during the previous year's inspection had been resolved. Due to the pandemic, IDPH will not conduct an in-person radioactive materials license inspection during 2020. The mammography program was also inspected during FY20, with no violations issued. The mammography program is currently scheduled to be inspected in December 2020.

Radiation Safety Committees

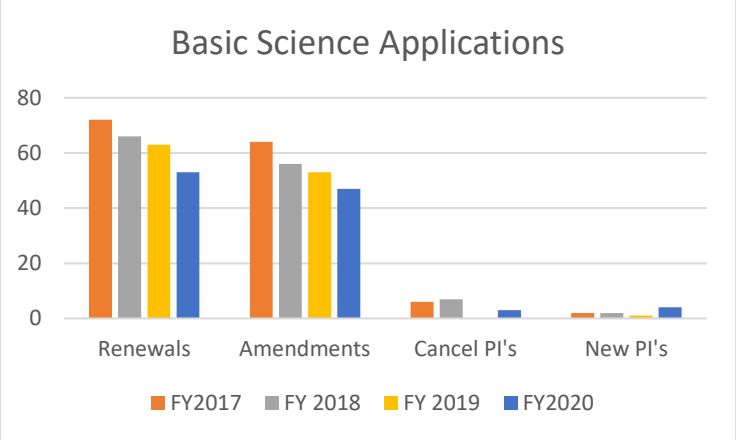
The University's Radiation Safety Committee (RSC) is comprised of five interrelated committees that function to provide radiation protection program oversight, review, policy development, and radioactive materials use authorization under the management of the Associate Vice President for Research. The 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.

Radiation Safety Administrative Support Activities

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. Staff maintained the application files for 282 active medical research-use applications. The graph below compares this fiscal year's medical use application activities with that of past years.



Additionally, staff maintained and managed 65 active authorizations for radioactive material (RAM) use in the basic sciences. The graph below compares this fiscal year's non-medical use application maintenance activities with that of past years.



Operational Safety and Compliance Programs

University Audit Program

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 following is a list of the audits performed by Radiation Section staff throughout the year.

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. The Radiation Oncology audits

include separate audits for brachytherapy, linear accelerator (LINAC), High Dose Rate, Positron Emission Tomography, Intra-operative radiation therapy, and gamma knife.
- 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-BRH Regulations.
- X-Ray Administrative Audit for Mammography - Annual audit for film-screen, digital and stereotactic mammography operations.
- UIHC Family Care Clinics (Southeast Iowa City, North Liberty, and River Crossing) – Annual audit of their x-ray programs.

Basic Science
- Radiation Research Gamma Irradiation Facility – Annual audit 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.

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

Dosimetry Program
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 regulations.

Activity	FY17	FY18	FY19	FY 20
Dosimeters Issued (annual total)	22,069	22,322	23,806	23.565
Individual Participants (monthly average)	1151	1174	1257	1236
Lost/Late Dosimeters (annual average %)	4.9%	5.2%	5.7%	7.4%
Percentage Issued to UI Personnel	4.4%	4.3%	4.0%	3.8%
Percentage Issued to UIHC Personnel	95.6%	95.7%	96.0%	96.2%

Badges lost or returned late rose to 7.4% this year due to COVID-19 related shutdowns.

ALARA Program
Dosimetry and bioassay results are reviewed each month by EHS to maintain exposures As Low As Reasonably Achievable (ALARA). Personnel exposures in excess of established monthly 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 for their review.

External Radiation Exposures
The following table reflects the UI and UIHC department demographics of exposures in excess of the University ALARA levels.

Number Reports Exceeding ALARA Level I Action Levels

Whole Body Deep Dose Equivalent	PET Imaging Center	2
	Adult Cardiac Cath Lab (improper use)	4
	Surgery (improper use)	2
Lens of Eye Dose Equivalent	Interventional Radiology	2
	Surgery	1
Extremities Dose Equivalent	PET Imaging Center	6
	Interventional Radiology	1
Total Level I ALARA Exposures (6 falsely elevated due to improper dosimeter use)		18

Number Reports Exceeding ALARA Level II Action Levels

Whole Body Deep Dose Equivalent	Surgery (improper use)	3
Total Level II ALARA Exposures (3 falsely elevated due to improper dosimeter use)		3

Internal Radiation Exposures – Bioassays
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.

- Thyroid Bioassays: EHS performed 42 thyroid bioassays. None of the thyroid bioassay results exceeded 10% of our 125 mrem committed effective dose equivalent ALARA limit.
- Urine Bioassays: EHS performed 20 urine bioassays. None of the urine bioassays exceeded 10% of our 125 mrem committed effective dose equivalent ALARA limit.

Airborne Radioactive Material Emissions
Regulations require the University to demonstrate that the atmospheric emissions from its licensed 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) Clean Air Assessment Package – 1988 (CAP88). The CAP88 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.

Based on the University's total annual radioactive material inventory from January 1 through December 31st, 2019 the CAP88 Program calculated an effective dose equivalent (EDE) of 0.0017 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 0.012% of the 10 mrem/year regulatory limit.

Emergency Response and Preparedness

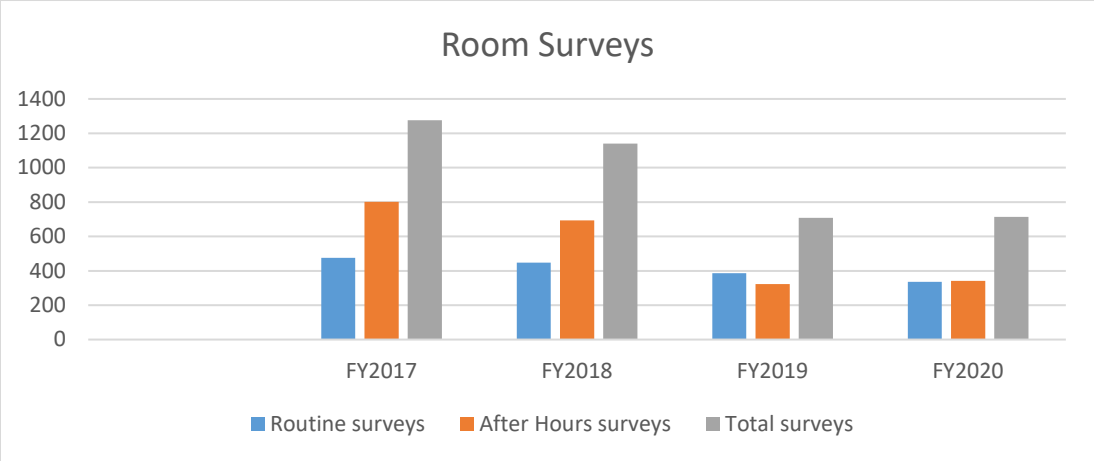
EHS serves as a resource unit for the UI, UIHC (including the Emergency Trauma Center (ETC)) and the Johnson County HazMat Team for emergencies involving sources of ionizing radiation. Two EHS staff members participated in an exercise to test the readiness of the UIHC ETC to handle a patient contaminated with radioactive materials. The exercise is part of the Duane Arnold Energy Center's (DAEC) emergency response plan required by the Federal Emergency Management Agency (FEMA). Representatives from FEMA, Iowa Emergency Management, and DAEC management evaluated the exercise. With the recent shutdown of DAEC, it is unclear if these exercises will continue in the future.

Health Physics Monitoring Support

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) to monitor compliance with regulations and license conditions; and (3) prior to facility maintenance or equipment disposal.

Room Survey Program

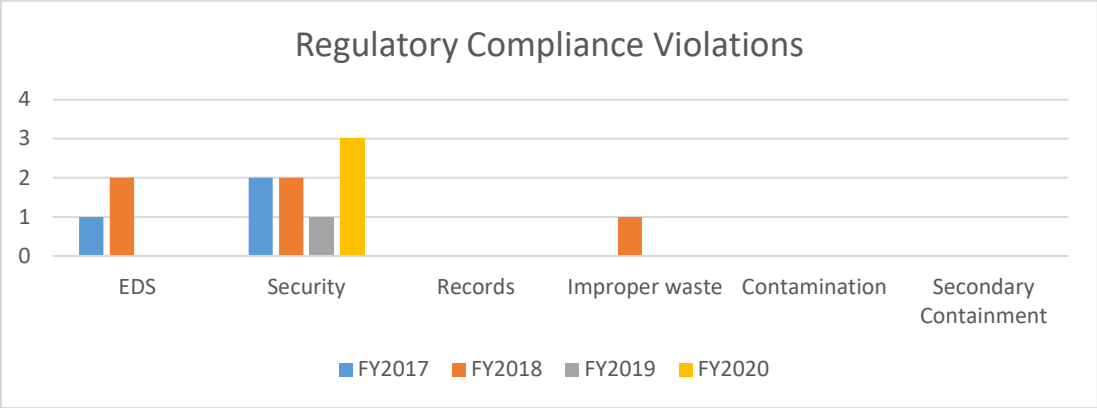
Radiation safety staff performed a total of 714 area and equipment monitoring surveys for academic labs and the UIHC. Surveys include routine laboratory audits, after hours security checks, facility-decommissioning, posting/de-posting, pre-maintenance, spill response and post-iodination activities. A comparison of the last four fiscal years is provided below.



Compliance Assessment Program

Currently there are 155 UI labs posted for non-medical use of radioactive material. A total of 3 regulatory compliance violations were observed by EHS during 336 routine surveys and 341

after-hours security checks of non-medical use research labs conducted in FY20. The number and type of violations are noted in the graph below.



Sealed Source Leak Testing Program

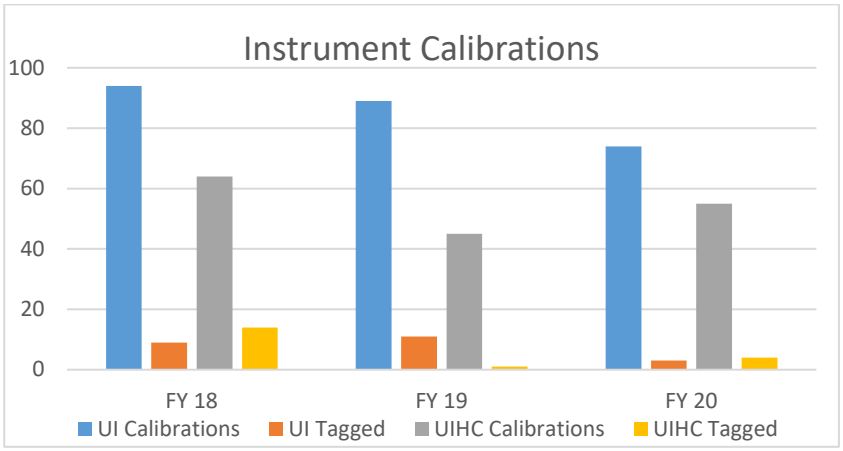
The sealed source leak testing program includes wipe testing to ensure sealed source structural integrity; ambient radiation level surveys in areas where the sources are used and/or stored; and physical inventories to assure sealed source accountability and security.

Activities and Accomplishments:

- Performed 150 ambient radiation level surveys and 301 physical inventories.
- A total of 13 new sources were added to the inventory while 10 sources were properly disposed of or returned to the original manufacturer.
- All sources were accounted for and all 248 leak tests were negative (< 0.005 uCi of removable radioactive material).

Instrument Calibration Program

Annual calibration is required for survey instruments used for quantitative radiation measurement. EHS continues to provide this service for the UI and UIHC. A total of 129 instruments were calibrated and 7 instruments were tagged out of service. A comparison of the last three fiscal years is given below.

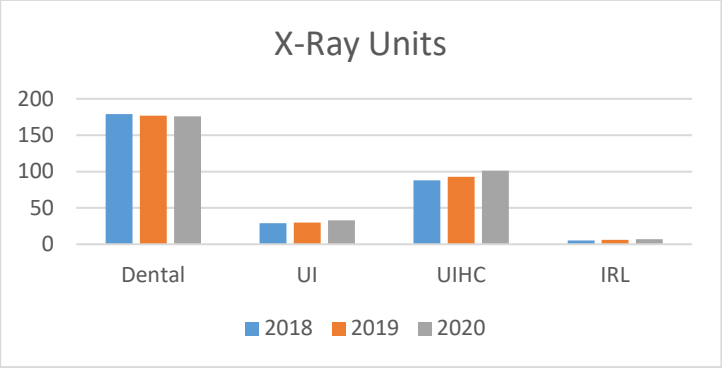


Machine-Produced Ionizing Radiation Safety Program

EHS maintains the registration with IDPH of all sources of machine-produced ionizing radiation at the University. 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. There are currently 315 registered x-ray units in the UI and UIHC inventory.

Activities and Accomplishments:

- Continued to provide mammography and computed tomography physicist services to UIHC.
- Assisted Breast Imaging staff in completing American College of Radiology accreditation application.
- Provided physicist testing following mammography unit upgrades.
- Conducted X-ray compliance inspection surveys of all medical and dental diagnostic X-ray units in service as well as the 33 research related X-ray units and 5 bone densitometer units in the University's X-ray inventory. The current inventory of x-ray units by type is shown below (IRL - Iowa River Landing):



Radiation Shielding Design and Construction Analysis

EHS provides radiation shielding evaluations for new construction planning and existing facilities to ensure all facilities designed for radiation producing machines and radioactive material use and storage meet applicable standards and regulations. Post construction shielding verification surveys are also performed for all new construction and renovations based on recent regulatory requirements

Activities and Accomplishments:

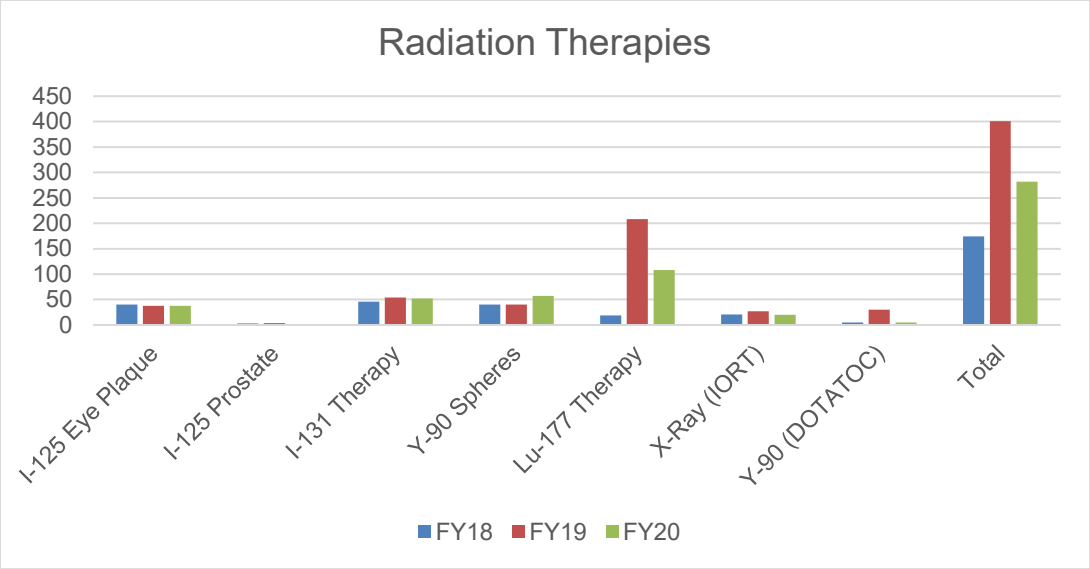
- Consulted and provided construction shielding plans for a number of x-ray, fluoroscopy, and CT installations at UIHC, including six new Cardiac Cath Labs.
- Completed shielding verification and oversight for shielded areas in PET and ER.
- Provided post construction shielding verification measurements for new and remodeled x-ray procedure rooms at UIHC and Veteran's Affairs Medical Center (VAMC).
- Conducted a radiological assessment for the Radiochemistry Lab to evaluate the effectiveness of the group's radiation safety practices.

- Provided required shielding specifications and verifications for all three new off-site clinics at the VAMC.

Radioactive Materials Procurement and Shipping Program
This program oversees the receipt, distribution and documentation for all radioactive materials delivered to the University. 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:
- A total of 234 items of radioactive material were processed and delivered to UI or UIHC facilities.
- EHS made 12 shipments of radioactive material for UI and UIHC.

UIHC Therapy Patient Monitoring Program
EHS provides health physics support and radiation safety monitoring services for UIHC departments administering therapeutic amounts of radioactive materials to patients. Support services include room preparation, post-administration radiation surveys, staff and family/visitor education and training, after hours on-call, facility decontamination, and radioactive waste services. Therapy patient activities and historical comparisons are provided below. All therapies were delivered as prescribed. No reportable medical events occurred this fiscal year.



Laser Safety Program
EHS provides laser safety support to UI and UIHC laser users. The program includes training, consultation, unit registration, purchase approvals and safety audits. Currently there are 123 research lasers registered with 48 investigators at the UI and 34 medical lasers registered to 9

departments at UIHC and IRL. The Assistant Radiation Safety Officer serves as chair of the UIHC Laser Safety Panel.

Activities and Accomplishments:

- Performed laser safety audits for UIHC departments utilizing lasers.
- Worked to develop policy for the use of respirators by laser staff.
- Continued to identify the primary rooms used for laser procedures in the main operating rooms and oversaw the refurbishment of their area entry control systems.
- Continued work on implementing a standard Area Entry Control system for laser use areas within UIHC.

Radioactive Waste Management Program

EHS staff 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.

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.

Number Processed	**FY18**	**FY19**	**FY20**
Patient Linens Decay-In-Storage (containers)	8	11	6
Sharps Decay-In-Storage (containers)	39	41	35
Dry Waste Decay-In-Storage (drums)	35	27	15
Dry Waste Incineration (containers)	63	111	50
TOTAL	145	190	106
Number Drums Eliminated from Radioactive Waste Burial	**FY18**	**FY19**	**FY20**
Dry Waste Decay-In-Storage	35	27	15
Sharps	2	2	2
Dry Waste Incineration	4	6	3
Total	41	35	20

Administrative Services Section

The purpose of the General Administrative Program is to provide budgetary, human resources, and administrative support to all EHS programs and staff. These activities are performed by the West Side

HR Professional and Administrative Services Coordinator with oversight provided by the OVPR Compliance Unit Business Manager.

The EHS 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. There were 25,730 course completions; see the table below for individual course information. These data reflect UI faculty/staff only and do not include students. Additionally, there were 139 course completions recorded by Veterans Affairs staff.

ICON Course	Number	ICON Course	Number
Advanced Biological Safety	379	Lockout/Tagout Procedure Writing	2
Aerial Lifts	105	Lockout/Tagout Safety	123
Analytical X-Ray Equipment	7	Machine Guarding	367
Antineoplastic Agents Safety	8	Methlylene Chloride Safety	0
APP Refresher of Radiation Safety for Fluoroscopy	26	Nanomaterials Research Safety	20
Asbestos Awareness	566	Nuclear Medicine Staff	6
Basic Biological Safety	952	Office Safety	60
BBP for FM, Housing and Dining	853	P.E.T. Imaging Staff	18
Beryllium Safety (New 2018)	0	Pandemic Influenza Dust Mask	1
Biohazardous Waste Management	1149	Performing a Qualitative Fit Test	2
Biological Safety Cabinets	91	PPE Awareness for Labs	1233
Bloodborne Pathogen Refresher	1159	PPE Awareness for Non-Labs	1158
Bloodborne Pathogens, Lab	741	Rad Material Patient Safety - Basic	427
Bloodborne Pathogens, Non-Lab	588	Rad Safety 3JPP Staff	104
Bone Densitometer	0	Rad Safety CRU Staff	14
BSC Awareness for FM	0	Rad Safety for FM Staff	304
Chemical Fume Hoods	721	Radiation Awareness for Labs	143
Chemical Storage Safety	129	Radiation Oncology Staff	88
Compressed Gas Safety	465	Radiation Safety CS Staff	2
Confined Space - Reclass and Alt Entries	193	Radiation Safety I-131 MIBG	3
Confined Space Administrator	3	Radiation Safety, Basic	123
Confined Space Evaluators	3	Radiation Safety, Refresher	152
Confined Space Full Permit Entry	4	Radioactive Materials Shipping	8
Confined Space Prohibited	62	Radioactive Waste Management	4
Contingency Plan Training	7	RDNA Research, NIH Guidelines	368
Controlled Substances Research	21	Research with Nonhuman Primate Material	0
Dual Use Research of Concern	6	Respirable Crystalline Silica Safety	0
EHS Staff OSHA Chemical Specific Standard	6	Respirator Dust Mask	71
Electrical Panel Breaker Resetting	39	Respirator PAPR Hood or Helmet	51
Electrical Safety	337	Respirator PAPR Tight Fit Face	30

Electron Capture Detector	14	Respirator Tight Fit Facepiece	102
Environmental Management Facility Safety Orientation	30	Respirator Voluntary Use	376
Ergonomics - Back Safety	627	Safety Leadership	90
Ergonomics - Computer Use	193	SAIC Radiation Safety	1
Fall Protection	42	Sealed Sources Radiation Safety	5
Fire Extinguishers	607	Shipping Infectious Substances	152
Forklifts	54	Shipping with Dry Ice	223
Formaldehyde Safety	533	SPCC: Oil Spill Prevention	11
Hand Safety	107	Spill Preparedness Response	87
Hazardous Waste for Labs	1484	Stem Cell Research	9
Hazardous Waste for Non-Labs	33	SWPP Plan (Storm Water Pollution Prevention Plan)	6
HazCom with GHS	1945	Tool Safety	476
Hearing Conservation	400	Toxins, Select Agent Quantity	42
Hearing Conservation for the School of Music	3	UIHC Radiation Awareness	0
Hexavalent Chromium Safety	6	UIHC Radiation Safety, Security	0
Incident Investigation Training	156	Universal Waste Management	485
Indoor Cranes	48	Walking and Working Surfaces	376
Intro to RCRA Training	0	Welding and Cutting	264
Job Safety Analysis	3	X-Ray Safety - General	50
Lab Chemical Safety	1763	X-ray Safety for Fluoro Staff	61
Lab Safety General Awareness	42	X-Ray Safety Limited	5
Ladders	771	X-Ray Safety, Anesthesia Staff	10
Laser Safety - Research	254	X-Ray Safety, Fluoroscopy Practitioners	3
Laser Safety - UIHC	36	Y-90 Microspheres Rad Safety	0
Lead Safety Awareness	243		