

2018

Environmental Health and Safety Annual Report

WORK SAFE. BE SAFE. STAY SAFE.



Carleton
UNIVERSITY



The Environmental Health and Safety Office mission is to promote a safe and environmentally conscious campus by providing expert guidance and effective leadership in support of Carleton University's strategic goals.

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MESSAGE FROM THE DIRECTOR

The 2018 Annual Report highlights the effectiveness of Carleton's efforts in managing the operational risks of a research and educational intensive university. It illustrates our commitment to the protection of the health, safety and wellbeing of all members of the University Community and the creation of a safe environment for all to learn, study and grow.

By partnering with the faculties, departments and services across campus we continuously improve service to the community.

This report describes some of the many highlights from 2018.

Leading the way

With CUWorksafe, we are the 1st Canadian University to implement a fully integrated EHS management software solution. It was featured in industry publications as an innovative means to decrease risk through prevention. Other universities are seeking to emulate our success. Our goal was 50% of incidents, injuries and good catches directed through the portal. **We achieved 95%!**

Collaboration

Multi stakeholder review successfully restructured the Animals on Campus Policy to reflect strategic initiatives such as the Carleton Therapy Dog program.

Innovation

We are raising the bar from simply ensuring engineering controls meet

design flow rates to ensuring they fully protect staff and students working with hazardous materials. An initiative that also provides experiential learning for Health Science students.

Excellence

In the fall, technical expertise was critical in supporting Ottawa Fire Hazmat during a Benzene spill and limiting the impact to a single evening of lost classes. Prior safety training ensured proper actions were taken, avoiding exposures.

Managing Risk

The regulatory changes to WHMIS legislation would have introduced significant costs to the university in order to ensure compliance. As a result, substantive discussions with the province resulted in the Regulation being amended. **Cost Avoidance for Carleton is estimated at \$3.7M.**

Ultimately, the state of health and safety at Carleton is a campus wide success story, supported by Senior Leadership, with engagement across all levels of the organization. It is a tribute to our Carleton culture.

WORK SAFE. BE SAFE. STAY SAFE.



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



Environmental Health & Safety Accomplishments

PUTTING OUR PLAN INTO ACTION

In an effort to continuously improve health and safety at Carleton University, a multi year action plan to further enhance safety culture was developed. This action plan required consideration from a variety of sources including an audit of Carleton’s Environmental Health and Safety Management System, new Leadership within FMP, a review of previous incidents, contributions by key stakeholders, as well as regulatory imperatives. In turn, this will drive the development of key programs and continue to entrench the safety culture at Carleton University.

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	—

DID YOU KNOW?

In 2018 EHS completed:

160⁺ Laboratory Inspections

100⁺ Ergonomic Assessments

200⁺ Fume hood and local exhaust ventilation verification tests



35⁺ Biohazards applications approved and renewed

25⁺ Biological Safety Cabinet verification tests



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

165⁺ Special event applications reviewed

55⁺ Environmental assessments (asbestos, mould, IAQ, noise etc.)

25⁺ Smudging ceremony locations evaluated and approved for use

Research and Operational Safety

As Carleton endeavors to become a leader in research excellence, the expansion of laboratory safety programs is critical to ensure protection of faculty, staff and students. By meeting the increased demands, the EHS office supports the community in conducting safe and compliant research.

500⁺

Knowledge sharing opportunities related to safe laboratory and workshop practices

We continue to provide expertise through all phases of laboratory space improvements: project design, decommissioning, renovation and construction.

Laboratory decommissioning activities include removal of all hazards from the space, decontamination of all surfaces and testing of drains and exhaust ducting for hidden hazards. Working with the faculties, 6 laboratories were confirmed safe to allow construction crews to begin demolition for the renewal of dated laboratories to then meet the needs of the researchers .

Interdisciplinary research is on the rise! For example, one project in MAE involves mechanical forces, electrical and chemical hazards, x-rays, lasers, and biohazards. The risk associated with this type of research is unique and requires careful assessment. Our approach to risk assessment is one of close collaboration with the researcher and laboratory personnel with an objective to stay safe and to achieve success.

EMERGENCY RESPONSE AND FOLLOW UP

Keeping the CU community safe is critical in a hazmat situation. With their knowledge and expertise, the EHS Team members were integral in the successful response, investigation and follow up of 3 such events in 2018.

A graduate student was exposed to hydrofluoric acid during a routine lab procedure. With the objective to prevent a recurrence of

DID YOU KNOW?

1. There are 600+ wet labs and workshops across campus
2. 2,700 chemicals were added to the inventory in 2018. There is a total of 25K+ chemicals housed at CU
3. 11,000+ kg of hazardous chemicals and biological waste safely disposed
4. CU partnered with ChemWatch, giving the Carleton community access to over 35 million Safety Data Sheets

\$8k

Invested into emergency response materials and distributed to high risk areas across campus.

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such a serious incident, timely corrective actions included revisions to the laboratory HF handling and emergency response SOPs.

A toxic benzene spill in ME required response by Ottawa Fire Services (OFS) Hazmat with the support of the EHS team and their expertise. Subsequent to spill clean up and departure of OFS, building ventilation was increased to purge the building of lingering benzene vapours. To ensure entry into the laboratory space only once levels had dropped to acceptable levels, we continuously monitored ambient benzene concentrations using specialized equipment.

Improper storage of an aqueous waste solution containing highly toxic sodium azide resulted in a spill. A frozen glass bottle in an outdoor waste storage bunker, cracked and spilled its contents. Access to the area was restricted while the situation was assessed. Cleanup by an external company with proper equipment to safely handle the spill was coordinated by EHS.

Overall, incident findings highlighted the need for stronger laboratory specific procedures. As a result, follow up actions included the development of standard operating procedures for hydrofluoric acid and benzene use that laboratories can customize for their specific needs. Procedures are available on the EHS website.

CONTINUED RISK MITIGATION ON CAMPUS

We continue to improve processes to validate the effectiveness of engineering controls on campus (our primary safety control).

In 2018, personal air monitoring campaigns were completed in welding workshops to validate the effectiveness of local snorkels on worker manganese exposure. The exposure limit for manganese was recently reduced to 0.02 mg/m³. This created a concern for possible elevated worker exposure levels when MIG welding. Personal airborne concentration levels confirmed current engineering controls in place were acceptable and safeguarded staff and students.

This is a shift to more focused task and equipment specific testing of engineering controls whereby worker exposure is no longer inferred but measured. A process to be expanded in the future.

Office Ergonomics continues to be a high demand program for our team with **100+** assessments completed in 2018. Over 90% of the requests come from staff who report pain while working at their desk. More than 40 of those staff members used their paramedical benefits to help address their symptoms.

30

Number of staff no longer using paramedical services after an ergonomic intervention this year (estimated)



Fire and Life Safety

Annual building evacuation drills are a requirement under the Ontario Fire Code. This provides an excellent opportunity for staff and students to refresh their knowledge of the evacuation process, meet the volunteer Fire Safety Wardens and reconfirm their Safe Destination Sites. All buildings completed an evacuation drill in 2018. The target for a successful evacuation is substantial building evacuation by **8 minutes**. All buildings met this target.

5.0

Average time in minutes to evacuate academic and administrative buildings

5.5

Average time in minutes to evacuate residence buildings

2018 ACCOMPLISHMENTS

165+

Hot work permits evaluated

5

Successful applications made to the City of Ottawa SEAT Committee for Special Events

10+

Fire Safety Plans revised, updated and submitted to OFS

5+

Safe Destination Sites revised in response to active construction projects

4

Buildings with updated fire evacuation and fire system signage

DID YOU KNOW?

1. The EHS team works closely with Ottawa Fire Services. Fire Response and HAZMAT teams are frequent invited guests to tour higher risk buildings, so they are familiar with the buildings and activities. OFS considers this valuable training and collaboration. 6 walkthroughs were completed in 2018.
2. Over 2000 fire extinguishers are inspected monthly on campus.
3. There are over 475k ft² of active fire suppression on campus.

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TRAINING HIGHLIGHTS

Safety training is a key component to ensuring staff and students are aware 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. We focus on information transfer through online training courses, in-class sessions, and passive knowledge transfer (i.e., website, Top 5 @ CU etc.). Currently, we offer the CU community **20+** general and occupation specific training courses. We have created and implemented 12 courses in the last 5 years and have identified gaps where an additional 15+ courses are required. We are working with stakeholders to address this community need.

Due to the number of required attendees, the online training platform is a necessity. Since the EHS team rolled out online courses in 2014, this method has allowed for over **33,000 course completions** by staff and students. Some 2018 training metrics are noted below:

6,000⁺

Completed online training sessions by staff and students

2,000⁺

Undergraduates completed online WHMIS training

In-class Sessions

Training Course	# of Participants
Bio-Safety Awareness	81
Workplace Health and Safety Inspections	16
Emergency First Aid and CPR	55
Laboratory Safety	173
Laser Safety Training	23
Radiation Safety Training	8
Transportation of Dangerous Goods	14
Young Worker Orientation	67
Total	437

The EHS team prioritizes and provides in-class training for higher risk operations and environments. In 2018, EHS provided **110+** hours of face to face formal training.

COMMUNITY OUTREACH

57k⁺

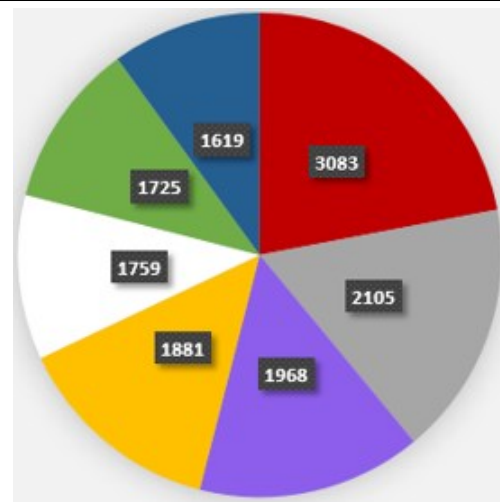
EHS website page views

3k⁺

Page views on how to set up your office workstation

5⁺

Average time (minutes) spent on webpage showing how to set up your office workstation



- How to Set Up Your Workstation
- Designated Substances
- Health and Safety Boards
- Workplace Violence and Harassment
- Fire Safety for Students
- Training
- CU WorkSafe

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In 2018 the Carleton community was introduced to Phase I of **CUWorkSafe**. *The first EHS software solution to be implemented by a Canadian University that will be a fully integrated, enterprise EHS management solution.* Enabling our team to collect comprehensive information on incidents, injuries and inspections while seamlessly generating corrective actions and safety metrics to drive a culture of safety and operational excellence within our institution.

The implementation of Phase I of **CUWorkSafe** focused on the reporting of **incidents, injuries and good catches (IIGC)** on campus through one contact point for all staff and students. No longer are workers required to fill out multiple and duplicate forms to meet internal and external reporting requirements.

KEY INDICATORS FOR 2018

530

Incidents, Injuries and Good Catches (IIGC) in 2018

160⁺

Good Catches reported by the CU community in 2018

95%

Of all IIGC's were initiated through **CUWorkSafe**

155⁺

Corrective Actions generated

78%

Of all IIGC's investigations by supervisors or EHS have been closed

70%

Corrective Actions generated have been completed and closed

Good Catches are the university's primary way to report hazards and prevent future injuries. The table below highlights the top 3 categories of Good Catches reported by our safety engaged CU community, indicating the number of possible incidents that were prevented in 2018.

Good Catch by Accident Type	Examples	Count
Possible Harmful Substance Exposure	Fume hoods not working, possible exposures to mould, diesel, asphalt, welding fumes, natural gas, sulfur, and no life safety alarms	50
Possible Fire or Injury	Blocked egress by material/equipment, missing fire extinguishers, inappropriate storage of highly combustible materials	40
Possible Slip, Trip, or Fall	Icy conditions, raised interlocking bricks, pot holes, damaged staircases, removed manhole covers	27





CRITICAL INJURIES AND REGULATORY COMPLIANCE

In 2018, there were 7 critical injuries on campus. Five were related to slip and falls as a result of environmental conditions, one was related to a contractor's use of equipment and the last was an electrical shock to a Carleton staff member from a light brought in by a third party. Our statistics for the number of lost time injuries and days lost due to injury is improving and we are in a WSIB premium rebate position as we move to the new WSIB premium framework in 2020.

	2015	2016	2017	2018	Change
# of Critical Injuries	2	3	4	7	
Days Lost to Injury Claims	102	48	42	8	
# of Lost Time Injuries	9	7	8	5	
Average # of Lost Days/Injury Claim	11.3	6.9	5.25	1.6	
# of Good Catches Reported	37	89	160	161	

4

Number of site visits completed by the MOL in 2018

3 orders were issued by the MOL on two separate occasions. All issues were fully addressed with no impact to staff safety or university operations.

Ministry of Labour (MOL) - Enforcement	Ministry of Labour (MOL) - Notifications
<ul style="list-style-type: none"> • 4 inspections • 3 orders issued, all complied with 	<ul style="list-style-type: none"> • 7 notifications for Critical Injuries <ul style="list-style-type: none"> • 2 contractor caused, addressed • 5 weather/ personal caused • No orders, No legal pursuits
Ministry of Environment (MOE) – Enforcement	Canadian Nuclear Safety Commission (CNSC)
<ul style="list-style-type: none"> • No inspections • Follow-up from previous abatement plan continues 	<ul style="list-style-type: none"> • No inspections • Full compliance • License renewed for another 5 years
Canadian Food Inspection Agency (CFIA)	Public Health Agency of Canada (PHAC)
<ul style="list-style-type: none"> • Full compliance • 4 labs certified 	<ul style="list-style-type: none"> • Full compliance
Public Works and Government Services Canada (PWGSC)	
<ul style="list-style-type: none"> • Full compliance 	



Legislative Changes

With over 100 separate legislative requirements in Health and Safety, Environmental, and regulatory compliance, Carleton's EHS team must continuously monitor change and respond accordingly.

WHMIS 2015

Workplace Hazardous Materials Information System (2015) Federal legislation started to come into play in mid-2016, adopting new international standards for hazardous workplace chemicals. These federally legislated changes focus on labelling, Safety Data Sheets and Training. In 2018, the provincial strategy and legislative wording was released for consultation, at which time the Ontario Universities' Health and Safety Directors (CEHSO) identified a critical financial risk to universities, should the legislation successfully pass as written. Across the Ontario University Sector, the cost of compliance was estimated at \$114M.

The cost avoidance for Carleton University is estimated at \$3.7M.

Following significant discussion and negotiation with the Ministry of Labour and Cabinet Office, the Ontario Government introduced Bill 66 on April 2nd, 2019, which amends the Regulation, and permits a cost effective alternative labelling solution, which provides the same level of safety, and avoids the prohibitive costs. EHS will oversee and implement the labelling solution during summer 2019, while offering experiential learning opportunities to a number of Faculty of Science students who will be trained in the solution.



Cannabis Legalization

The Federal *Cannabis Act*, and the Provincial *Cannabis Control Act*, came into force in October 2018, legalizing the consumption of cannabis and introducing associated risk to the university. Mitigation strategies, involving student leaders and representatives from university stakeholders focused on policy development and governance (fit for duty and safety sensitive positions), decreasing risks for residence operations, intersectionality with the Occupational Health and Safety Act, training and education program development, and supporting initiatives including accommodation needs and enforcement.

The following were updated to ensure compliance and address risk: The Alcohol and Cannabis Use Policy addressed cannabis use at events. There is to be no cannabis use. Smoking on Campus (Tobacco and Cannabis Consumption on Campus) Policy confirms that cannabis is not to be consumed on Carleton property. The Student Rights and Responsibilities Policy was amended to address possession, use and distribution of cannabis; and the Environmental Health and Safety Policy was amended to address impairment in the workplace. Very few incidents occurred followed legalization.

Monetary offenses under the Occupational Health and Safety Act

Bill 177 raised the fines that individuals and corporations could face if convicted of an offense under the Act. For an individual, the fine has quadrupled from **\$25,000 to up to \$100,000** per offense. Jail sentences for individuals remain unchanged at a maximum of 12 months. The maximum fine for corporations has increased threefold from **\$500,000 to \$1.5 million**. The limitation time for laying charges under the Act has now been extended from one year from the date of the offense to one year from the date that an inspector becomes aware of the alleged contravention. Some additional changes were introduced which increase reporting requirements.

Strategic Priorities for 2019

2019 UPDATE

For 2019 and into 2020, we will continue to make progress on our 4 year plan and enhance the safety culture at Carleton University. Some of the key areas of focus for 2019/2020 include CUWorkSafe, WHMIS 2015, and occupation specific training.

CUWorkSafe

Refinement of the CUWorkSafe Inspection module. Thus providing Carleton University with a comprehensive tool to assist supervisors and managers to evaluate and correct hazards.

WHMIS 2015

Carleton's chemical inventory will be resurveyed for accuracy, relabelling all chemicals in accordance with the new WHMIS 2015 Regulation. Updating the training to account for WHMIS 2015 changes.

Employee Training

Establishing the systems necessary to embed risk based health and safety training within each employee's file will firmly establish Carleton as a health and safety innovator.

It is also noted that lessons learned from the January 2019 Steacie building fire will continue to be incorporated into action plans to address infrastructure needs, training gaps and enhanced laboratory operational effectiveness. These lessons learned are being shared across the university sector.

COMMUNITY ENGAGEMENT

To promote and encourage a safety culture within CU and beyond, the EHS team members either lead or are involved with the following committees and organizations:

INTERNAL

Joint Health and Safety Committee

Radiation Safety Committee

Animal Care Committee

Biohazards Committee

Emergency Management Advisory Committee and
Emergency Management Team

Working Group for Workplace Violence and
Harassment Prevention

EXTERNAL

Council of Environmental Health and Safety Officers

Ontario University Biological Safety Officers

AIHA Ergonomics Committee

AIHA Control Banding Committee

CSSE Journal Sub-Committee



Student Impact and Experiential Learning

Building on the success of existing experiential learning activities, discussions will continue to seek out additional opportunities for student engagement and knowledge transfer. This will continue to include the following:

- FED Capstone projects – review of safety plans for projects. Introduction to real world requirements
- Review of Lab exercises for Faculty of Science undergraduate laboratories
- Placement for Health Sciences student annually
- 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, CRSP
Director

David Hunt MScA, CIH
Manager— Operations Safety

Tina Preseau MSc
Manager— Laboratory and Academic Safety

Tim Golding BScEE, CRSP
Fire Prevention and Safety Officer

Norm Barton
Radiation Safety Officer

We value and incorporate student experiential learning into our office. In 2018 we hired four students and continue to support the Health Sciences Capstone Course with a field placement during the fall and winter semesters. All students from our previous years have gone on to further graduate studies and successful professional careers.

Environmental Health and Safety Office

For more information about our services, please visit Carleton.ca/ehs

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