

ANNUAL REPORT FISCAL YEAR 2022-2023



July 2022 - June 2023

CLEMSON®

OCCUPATIONAL AND ENVIRONMENTAL SAFETY

Executive Director

Occupational and Environmental Safety had an innovative, service oriented and cost savings year for 2022-2023. The highlights included:

- Established a Hazmat Transport Pilot program to support campus safety and compliance
- Established a Small Spill Response team and responded to 29 cleanups saving the university between \$30,000 - \$40,000 in costs for a vendor to respond and cleanup
- Established a Controlled Substances compliance and coordination program
- Total trained: online and in person: 11,306 (9,958 online) or 88% online. Cost of \$1.79/attendee for online training using SciShield management system
- Lead the implementation of the Occupational Health Module in SciShield transitioning from a paper-based program to electronic. This effort resulted in a reduction from 25 minutes per form processing to 8 minutes (see Attachment, pp. 19-20).
- Completed a Lean Process project with Institutional Effectiveness to improve the Research Lab Renovation process with Facilities, OES, Provost's Office and College Associate Dean's.
- Included in a Charleston Post Courier Investigative Report for mold in South Carolina colleges and universities. Clemson had a favorable report due to the comprehensive process, procedures and resources dedicated to this issue
- Increased the number of asbestos abatement contractors to support campus from 2 to 9
- Initiated upgrades to the Radiation Safety facility
- Demonstrated fiscal stewardship and operational responsibility with successful budget management

Goals and Challenges for 2023-24

- Staff development and succession planning to support Clemson Elevate
- Implement OES Strategic Plan
- Implement Research Lab Renovation Lean Process recommendations
- Implement Controlled Substances program and policy
- Determine need for Hazmat Transport service based on Pilot results
- Develop and implement Field Safety program
- Develop and implement OSHA 10 Hour Construction certification to campus

I would like to thank the staff of OES for their hard work, commitment and service to Clemson University. I would like to thank Tony Wagner and the Division leadership who support OES and who are valued partners throughout the year.

Total **trained**: online and in person: **11,306** (9,958 or 88% online).
Cost of **\$1.79**/person for online training

Total Lab and Safety **inspections**: **488**

83 Asbestos Abatements

Total safety **consultations**: **445**

Asbestos **DHEC O&M Certified** staff:
142

Managed **waste** on Main Campus (pounds)

- RCRA: **39,011**
- Universal: **32,734**
- Infectious: **27,367**
- Non-infectious: **19,470**

Total **waste** containers removed by OES:
9,117

All (**10**) **SPCC** plans updated and new
online training

OES in Numbers

Total Indoor **Air Quality** Investigations:
57

Chemical **Reviews** for IBC and IACUC:
42

X-Ray Producing Equipment: **57**

Incident Reviews and Responses: **65**

Respirator Fit Tests: **282**

Lasers Class 3B and 4: **65**

President Elect for **Staff Senate**

4th Annual **DSC Retreat**



Combined Program Highlights and Metrics

Training (Live and Online)

	1st	2nd	3rd	4th	Total	Comments
Biosafety						
Live Sessions	12	6	7	4	29	
Live Session Participants	107	25	193	27	352	
Online Participants	416	135	174	192	917	
Chemical and Lab safety						
Live Sessions	14	4	3	4	25	
Live Session Participants	189	59	15	40	303	
Online Participants	419	97	302	193	1011	
Environmental Compliance						
Live Sessions	6	4	3	6	19	
Live Session Participants	54	53	6	21	134	
Online Participants	684	305	428	208	1625	
Industrial Hygiene						
Live Sessions	2		3		5	
Live Session Participants	25		68		93	
Online Participants	966	743	995	680	3384	
Low Country Safety						
Live Sessions	57	38	48	46	189	
Live Session Participants					0	
Online Participants					0	
Occupational Safety						
Live Sessions	8	3	14	10	35	
Live Session Participants	57	34	90	70	251	
Online Participants	1162	712	738	352	2964	
Radioactive Material, X-Ray and Laser Safety						
Live Sessions	2		1	1	4	
Live Session Participants	19		4	3	26	
Online Participants	22	8	11	16	57	

Inspections

	1st	2nd	3rd	4th	Total	Comments
Inspections, Audits and Lab Visits						
Laboratory	50	89	61	72	272	
Non-lab	17	11	18	19	65	
Occupational Safety	65	13	21	10	109	
Radiation safety	6	11	1	14	32	
Hazardous Waste					0	
IBC Review	1	1	6	2	10	

Incident Response

	1st	2nd	3rd	4th	Total	Comments
Response to Incidents, Injuries and Near Misses						
Biosafety	3		8	2	13	
Chemical and Lab Safety	8	11	8	3	30	
Industrial Hygiene	1	2	3		6	
Occupational Safety	2		5	3	10	
Low Country Safety	2	1	2	1	6	
Radiation safety					0	



Individual Program Highlights and Metrics

Biosafety**Biosafety program in numbers:**

	1st	2nd	3rd	4th	Total	Comments
Inspections						
General Lab Safety	36	41	30	51	158	
IBC review	1	1	6	2	10	
2-nd visits	3				3	
Other (lab visits)	8	2			10	
Incident Response						
Spills			3	1	4	
Exposure	2		2	1	5	
Injury	1		3		4	
Needle sticks					0	
Breach of containment					0	
Administrative Review						
IBC	19	15	9	10	53	
IACUC	34	18	39	45	136	
Training						
Biosafety & Biohazard Waste online	323	94	138	163	718	
BBP Live Sessions	9	6	7	4	26	
BBP Live Session Participants	107	25	193	27	352	
BBP Refresher (online)	93	41	36	29	199	
Other Live Sessions	3				3	

Chemical and Laboratory Safety**Chemical and Laboratory Safety program in numbers:**

	1st	2nd	3rd	4th	Total	Comments
Inspections						
Laboratory inspections	11	48	31	21	111	
Other					0	
Fume Hoods						
Annual testing / calibration	73	232	18	96	419	
Consultations						
Lab renovation and design	14	7	19	15	55	
Safety and compliance	31	26	43	45	145	
Other		3			3	
Incidents						
Reported and investigated	8	11	8	3	30	
Training and Presentations						
Live Training Sessions	14	4	3	4	25	
Live Presentations					0	
Live Session Participants	189	59	15	40	303	
Online Participants	419	97	302	193	1011	

Asbestos

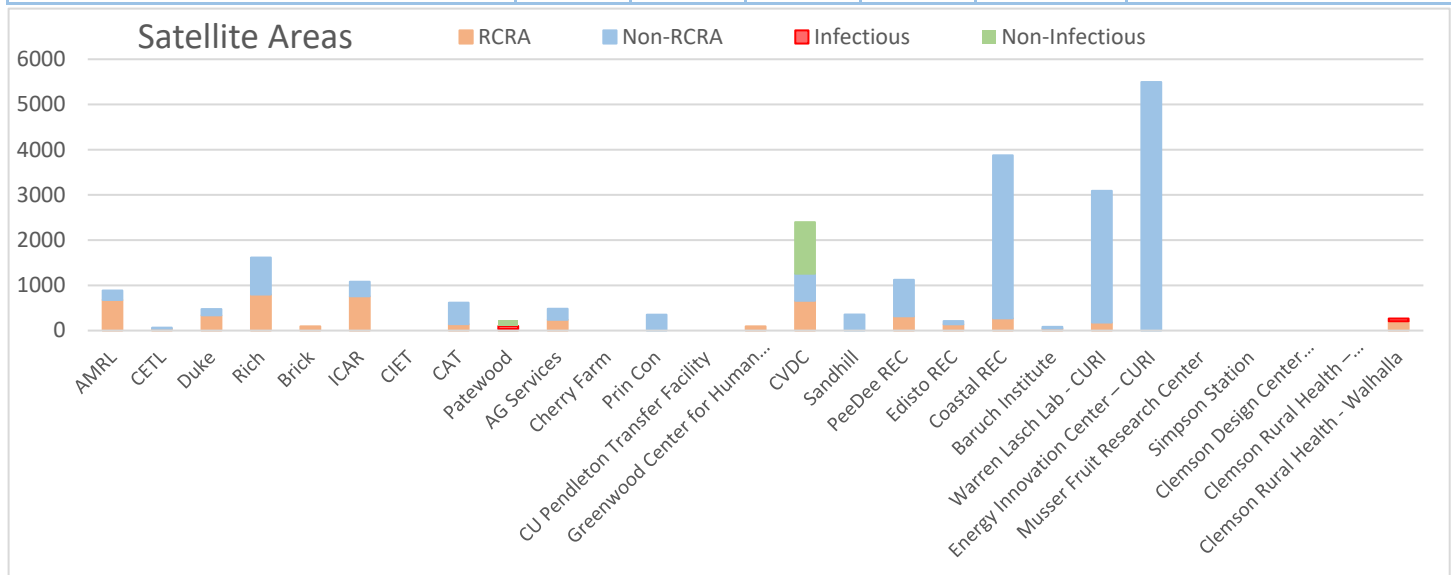
Asbestos program in numbers:

	1st	2nd	3rd	4th	Total	Comments
Requests reviewed						
New asbestos materials testing	50	17	48	42	157	
New asbestos air sampling	5	7	4	6	22	
New asbestos abatement		16	8	22	46	
New Lead Based Paint testing	12	13	8	17	50	
Other HazMat materials testing	2	2		2	6	
Reports reviewed						
Asbestos materials testing	50	55	4	42	151	
Asbestos Air Sampling	5	7	4	6	22	
LBP materials testing	12	13	8	17	50	
Other HazMat materials testing	2	2		2	6	
Asbestos						
ACM and Hazmat testing & reports	52	17	48	44	161	
Abatements (non-project related)	1		2		3	
Asbestos abatements completed	15	16	8	42	81	
Abatement Projects (Total)	17	16	8	42	83	
NESHAP	7	3	1	14	25	
Small	3	8	3	7	21	
Minor	2	5	5	1	13	
O&M*					0	
Asbestos waste (total cubic yards)	154	163	127	95	539	
Asbestos abatement audits	17	16	8	22	63	
Air sampling reports reviewed	5	7	4	6	22	
Lead Abatement and other Hazardous Materials Testing						
LBP testing and reports	12	13	8	17	50	
Lead abatement projects					0	
Other Haz Material test reports	2	2		2	6	

Environmental Compliance

Environmental Compliance program in numbers:

	1st	2nd	3rd	4th	Total	Comments
Manifests Shipped and Tracked						
Hazardous Waste	22	48	41	65	176	
Non-Hazardous Waste	13	8	10	8	39	
Biohazard Waste	20	31	27	25	103	
Waste Managed in Pounds – Main Campus						
RCRA	8,711	9,272	7,547	13,481	39,011	
Non-RCRA	25,689	11,263	13,134	19,413	69,499	
Industrial (Class III Landfill)	148,380	126,200	149,764	95,020	519,364	
PCB			5,694		5,694	
Universal	5,772	4,034	10,182	12,746	32,734	
Infectious	6,235	6,435	6,106	8,591	27,367	
Non-Infectious	3,607	5,412	5,204	5,247	19,470	
Waste Managed in Pounds – Satellite Areas						
RCRA	4,567	5,991	3,494	4,793	18,845	
Non-RCRA	3,764	28,064	6,140	16,483	54,451	
Infectious	1,157	148	82	127	1,513	
Non-Infectious	1,504	960	1,584	1,259	5,307	



Lab Inspections/Visits						
Lab Audit (SAA)					0	
Lab Clean-outs	8	2	2	5	17	
Lab Visits	564	313	399	312	1588	
Waste Items Removed						
Chemical	1940	1162	1834	2433	7369	
Infectious	230	260	225	340	1055	8 containers off campus
Non-Infectious	122	230	177	164	693	56 items off campus
Training						
Hazardous Waste Live Sessions	3	3		1	7	
Hazardous Waste Live	27	52		4	83	
Hazardous Waste Online	684	305	428	208	1625	
Haz Mat Live Sessions	3	1	3	5	12	
Haz Mat Live Participants	27	1	6	17	51	
Haz Mat Online					0	

Industrial Hygiene

Industrial Hygiene program in numbers:

	1st	2nd	3rd	4th	Total	Comments
Inspections:						
Arts					0	
HAZCOM - General	2		3		5	
Shops			1	1	2	
Other Inspections		1		1	2	
Indoor Air Quality Investigations:						
Housing	9	9	10	3	31	
Long term IAQ Evaluations			2	2	4	
Off main campus					0	
Office	8	5	4	5	22	
Other					0	
Hazard Communication						
SDS reviews - general	13	11	14	15	53	
SDS reviews - COVID-19					0	
Assessments	33	47	61	12	153	
IBC/IACUCU Chemical reviews						
Chemicals reviewed	18	12	8	4	42	
SASPs completed	7	1	3	4	15	
SOPs completed	11	8	3	4	26	
Incident Response						
Spill					0	
Exposure	1	1	1		3	
Injury					0	
ObservNow and Nice Catch, Tiger!		1	2		3	
Training						
Respiratory Protection (online)	151	127	229	122	629	
Hazcom (online)	442	280	367	222	1311	
Other (list out)	373	336	399	336	1444	
Live training sessions	2		3		5	
Live training participants	25		68		93	
IH Program:						
IH Monitoring	5	3	6	11	25	
IH Consulting - Assessments	4	4	9	5	22	
Equipment reviews	6	5	3	2	16	
Outreach Fact sheets		1	3	2	6	
Personal Protective Equipment						
Respirator Fit tests - General Use	148	14	46	74	282	
Respirator Fit tests - Covid	6				6	
N95 reviews - COVID					0	
Other PPE reviews	19	12	12		43	
Hearing Conservation						
Noise area survey assessments	2	2	2	3	9	
Potential Areas identified	2	4		1	7	
Noise dosimetry conducted					0	
Personnel in HCP		6	4		10	

Occupational Safety

Occupational Safety program in numbers:

	1st	2nd	3rd	4th	Total	Comments
Consulting / Inspections / Reviews						
Consulting	41	22	53	45	161	
Safety Walkthroughs/Inspections	24	10	12	10	56	
Formal Inspections	41	3	9		53	4th, PIs were out/vacation
Building / Structure Construction	5	2	7	10	24	
Machinery/ Equipment	6	3	3	3	15	
Incident Review						
Employees	24	3	18	7	52	
Student		1	1	1	3	
Total	24	4	19	8	55	
Incident Investigation						
Incident Response	2		5	3		
OSHA Reportable				2	2	
OSHA Recordable	18	3	28	34	83	
General Safety	6	2	6	4	18	
Physical Hazards Safety Training (Practical Exams, Shop Safety, OSHA, Live Fire Safety)						
Live Sessions	8	3	14	10	35	
Live Session Participants	57	34	90	70	251	
Online Training Participants	1162	712	738	352	2964	
Job Safety Analysis						
Best Safety Practice Review	4	2	6	8	20	
OSHA Written Programs (Create/Review/Revision/Implement)						
	2	2	3	2	9	

Radiation Safety

Radiation Safety program in numbers:

	1st	2nd	3rd	4th	Total	Comments
Program Administration						
RSC Meetings	1	1	1	1	4	
New Projects			1		1	
Inactivated Projects			1		1	
Terminated Projects			1		1	
Amendments (RSC)				1	1	
Amendments (RSO)	18	11	16	22	67	
Compliance Award Reviews	4	6	5	7	22	
Inspections						
RAM	6	9	1	7	23	
X-Ray		2		7	9	
Waste Pickups						
Dry Waste	7	6	4	9	26	
Liquid Waste	2	3			5	
Mixed Waste	5	1	2	6	14	
Waste Disposal						
Dry Waste		4		61	65	
Liquid Waste			7		7	
Mixed Waste	2		47	6	55	
Training						
New RAM Users Live Sessions	1		1	1	3	
Live Session Participants	4		4	3	11	
Refresher Live Sessions	1				1	
Live Session Participants	15				15	
Refresher (online)	14	3	2	7	26	
X-ray (online)	5	1	2	2	10	
Laser (online)	3	4	7	7	21	
Regulatory Visits						
DHEC RAM					0	
DHEC X-Ray					0	
Other						
Instruments Calibrated	10	4	25		39	
Surveys Performed					0	
Sealed Source: Leak Test	20	5	18	1	44	
Sealed Source: Inventories	25	3	13		41	
Dosimetry Exchanged	30	30	51	47	158	
Packages Received	3	1	3	1	8	
Incident Response					0	
Lab Setup / Closeout			3	8	11	

Low Country Safety**CURI and Low Country program in numbers:**

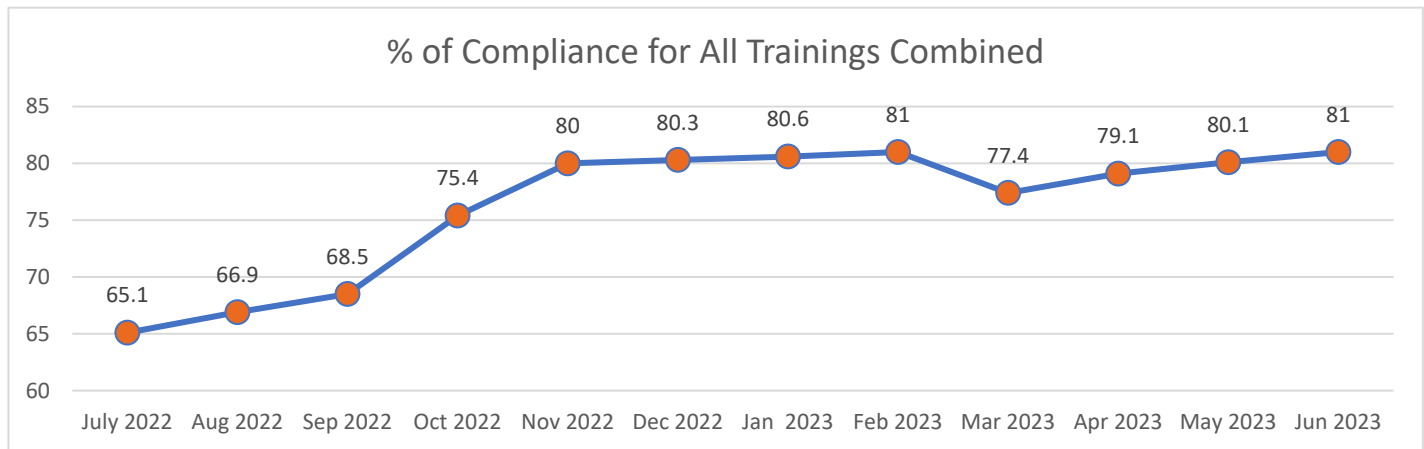
	1st	2nd	3rd	4th	Total	Comments
Training						
Various topics	28	4	6	9	47	
Collaboration	12	12	14	11	49	
Survey discussion	4	7	4	4	19	
Hazard Identification	8	8	15	12	43	
Lab safety discussions	2	5	2	4	13	
Ph.D. Grad student, Intern	3	2	7	6	18	
Inspections and Monitoring						
Hazard Identification	5	5	8	9	27	
Surveys	7	2	4	5	18	
Audits	3	3	2	3	11	
Consults	16	11	15	17	59	
Incidents / near misses	2	1	2	1	6	
Professional Development						
Self					0	
Others	9				9	



Institutional Safety and Compliance Metrics

BioRAFT

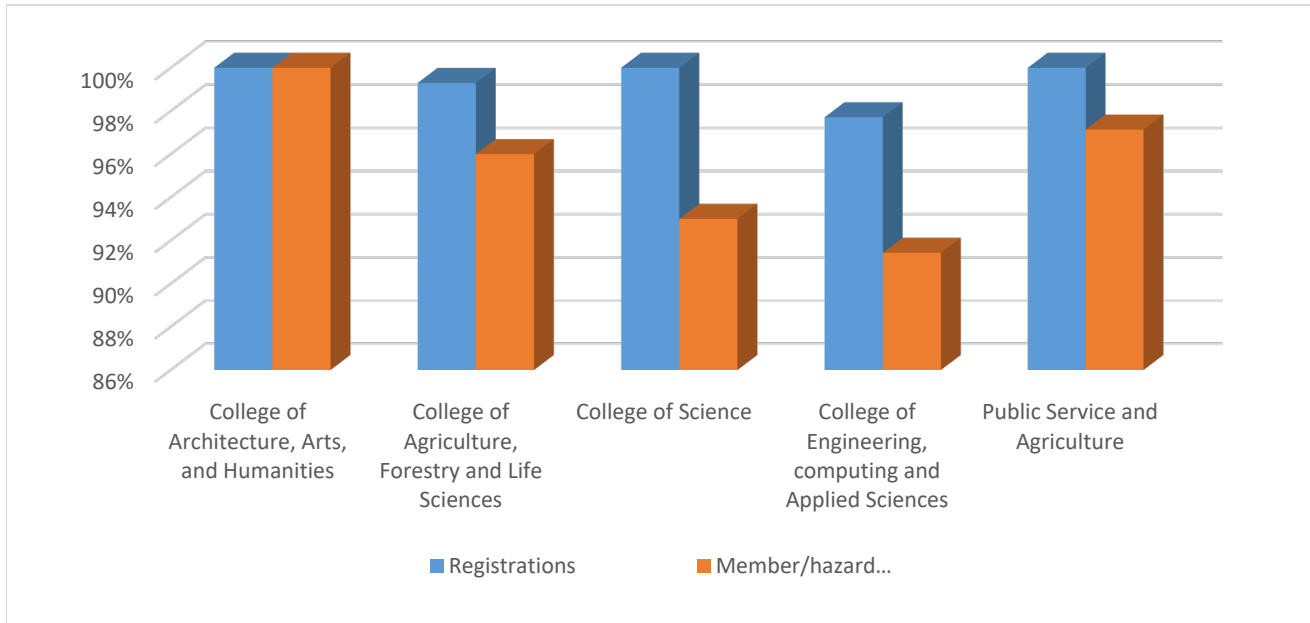
	1st	2nd	3rd	4th	Total	Comments
Lab Registration						
Number of labs registered	395	425	435	446	446	
Number o labs not registered	40	13	5	6	6	
Percentage of labs registered (%)	91.4	97.2	98.7	98.7	98.7	
# lab hazards confirmed	330	407	413	446	446	
# lab hazards not confirmed	105	31	28	30	30	
Percentage lab hazards confirmed (%)	77.6	93.3	94	93.7	93.7	
% Animal Use Froms Completed			76.7	81.7	81.7	
% of Training Compliance by Course (most required)						
Hazard Communication	94.2	94.2	95.3	95.5	95.5	
Lab Safety	97.8	98.0	98.6	99.0	99.0	
Hazardous Waste lab	94.1	95.0	95.5	95.6	95.6	
Hazardous Waste Non-lab	92.1	94.7	94.2	95.1	95.1	

**Injury and Incident Summary**

	1st	2nd	3rd	4th	Total	Comments
Non Recordable Incident Summary						
Near Miss	3	1		1	5	
First Aid	3	1	3	3	10	
Other Incident (no first aid)	6		6	2	14	
Total	12	2	9	6	29	
Injury Summary OSHA Recordable Incidents						
No Days Away or Restricted	11	3	13	14	41	
Resulting in Days Away	3	2		10	15	
Resulting in Days Restricted	10	7	12	21	50	
Resulting in Days Away & Restricted	1		3	7	11	
Total	25	12	28	52	117	
Injury Summary OSHA Reportables						
Serious Bodily Harm					0	
Hospitalization				2	2	
Fatalities					0	
Total				2	2	

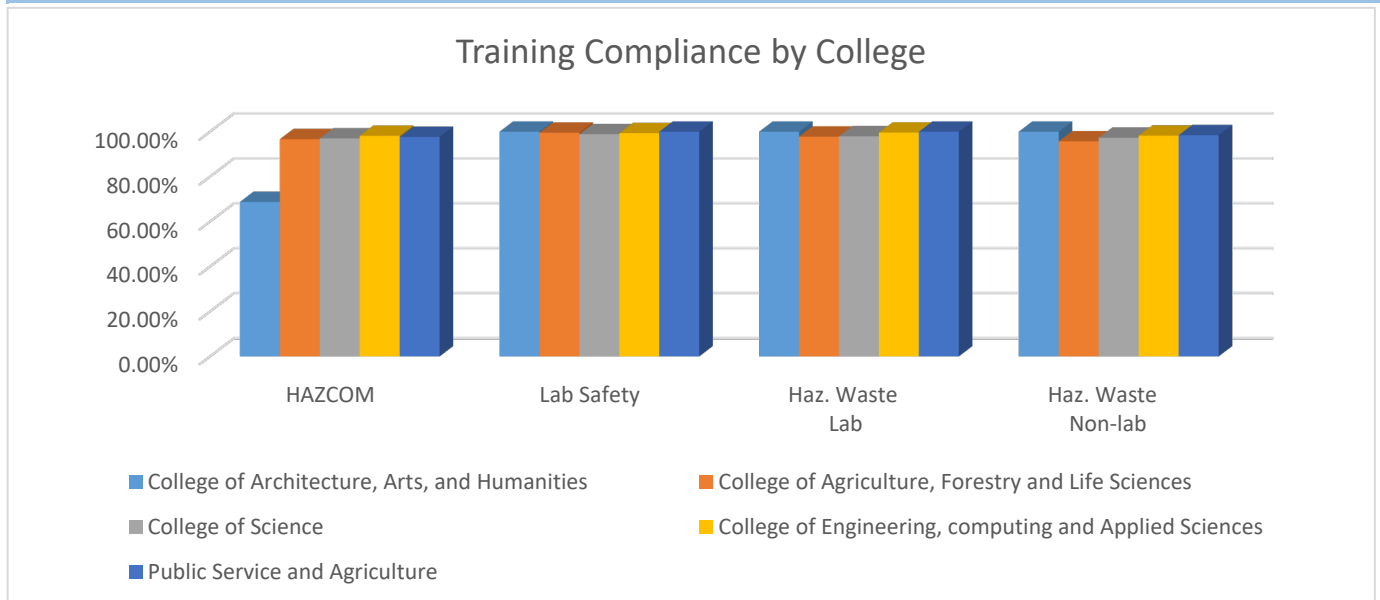
BioRAFT/SciShield Registrations by College

College	Registrations	Member/hazard registrations
College of Architecture, Arts, and Humanities	100%	100.00%
College of Agriculture, Forestry and Life Sciences	99.30%	96.00%
College of Science	100%	93.00%
College of Engineering, computing and Applied Sciences	97.71%	91.43%
Public Service and Agriculture	100.00%	97.14%



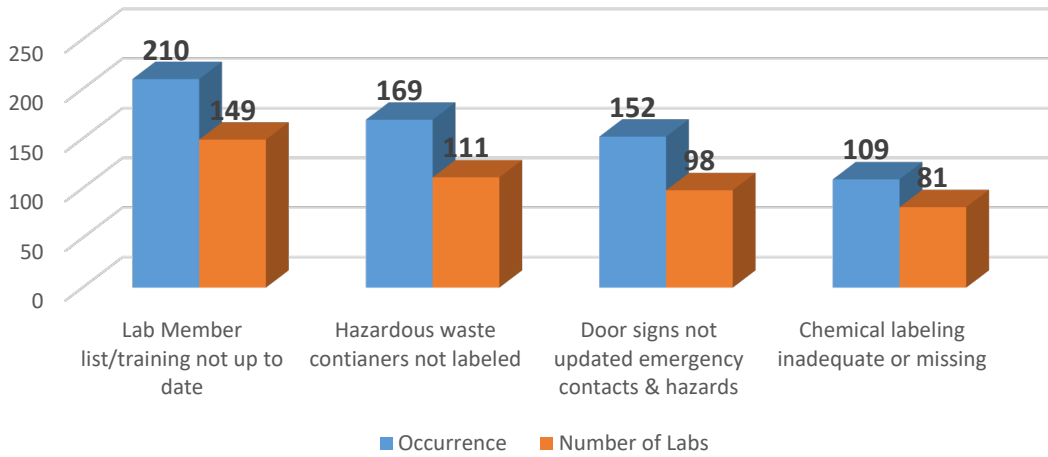
Top 4 Regulatory Trainings Compliance by College

College	HAZCOM	Lab Safety	Haz. Waste Lab	Haz. Waste Non-lab
College of Architecture, Arts, and Humanities	68.75%	100.00%	100.00%	100.00%
College of Agriculture, Forestry and Life Sciences	96.69%	99.56%	97.79%	95.70%
College of Science	97.03%	98.88%	97.97%	97.31%
College of Engineering, computing and Applied Sciences	98.18%	99.35%	99.59%	98.24%
Public Service and Agriculture	97.67%	100.00%	100.00%	98.45%

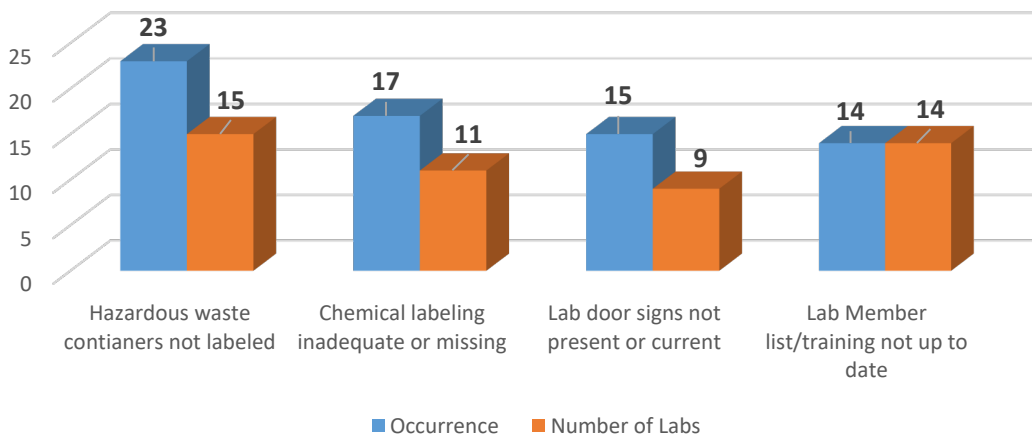


Inspections

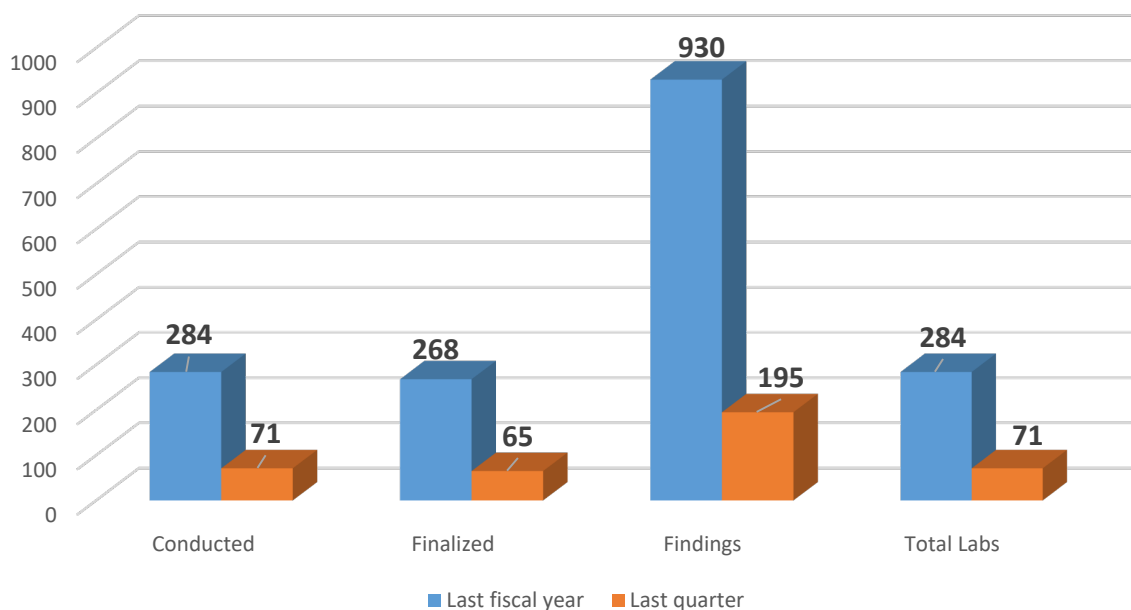
Top 4 Findings last 2 years



Top 4 findings last quarter



Total Lab inspections





Increased Productivity and Time Management

Quick note:

Using SciShield to manage the Medical Surveillance Enrollment for the Animal Contact groups has increased productivity by 75%.

Details:

Previous Process for MSP Enrollment for employees/students with Animal Contact: Employee/student instructed by supervisor/manager to complete MSP Enrollment paper form. The form contains medical information, requiring the form to be sent via Fax, Mail, or delivery to MSP office located within the Sullivan Center Medical Practice. The administrative support staff received the forms, created a medical record, and scanned forms into the medical record. The employee/student was placed on the medical schedule at CRH-Sullivan Center for review and documentation by the Registered Nurse (OHN). An email was sent to the employee/student indicating completion of enrollment or requesting additional information for completion. The Nurse also placed the date of confirmed enrollment on a shared Excel spreadsheet with IACUC management.

Barriers:

- Time consuming
- Potential for loss of paper forms
- Multiple employee contacts with form
- Forms required secured method of delivery to MSP office

This process is cumbersome and requires multiple steps for completion. Once the form was received, it took approx 25 minutes per form to complete.



Current Process: *Began 1/9/2023*

The Animal Contact form is located in the SciShield (formerly BioRAFT) system. The Manager/Supervisor places an indication in SciShield for Animal Contact, and the system sends a notification to the employee/student for form completion. SciShield notifies RNOHN of forms awaiting review.

As of **7/18/2023** we have completed



FORMS REVIEWED BY RNOHN AND MARKED AS:



ACCEPTED

At this point the SciShield system auto-sends a completed email to the employee/student.



PENDING FURTHER REVIEW

At this point the RNOHN sends an email within the SciShield system for the employee/student to call for further discussion.



DENIED

Used only after discussion with RNOHN and OHNP.

Once the RNOHN receives notification of forms awaiting review, the RNOHN accesses the form the same day (M-F) and takes an average of 8 minutes to review and mark the form accepted. The forms marked pending are typically few and take a short phone call to resolve.

The system sends an email confirmation to the employee/user. The IACUC team with administrative rights has the ability to view if individuals have confirmed enrollment. This deletes the need for documentation of dates on a shared Excel spreadsheet and multiple phone calls/email inquiries.