

2020

Environmental Health and Safety Annual Report

WORK SAFE. BE SAFE. STAY SAFE.



The Environmental Health and Safety Office reduces risk to the University and its community through our focus on stakeholder engagement, hazard management and regulatory compliance.

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MESSAGE FROM THE DIRECTOR

The Environmental Health and Safety Office is pleased to provide you with the 2020 Carleton University EHS Annual report.

Our team offers solution-based programs specializing in Industrial Hygiene, Laboratory Safety, Workplace Violence and Harassment Prevention, Ergonomics, Accident/Incident Prevention, Risk Assessment and Health and Safety training. We identify, evaluate and mitigate operational risk across the spectrum of our research, teaching and business activities, achieving best in class and innovation driven guidance in support of the Carleton mission.

Collaboration and partnership with stakeholders across the CU community are foundational as we continue to build a safe and productive environment for all to learn, study and work.

Never before has health and safety formed such an integral part of every decision that Carleton has undertaken during this pandemic year, and will continue to be of critical importance as we stride toward returning to more normal activities for our faculty, staff and students on our beautiful campus.

Some milestone moments from 2020 include:

- A record number of Service Excellence nominations for EHS Team and Individual efforts (7 nominations) in responding to COVID, and business needs.
- Introduction of virtual Home Office Ergonomic assessments— a first among Ontario's universities.
- Focus on COVID-19 communications. The only Ontario university to introduce bi-weekly COVID-19 update meetings to include union leadership with the JHSC committee. This avoided multiple MOL COVID-19 compliance inspections as

concerns were proactively addressed, avoiding reactive responses.

- Lowest NEER across all Ontario universities
- EHS gained a new team member, Ms. Zaneta Polis, with Public Health and IH experience

Even in our COVID-19 focused year, we continue to advance health and safety across the organization. I am pleased to highlight some of the performance based metrics we achieved, together, in 2020.

CU 2020 SAFETY METRICS:

- Over **100** Ergonomic Assessments, a **25%** increase from 2019
- **100%** of corrective actions linked with very high / high risk concerns resolved, and over 70% of medium risk resolved
- Just under **100** Good Catches reported—despite having extremely low numbers of staff on campus
- Over **2600** faculty/staff completed COVID-19 training

Last year, as we began navigating a pandemic response, I spoke of strength, resiliency and commitment to health and safety. These values, together with creativity, compassion, resolve and genuine caring epitomize our community response this past year. We carried out our mission, cared for each other, and have developed solutions that will keep us healthy, and safe this year and years ahead.

WORK SAFE. BE SAFE. STAY SAFE.



Nancy Delcellier, MBA, BSc, CRM, CRSP
Director
Environmental Health and Safety

Environmental Health & Safety Accomplishments

PUTTING OUR PLAN INTO ACTION: A RETROSPECTIVE

In 2016, EHS launched an inaugural four year action plan with the goal of enhancing safety culture and addressing risk in a systematic approach across the university. The end of 2020 successfully closed this four year cycle. We are already building on the successes and lessons learned as we move toward the next four year action plan to guide us out of the pandemic and into a new, safer normal.

Year 1 (2017)	Year 2 (2018)	Year 3 (2019)	Year 4 (2020)
Engineering controls – Enhance testing protocols	Implement CUWorkSAFE (Phase 1—IIGC)	WHMIS 2015 program and training updates	Implement CUWorkSAFE (Phase 2—Inspections)
Campus wide Noise Assessment	Developed strategy for occupation based training	Develop CUWorkSAFE (Phase 2—Inspections)	Campus workshop equipment audit
Install AEDs across campus	Hot Work and Smudging Procedures	Update of Health and Safety Management System	Engineering controls – Enhance testing protocols with personal monitoring
Develop CUWorkSAFE (Phase 1—IIGC)	Designated Substances Program update	Update Workplace Violence and Harassment Prevention training	—

Our stepwise efforts to systematize testing and validation of existing engineering controls and enhancing personal hygiene monitoring prevented exposures and supported incredible strides in our engineering and science research. CUWorkSAFE was introduced, updated, and paired with a third party review of Carleton University’s Health and Safety Management System, providing the ability to track and identify strong preventive metrics, including those related to COVID-19 compliance. Core training programs (WHMIS and Workplace Violence and Harassment Prevention) were updated in 2019, COVID-19 Infection Control training introduced in 2020, ensuring a smooth transition to our new Brightspace learning management system. The strategy to address occupation based training progressed significantly when we were able to automate processes to renew faculty and staff training, ensuring compliance with CSA standards on frequency of H&S training. Campus wide noise assessments combined with hot work procedures have laid the foundation for enhanced safety in workshops. This progression will continue with a campus wide workshop equipment review (postponed from 2020) to finalize a workshop safety program that will support research and operations, but also student experiential learning in FED, FASS and Science.

DID YOU KNOW?

In 2020 EHS completed:

150⁺ Life Safety Alarm (Cl₂, NH₃, CO, H₂S, O₂, etc.) tests and calibrations



105⁺ Ergonomic assessments

35⁺ Risk assessments and investigations (i.e., asbestos, mould, mercury, noise)

50⁺ Respiratory Fit Tests (Research and Covid-19)

325 Research resumption plans reviewed



450⁺ Virtual training completions as a result of COVID-19 restrictions



350 Faculty and staff Covid-19 contact tracing cases managed

20 Meetings with the JHSC and union leaders

COVID-19

[COVID-19 SYMPTOM REPORTING →](#)

On March 11, 2020 the World Health Organization declared COVID-19 a Global Pandemic. Carleton rapidly implemented strategic initiatives to safeguard staff and students from the newly emerging virus.

A focus on health and safety was evident through the early adoption of online teaching and remote working for all but essential employees.

The EHS team rose to the challenge with flexibility, innovation, dedication and compassion ensuring H&S remained at the forefront of Carleton's COVID-19 response. Detailed infection prevention protocols covering all aspects of university operations were implemented; training on infection control was developed; fit testing for essential workers was conducted; screening, symptom reporting and contact tracing protocols supplemented Public Health directives, and provided added safety to the Carleton Community. Return to research was then successfully facilitated by transitioning laboratory related training to a virtual format, and reviewing research proposals.

“Despite the difficult challenges in this area, Nancy and her team have been very efficient and professional.”

**-Rafik Goubran
(Vice-President Research and International)**

Ongoing inspections by Ottawa Public Health continue to find Carleton exceeding all COVID-19 requirements, affirming a safe environment for faculty, staff and students.

BY THE NUMBERS

1600⁺

Spaces fogged with disinfectant to reduce potential transmission

250

Student COVID-19 symptom cases cleared

325⁺

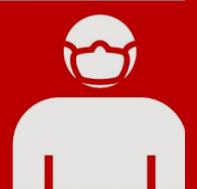
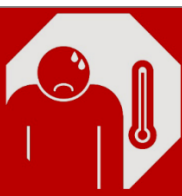
Research resumption plans approved

9

Recovered COVID-19 illnesses among faculty and staff

0

Workplace acquired infections



Coronavirus)

COVID-19 SCREENING REQUIREMENT →

KEY COVID INITIATIVES

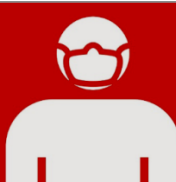
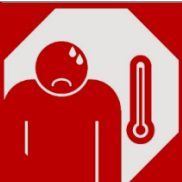
- Development of workplace specific infection prevention guidelines, including field work, laboratories, workshops, retail operations, construction, maintenance, and others; Ongoing revisions as regulations and public health recommendations changed
- Development of COVID-19 Infection Prevention and Control Training with over 2600 completions
- Introduction of home office virtual ergonomic assessments
- 20 opportunities for open discussions between EHS and JHSC members including union heads — the only Ontario University to include union leadership
- Transition of mandatory H&S training to remote learning
- Inspections/audits of COVID-19 compliance in occupied spaces
- 12 in-person pilot projects across 3 faculties were reviewed and assessed for Winter 2020
- Q&A sessions to essential on-campus departments (FMP, CSS, Housing, Library, Athletics, Science and FED) as well as to union executives (CUASA and CUPE4600)

INVESTING IN SAFETY

A number of strategic investments were made in prevention activities to ensure compliance and best practices with COVID-19 recommendations.

\$4M

Hand sanitizer, personal protective equipment, signage, barriers, WFH equipment, enhanced cleaning protocols





Advancing Raven Safety in 2020

With COVID-19 restrictions and limited access to campus, EHS pivoted at the start of 2020 and saw opportunities for enhanced service delivery.

One of the areas for improvement with minimal impact on day-to-day operations was identified as making a concerted effort to abate asbestos pipe insulation in mechanical rooms across campus. Historically, mechanical room pipe insulation has shown an increased risk for disturbance, damage and potential exposures due to maintenance activities.

There are currently more than 150,000 square metres, 25,000 pipe elbows and 10,000 linear metres of asbestos containing building materials in 25 buildings and tunnels on campus.

During a three-phase approach, we were able to glove bag and abate or repair over **2000 fittings and reinsulate over 1000 units of pipe runs or valves.**

SAFETY THROUGH PREVENTION

8

Buildings stripped of asbestos pipe insulation in mechanical rooms

1200⁺

Pipe elbows removed from high use mechanical rooms

590⁺

Linear metres of pipe insulation removed

195⁺

Fittings repaired when cost prohibitive to remove



With the migration to working from home for the majority of our staff in March of 2020, our Office Ergonomics Program continues to be in high demand. Our team completed **108** assessments in 2020 which was an increase of over **25%** from 2019 and is the highest annual number of request since EHS took over the program in 2014.

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72% (78) of the assessments were completed virtually with **76% (82)** of CU staff members reporting pain and symptoms prior to their initial review.

The trend for ergonomic assessment demand continues for 2021, with over 50 assessment requests in the first 10 weeks of the year. It is noted that similarly to years past, over 80% of the requests come from staff who are reporting pain while working at their desk: highlighting the need to be proactive and diligent with this service in order to keep our CU community safe.



PROTECTING STAFF AND STUDENTS THROUGH EXPOSURE PREVENTION

EHS conducted its annual performance testing of fume hoods, biological safety cabinets, and local exhaust systems (LEV) such as snorkels and downdraft tables across campus. The annual testing of these engineering controls is the primary mechanism to ensure user protection from possible exposures to chemical and biological agents.

45⁺ Biological Safety Cabinet performance tests completed

50⁺ Local exhaust performance tests completed

275

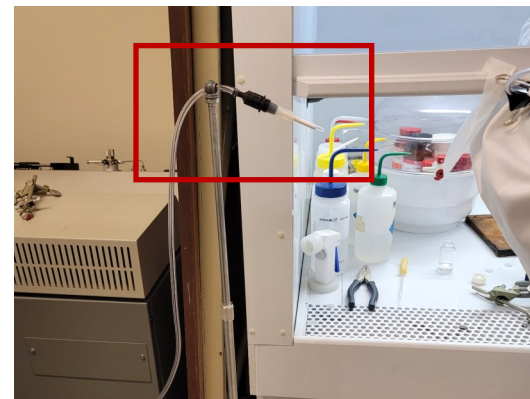
95⁺

Fume hood performance tests completed

Deficiencies addressed to bring fume hoods and local exhaust units up to optimal working order

Over the last four years we have completed 10 personal and area air sampling campaigns to confirm safe exposure levels for our staff and students, and confirm the effectiveness of our engineering performance testing protocols. With these goals in mind, this year we completed three air sampling surveys:

1. To support the commissioning performance tests for the downdraft tables on the 6th floor of the Health Sciences building, we measured exposure levels to formaldehyde for our vivarium as well as research staff and students. Based on the measurements collected, exposure to formaldehyde during perfusions does not pose a concern and was below the occupational exposure limits of 1 ppm (STEL) and 1.5 ppm (C).
2. Mouse and rat allergens are known occupational hazards for our staff in the vivarium and there was a desire to assess mouse allergen exposure potential through surface and air sampling. Within this sampling campaign, all personal air samples collected had airborne mouse allergen concentrations below the exposure limit of 5 ng/m³. Half of the surface samples were above the 0.5 ng/m² guideline threshold. As a result, the surface results in combination with the air sampling results support increased cleaning and future air sampling to gain better insight into the exposure profile of these workers.
3. Personal and area air sampling for diazomethane within a research lab in the chemistry department was started in the fall of 2020. This work will continue into 2021 to monitor exposure levels of diazomethane during key laboratory tasks, as well as the effectiveness of one of the few total exhaust hoods on campus.





Laboratory renewals progressed throughout 2020 requiring decommissioning of five laboratories within the Faculty of Science and one in the Faculty of Engineering. Hazards were secured, fume hoods and associated ducting were decontaminated and plumbing was tested for mercury. These crucial decommissioning activities ensure the safety of our construction partners during demolition and reduce liabilities.

Commissioning of newly installed downdraft tables within the necropsy suite of the vivarium in the Health Sciences building began in 2020. Verification tests were performed according to leading industry standards in order to ensure their effectiveness as critical engineering controls.



Also in HSB, autoclaves were commissioned and cycle validation performed as per the Canadian Biosafety Standards. Safety training was introduced to allow for safe and effective in-house treatment of biomedical waste generated in the labs, thereby eliminating our need for third-party waste disposal resulting in cost savings.

“EHS worked closely with us to ensure that our Covid-19 research could get underway efficiently and safely.”

**-Alex Wong
(Associate Professor, Biology)**

As we strive to become a leading University in research intensity, the number of projects involving biohazardous material has continued to climb. In just four years, the number of biohazard applications reviewed and approved has increased by nearly 50%!



As a result, an amendment to add new authorized locations and materials to Carleton’s institutional Pathogen and Toxin Licence was submitted and approved by the Public Health Agency of Canada.

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EHS has continued to prioritize experiential learning in laboratory settings. A combined lab and biosafety course was developed and delivered to third year Health Sciences students to ensure their safety when accessing research spaces to study practical laboratory techniques. The importance of experiential learning, even off campus, was the focus as the safety of home laboratory kits was discussed and assessed among EHS and numerous departments across the faculties.

DID YOU KNOW?

1. Over **6,000kg** of hazardous chemicals and biological waste were safely disposed.
2. **98%** of fall arrest equipment passed annual inspection.
3. **1000+** eShop notifications received for the purchase of laboratory related materials

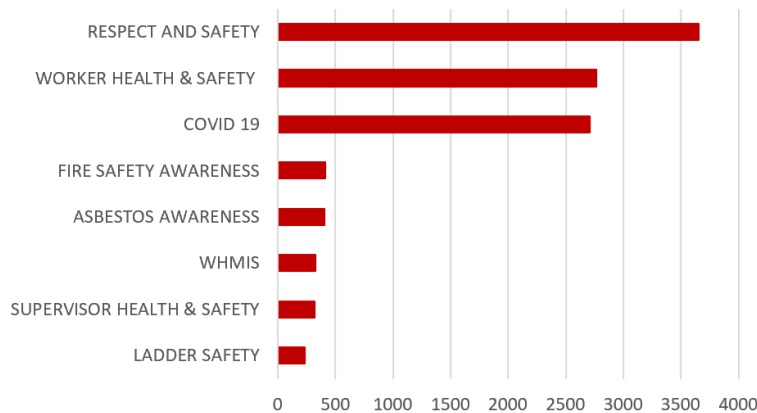
“Throughout a very challenging 2020, the EHS department continued to provide vital and timely support to our on-going work in Carleton’s Electronics and Engineering research labs.”

-Rob Vandusen
(Microfabrication Technical Officer)

TRAINING HIGHLIGHTS

Safety training is a key component to ensuring staff and students are aware, competent and able to work safely at Carleton University. The EHS team works diligently to provide training opportunities across a variety of platforms to meet the needs of our community. **In 2020 we offered the CU community 25 general and occupation specific training courses.** Given the nature of university staffing, there is a need to move from participant completion counts to completion percentage relative to those required to take the course. This will be a key training metric moving forward.

TRAINING COMPLETIONS THROUGH CuLearn



To address completion percentage, refresher training notifications were introduced in the spring of 2020 and initiating a three year training cycle for mandatory health and safety courses.

The number of high hazard and job specific training sessions such as electrical safety, and laboratory safety offered in 2020 increased from the previous year despite COVID-19 restrictions and the move to virtual learning or limited in class learning.

11,813

Course completions by staff and students in 2020

57%

CU staff with current Worker Health and Safety Training

43%

CU staff with current Respect and Safety Training

IN-CLASS AND VIRTUAL TRAINING	# of Participants
LABORATORY SAFETY	317
BIOSAFETY AWARENESS	180
WORKING AT HEIGHTS	68
FIRST AID CPR	65
TUNNEL CART TRAINING	56
COMPRESSED GAS SAFETY	45
HOME OFFICE ERGONOMICS	45
LOCKOUT TAGOUT SAFETY	31
LASER SAFETY	30
TRANSPORTATION OF DANGEROUS GOODS	30
ELECTRICAL SAFETY: TRADE SPECIFIC	29
AUTOCLAVE SAFETY	25
AERIAL WORK PLATFORM	19
WORKPLACE INSPECTION	18
CONFINED SPACES AWARENESS	15
RADIATION SAFETY	11
LEGIONELLA RISK MANAGEMENT	8
Total	992

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RESPONDING AND CULTIVATING SAFETY

Every year there is a need to respond, investigate and address safety concerns that are brought forward by our Carleton University community. These can be reactive in nature when responding to incidents or injuries on campus or they can be proactive and address deficiencies identified through Good Catches or planned inspections.

219

Incidents, Injuries and Good Catches (IIGC) in 2020

91

Good Catches generated on campus

35

Good Catches related to monitoring COVID-19 safety guidelines



Campus wide safety improvements initiated through corrective actions continue to increase. For the last three years since the implementation of CUWorkSAFE we have averaged over 180 corrective actions/year. In 2020 we were able to close out 33 more deficiencies compared to last year.

SUMMARY OF CORRECTIVE ACTIONS FOR 2020

Risk Category	# of Corrective Actions	# of Open Corrective Actions	# of Closed Corrective Actions	% of Corrective Actions Closed
Very High Risk	4	0	4	100
High Risk	7	0	7	100
Medium Risk	143	42	101	71
Low Risk	35	18	17	49
Total	189	60	129	NA



Health and Safety Excellence program

As of May 2020, we are officially a WSIB Excellence program participant along with 18 other Ontario Universities. Each university is required to submit documentation and evidence on health and safety focused topics to reduce injuries and institutional risk. A rebate of **1.4-2%** on rate premiums is awarded for every topic the University completes with successful validation from the WSIB. Carleton University has chosen the following risk topics to address:



1. Controlling hazards associated with the COVID-19 pandemic
2. Controlling hazards associated with our groundskeeping crew (young workers)
3. Workplace Health Promotion —Mental Health while working from home

Throughout the year we collaborated with internal stakeholders as well as other universities and the WSIB Excellence Program consultants. We are excited about the work that has already been completed for these programs and are currently in the preparation stages to submit our submissions for October, 2021.



WSIB AND REGULATORY COMPLIANCE METRICS

In 2020, there were no critical injuries on campus. Historically, our critical injuries were dominated by slip, trip and fall injuries as a result of environmental conditions (weather and walkway conditions). With limited number of staff, students and visitors on campus as a result of COVID-19 restrictions, we saw a decline in serious injuries. Our WSIB statistics continue to be in excellent standing as it relates to lost time injuries and days lost due to injury. In addition, **Carleton University continues to be in a WSIB premium rebate position and we currently have the best NEER Performance Index Score among all Ontario Universities.**

	2017	2018	2019	2020	5 YR AVG	Change
# of Critical Injuries	4	7	4	0	4	 
# of Lost Time Injuries	8	5	9	3	6	
Days Lost to Injury Claims	42	8	17	8	25	
Average # of Lost Days/Claim	5.25	1.6	1.8	2.6	3.6	
# of Good Catches Reported	160	161	105	91	121	

Carleton University continues work hard to meet our regulatory requirements. A summary can be found below:

Ministry of Labour (MOL) - Notifications /Enforcement	Ministry of Environment (MOE) - Enforcement
No notifications or Inspections	2 Inspections: hazardous waste and PCB Full Compliance
Canadian Food Inspection Agency (CFIA)	Public Health Agency of Canada (PHAC)
No Inspections	No Inspections
Canadian Nuclear Safety Commission (CNSC)	Public Works and Government Services Canada (PWGSC)
No Inspections	No Inspections
Ottawa Fire Services	Transport Canada
2 Inspection Orders All orders resolved, full compliance	1 Inspection: Ground TDG and IATA Full Compliance

Strategic Priorities: 2021 and Beyond

2021 UPDATE

For 2021, a significant focus will be on supporting a safe and effective return to campus for a greater number of our faculty, staff and students. As numbers on campus increase, and until the national vaccine strategy is fully implemented, the need for continued vigilance and support remains critical to keeping everyone safe, and the university open, and able to accomplish our mission.

Safe Return to Campus

Develop and implement creative solutions to support the needs of individuals, departments and faculties in a safe return to campus

CUWorkSAFE

Transition CUWorkSAFE to a new, more agile and user friendly platform to assist supervisors and managers to evaluate and correct hazards, and to generate enhanced metrics for leadership

WSIB Excellence

Achieve validation of our selected health and Safety topics through demonstration of development, implementation and review

The integration of our 2021 initiatives into our existing programs will position us to successfully carry out the strategic priorities for the following three years.

STRATEGIC PRIORITIES FOR 2021—2024

Year 1 (2021)	Year 2 (2022)	Year 3 (2023)	Year 4 (2024)
Safe Campus Return	Implement Workshop Safety Program	Implement lab and shop Inspection Program	Cyclical review of selected programs
Develop Workshop Safety Program	Develop lab and shop inspection program	Review and update of Ergonomics program	
CUWorkSAFE—new user platform	Chemical inventory reconciliation (4 year cycle)	Full implementation of H&S training to job descriptions	
Health and Safety Excellence (Year 1)	Health and Safety Excellence (Year 2)	Health and Safety Excellence (Year 3)	Health and Safety Excellence (Year 4)

COMMUNITY ENGAGEMENT

To promote and encourage safety culture within Carleton University and beyond, the EHS team members continue to either lead or participate in the following committees and organizations.

INTERNAL	EXTERNAL
Joint Health and Safety Committee	Council of Environmental Health and Safety Officers
Return to Campus Committee	Ontario University Biological Safety Officers
Academic Continuity Committee	Advisory Board of the Public Services Health and Safety Association
Operations Committee	AIHA Control Banding Committee
Animal Care Committee	AIHA Ergonomics Committee
Biohazards Committee	
Radiation Safety Committee	
Emergency Management Advisory Committee	
Working Group for Workplace V&H Prevention	

2020 saw the end of Nancy Delcellier's two year term as the Chair of CEHSO while Tina Preseau has just begun her term as Chair of OUBSO .



Building on the success of existing experiential learning activities, EHS will continue to support the following:

- FED Capstone projects – review of safety plans for projects.
- Review of Lab exercises for undergraduate laboratories
- Placement for Health Sciences student annually
- Carleton co-op student placements
- Completion of respiratory fit testing for student work placements
- Summer students as part of the EHS team

EHS Team

Our team supports the prevention of incidents and injuries on campus through a number of solution based programs. Our highly skilled team works collaboratively with faculty and staff to enable and support research and student activities.

Nancy Delcellier MBA, BSc, CRM, CRSP
Director

David Hunt MScA, CIH
Manager— Environmental Health and Safety

Tina Preseau MSc
Manager— Laboratory and Academic Safety

Tim Golding BScEE, CRSP
EHS Officer

Zaneta Polis HBSc, MPH
EHS Officer

Norm Barton
Radiation Safety Officer

We value and incorporate student experiential learning into our office. In 2020 we hired a remote co-op placement student and continue to support the Health Sciences Capstone Course with a field placement during the fall and winter semesters. All students from previous years have gone on to further graduate studies and/or successful professional careers.



Environmental Health and Safety Office

For more information about our services, please visit [Carleton.ca/ehs](https://www.carleton.ca/ehs)

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