

ENVIRONMENTAL HEALTH AND SAFETY
FIFTH ANNUAL REPORT
2002



DALHOUSIE
University

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1 INTRODUCTION

1.1 Environmental Health and Safety Office

The Dalhousie Safety Office operates to:

- Offer advice to the University's Senior Management on ways in which the University can strengthen its efforts to provide a healthy and safe environment in support of the entire range of University activities.
- Support the activities of the Dalhousie Environmental Health and Safety Committee.
- Support the Deans, Directors and Chairs of Departments as they discharge their responsibilities for health and safety within their units.
- Liaise with regulatory agencies and other organizations to keep the University informed of developments which could impact Dalhousie's Environmental Health and Safety Program.
- Ensure that inspections, testing and training are carried out as needed to ensure that the University is operating in accord with legislation.
- In accord with regulations, coordinate the disposal of hazardous waste created by teaching and research programs and by the University's operations.

The Safety Office operates with a staff of three:

Director	-	Dr. William J. Louch
Radiation Safety Officer	-	Ms. Pauline Jones
Administrative Secretary	-	Ms. Jan Taylor McIntyre

2 HIGHLIGHTS OF 2002

2.1 Opening of Fountain House and the Killam Learning Commons

The fall of 2002 saw the opening of two important additions to the campus landscape. Fountain House - a 201-bed addition to Howe Hall, and the Killam Learning Commons - a state-of-the-art student computerized study/work area on ground floor of the Killam Library. Both required extensive construction and renovation efforts involving both Dalhousie's trade staff and external contractors. Both projects were completed without significant health or safety problems. Similarly, the first stages of an extensive refit to the Student Union Building were completed during 2002. This work presented a number of safety challenges as construction work had to be carried-out while staff and students continued to use nearby areas of the building. At times, it has been challenging to have both types of activities proceed safely.

2.2 Continuing Response to September 11, 2001

Late in 2001, the Deans of Science, Engineering, Dentistry, Medicine and Health Professions, asked the Safety Office and Security Services to review the security of our use and storage of dangerous materials. During the early months of the year, the Chief of Security Services and Director of Environmental Health and Safety, aided by senior members from each Faculty, toured the research and teaching areas where appreciable quantities of dangerous materials were present. Following the survey, a report was prepared which offered suggestions on steps which might be taken to improve chemical security both during "business" hours and after-hours on evenings and during weekends.

The audit showed that only minor difficulties existed in the Faculty of Dentistry and Health Professions. Most of these were addressed during the year. More significant challenges faced Engineering, Medicine and Science.

Initially focussing on after-hours security, a series of specific recommendations regarding facility upgrades, was forwarded to the Deans of Engineering and Medicine. In each case, the cost to implement the recommendations is expected to be in the order of \$25,000. Both Deans responded positively to the recommendations and applications have been made for funding through the 2003 Alterations and Renovations process.

A theft of keys to sections of the Life Sciences Centre, occurred late in 2002. The need to respond to the security problems posed by the loss of these keys, presented an opportunity to address the after-hours chemical security issues in the Life Sciences Centre and Chemistry Buildings. By the end of 2002, a perimeter security system was installed that has dramatically improved after-hours chemical security in the LSC. We anticipate that similar changes will be made in early 2003, to secure the research and chemical storage areas in the Chemistry Building.

2.3 Renewal of the University Radioisotope Licence

For many years, the University's use of radioisotopes has been subject to the terms set out in licences issued first by the Atomic Energy Control Board, and more recently, by the newly created Canadian Nuclear Safety Commission (CNSC). Historically, these licences have been issued for two year periods.

By chance, Dalhousie was the first Canadian University to come up for a licence renewal under the new Act administered by CNSC. Not only did the renewal process go smoothly, but the University was granted a five-year licence. We take this as an indication of the degree of confidence that the Commission has in the Dalhousie Radiation Safety Program.

2.4 Re-Launch of the University's Scent Program

Spurred by the growing number of people on campus who are unfamiliar with Nova Scotia's experience with indoor air quality problems, the Environmental Health and Safety and Employment Equity Offices cooperated to re-launch the University's Scent Program. A pilot effort undertaken in Spring 2002 indicated a need for much more support and information than had generally been available. The re-launch utilized an updated suite of visual materials, an extensive website and a series of e-mails from the President to all staff and students.

The University Community responded very positively to the effort. Many responses to the campaign indicated support for the scent-free initiative and wishes to see similar efforts directed toward smoking and situations where engine exhaust occasionally contaminates building air supply systems.

2.5 Demolition of Hancock Hall

With the completion of a new building on the old site of the Sociology and Social Anthropology House, and renovations made to the Henry Hicks Arts and Administration Building, the remaining occupants in Hancock Hall were able to move out early in 2002. During the summer, the building was then demolished. Despite the presence of large amounts of asbestos, the demolition went smoothly and without incident. Having never been designed for long-term use, Hancock Hall had begun to deteriorate badly. From a safety perspective, we were happy to see it demolished before serious health or safety problems arose.

2.6 Safe Communities Initiative

The Safe Communities Foundation of Canada is a national organization that recognizes community efforts to improve safety. About 30 Canadian communities have been accredited as Safe Communities by the Foundation. Early in 2002, HRM announced its intention to pursue accreditation. In response to an invitation from the Organizing Committee, W. Louch represented Dalhousie on the Safe Communities Leadership Group. The group conducted a series of studies aimed at identifying areas where safety performance could be improved in the Municipality. Based upon the results of these studies, a work plan was developed which will bring together groups that share a goal for improving safety in the HRM. The work plan will be submitted to the Foundation early in 2003. The leadership group is hopeful that this will result in the formal designation that will allow Halifax to join a growing number of similarly minded communities in Canada, and around the world.

3 PROGRAM ADMINISTRATION

3.1 Environmental Health and Safety Committee

Throughout 2002, the Dalhousie Environmental Health and Safety Committee continued to operate as a forum for discussion of health and safety policy and procedural matters. The Committee responds to the requirements of Nova Scotia's Occupational Health and Safety Act.

Committee membership for the year is shown below:

<u>Chair Person</u>	2001 - 2002	D. Sommerfeld	Employee Group Appointee
	2002 - 2003	K. Wheadon-Hore	University Appointee

2002-2003 ENVIRONMENTAL HEALTH & SAFETY COMMITTEE MEMBERSHIP			
<u>Employee and Student Group Appointees</u>			
C. McGrath	Senate Representative	DSU	
M. Somers	Public Relations		DUAG
D. Clarke	Facilities Management	IUOE	
F. Fyfe/D. Silvert	Physics/Chemistry	DFA	
J. Dorey	Custodial Services	IUOE	
M. Silver	Biology	CUPE	
S. Fry	Biology	NSGEU	
<u>University Appointees</u>			
D. Boutilier	Facilities Management		
C. Delodder	Financial Services		
C. MacLean	Faculty of Dentistry		
J. Hines	Housing & Conference Services		
K. Wheadon-Hore	Athletics & Recreational Services		
R. Murray	Canadian Institute of Fisheries Technology		
C. Stuttard	Faculty of Medicine		
<u>Ex-officio Members</u>			
William J. Louch	Director		
Jan Taylor McIntyre	Recording Secretary		

In addition to some of the more routine matters listed below, the Committee followed up on the extensive discussions of 2001 regarding the placement of a cell phone site on the Life Sciences Centre. The Committee reviewed results of several microwave radiation tests and concluded that the site complied with the University's request that levels in occupied spaces, be less than 1/100 of the federal standards. The Committee communicated these results to interested individuals across campus.

The Committee also engaged in an important dialogue with Student Services regarding the smoking policy in Dalhousie's traditional residences. Although much progress had been made over the years in limiting exposure to second-hand tobacco smoke, smoking continued to be permitted in some residence rooms. The Committee was very pleased when Vice-President

McKee announced that, effective September 2003, smoking would no longer be permitted in any of the traditional residences. The Committee believes that this announcement marks an important step forward.

Among the more routine matters handled by the Committee during the year, were reviews of:

- Environmental Health and Safety Committee Terms of Reference
- The Environmental Health and Safety Policy
(as required by Section 27 of the NS Occupational Health and Safety Act)
- The Environmental Health and Safety Program
(as required by Section 28 of the NS Occupational Health and Safety Act)
- Monthly and annual accident experience
- Results of environmental monitoring results
- Health and Safety promotional efforts
- Recognized the fire and public safety effort of the Dalhousie Arts Centre with the 2002-2003 Environmental Health and Safety Awards.

Through the Safety Office, the Committee communicated regularly with the University Administration and with many local safety committees which operate across campus.

3.2 Local Safety Committees

In response to the University Policy which encourages Deans, Directors and Departmental Chairs to engage staff and faculty in safety matters, approximately 18 local safety committees operate on a faculty, departmental, building or functional level.

To the extent possible, the Director attends meetings of these committees.

3.3 Communications

The Safety Office continued to publish its quarterly newsletter "Safety Net". The newsletter is widely circulated on campus and is sent out to over 100 external institutions and agencies.

During 2002, the Safety Office continued to expand its web site: www.dal.ca/safety. The site has become the Environmental Health and Safety Committee's and the Safety Office's most important means of communicating with the University and the wider community. To keep pace with rapidly evolving internet standards, the Safety Office re-designed the entire site to more closely align it with the web standard that the University has recently adopted.

4 SAFETY AND ACCIDENT PREVENTION

4.1 Accident Reporting

For over a decade, Dalhousie has required staff and faculty to report work-related accidents and injuries. Such reporting programs are important components of the University's safety program in that they provide a means to:

- document the incident,
- ensure that the accident victim receives appropriate care, and
- initiate a review which aims to prevent reoccurrences of similar accidents.

When an accident occurs, the person involved is required to report the accident to their supervisor. In turn, the supervisor, directs the individual to complete the section on the Accident/Incident form which describes the sequence of events that led to the accident and the nature of the injuries. The supervisor then completes the section of the form describing the steps which the supervisor believes are necessary to prevent similar accidents. Copies of the report are provided to:

- the individual involved in the accident,
- the local safety committee (acting on behalf of the Dean, Director or Chair),
- the supervisor, and
- the Director of Environmental Health and Safety.

Where the accident is serious, the Director of Environmental Health and Safety, in cooperation with the Dalhousie Environmental Health and Safety Committee, carries out a formal accident investigation.

In addition to investigating serious accidents, the Director, again in cooperation with the Committee, prepares an annual review of the University's accident experience which aims to identify trends or clusters of accidents which present an opportunity for future accident prevention efforts.

4.2 2002 Accident Experience

As **Figure I** shows, employees suffered 208 accidental injuries during 2002. This total has somewhat increased over the total number of employee injuries reported during 2001. This modest increase in accidents arose almost entirely from an increase in the number of accidents reported by Dalhousie tradesmen. However, from an overall perspective, the 2002 accident experience is not dramatically out-of-line with the experience seen over the past decade.

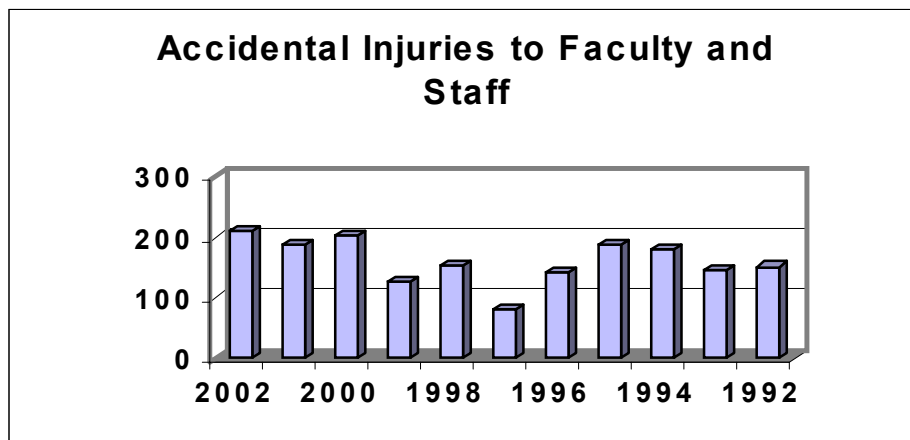


Figure I

Table I breaks down the proportions of staff and faculty reporting injuries.

Table I

2002 ACCIDENTAL INJURIES BY EMPLOYEE GROUP	
Employee Group	Number of Accidental Injuries
Faculty	4
Engineering Services	54
Environmental Services	109
Security Services	3
Other Staff	38
Total Employees	208

As is always the case, the highest proportion of injuries are reported by employees of Facilities Management. Included are carpenters, plumbers, electricians and mechanics employed in Engineering Services; custodians, truck drivers and grounds keepers employed in Environmental Services and the officers employed in Security Services. Other universities across the country report similar accidental injury patterns.

Although all accidents are of concern, clearly some are more serious than others. One measure of accident severity is time lost from work. Dalhousie counts as a lost time accident one which prevents the injured person from returning to work on the next scheduled work day.

During 2002, 47 accidents caused injuries serious enough to keep staff from reporting to work on their next scheduled work day. In total, these time loss accidents resulted in 392 lost work days. An additional 17 days were lost as a result of accidents which occurred in 2001. The net result then is that Dalhousie lost the services of staff for 409 days during 2002. **Figure II** shows that, while still significant, the 2002 loss time was down considerably from the 543 lost work days experienced in 2001.

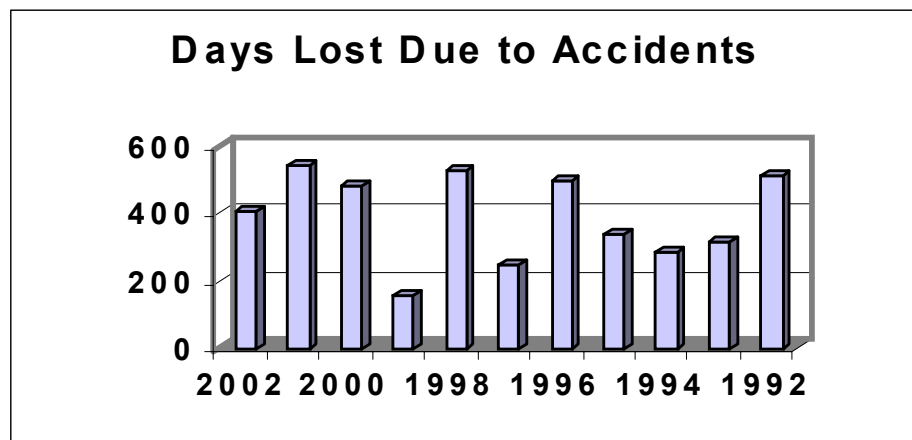


Figure II

A breakdown on the number of 2002 time loss accidents and days lost for each employee group is shown in **Table II**.

Table II

	NUMBER OF TIME LOSS ACCIDENTS	DAYS LOST
Engineering Services	23	84
Environmental Services	20	299
Security Services	2	6
Other Staff	2	0
Total	47	392

As has been the usual experience, a very small number of accidental injuries account for the bulk of the loss time. In 2002, only 3 accidents together accounted for a loss of 204 days or almost 52% of the time lost due to 2002 accidents.

The following **Table III** shows that over-exertion, falls, including falls from a height - for example from a ladder or on a set of stairs - as well as falls on the level, and striking something or being struck by something, were the most important causes of loss time accidents.

Table III

	Over Exertion	Fall	Striking/Being Struck	Other
Number of Accidents	13	9	21	4
Total days Lost	224	54	106	8

Unusually, none of the lost time falls were attributed to water on interior floors or stairs, or snow or ice on exterior walks or stairs.

Accidents and injuries involve not only staff. Faculty, students, contractors and visitors are also occasionally injured. Further, the Safety Office receives reports on other campus events, some of which relate to injuries.

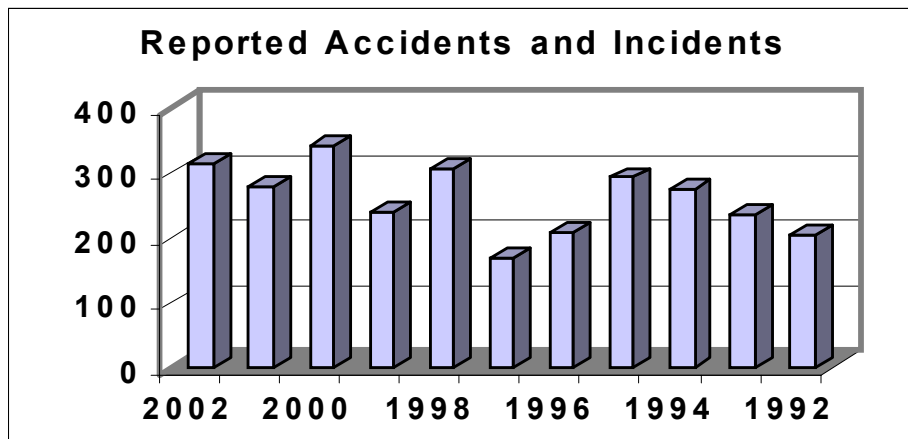


Figure III

Figure III shows that the Safety Office received a total of 304 such reports during 2002, generally in-line with the experience of recent years. Included among these reports were:

-	Accidents causing injuries to staff and faculty	208	
	Other work or study accidents (1)	22	
-	Sport accidents involving:		
	students	15	
	visitors		10
	faculty	1	
-	Medical emergencies	28	
-	Incidents (2)	20	

(1) *Other work or study accidents include:*

- *cuts and punctures suffered by students in laboratory or clinic programs; and*
- *other miscellaneous injuries suffered by students in the course of attending classes or working on campus.*

(2) *Incidents included 5 fires, a chemical spill, several indoor air quality episodes and similar events. None resulted in serious injuries.*

5 FIRE SAFETY

5.1 The Fire Safety Program

During 2002 Dalhousie continued to operate the aggressive fire safety program which has been developed over the years. The University makes ongoing efforts to install and maintain detection, suppression and alarm systems, and to upgrade equipment and facilities to keep pace with changes in the National Building and Fire Codes of Canada.

5.1.1 Fire Warden Teams and Evacuation Drills

During the year the Safety Office continued to work with and fire warden teams which serve each of the University's major buildings. To ensure that both wardens and building occupants are familiar with emergency building's evacuation plan, evacuation drills are conducted annually. In most cases, the drill is conducted during the first few weeks of the Fall term. The evacuation systems are now so well established that we are usually able to evacuate a Dalhousie building in under 5 minutes.

5.1.2 Emergency Lighting Audits

Encouraged by the Halifax Regional Fire and Emergency Services in 2001, we began to systematically audit the effectiveness of our emergency lighting systems. During 2002, we took advantage of a scheduled power interruption in Sir Charles Tupper Medical Building, the Link and the Clinical Research Centre to survey emergency lighting in the complex.

The audit showed that the complex is generally well serviced. But there are a few areas in the Link, in entrances to the Parkade and in a few other larger rooms on the upper floors of Tupper, where improvements are needed. Funding to address these deficiencies has been requested in the 2003 Alterations and Renovations budget.

5.2.3 The 2002 Fire Experience

2002 was an exceptionally good year in terms of our fire experience. During the year, 5 fires were reported. Of these, one occurred in bark mulch on a flower bed outside the Killam Library - probably caused by a carelessly discarded cigarette. The fire caused no damage and was easily extinguished by the Security Officer who discovered it.

A second fire was discovered by a custodian in a waste container in the Computer Science Atrium. Although this fire clearly presented much more risk than the Killam plaza fire, prompt action by the custodian to remove the container to the outdoors prevented any damage.

Two fires occurred in connection with construction or renovation work in Howe Hall. Early in the year, propane-fired heaters were used over night to prevent freezing while construction proceeded with the Fountain House addition. One of these heaters started a small fire when it was placed too close to a plywood partition. Smoke detection systems operated as designed, signalling while the fire was still small. As a result, there were no injuries and no significant damage. The second fire broke out in the early evening mid-December. At the time, students had vacated the building for the Christmas break. Although the building was vacated, fortunately a staff member was present, noticed smoke in the residence dining hall and manually activated the alarm. The responding fire crew discovered a smouldering fire in a rafter in the ceiling space, in an area not served by smoke detectors. Earlier in the day, a contractor had been working to re-new the roof over the dinning hall. Torches used to seal the new roofing had apparently over-heated the metal roof which carried the heat to the nearby rafter. The fire did not cause any injuries, but it did cause several thousand dollars damage.

The fifth fire occurred when a November power failure tripped an electronic solenoid switch. In turn, the solenoid turned off the propane supply to the Howe Hall kitchen. In restoring the propane, a tradesman turned on the main propane supply and began relighting the pilot lights on a number of propane-fuelled appliances. By the time the tradesman reached the final appliance, a large quantity of propane was present. Re-lighting the pilot light produced a small fire which caused a superficial burn to the tradesman's face.

The Environmental Health and Safety Committee reviewed the accident and suggested modifying equipment and procedures. These changes have since been implemented at all campus locations where propane is used to fuel similar appliances.

In accord with a requirement of the NS Occupational Health and Safety Act, the accident was reported to the Department of Environment and Labour. Following up, an inspector visited campus to review the documentation. He concluded that the response to the accident had been appropriate.

Year	2002	2001	2000	1999	1998	1997	1996	1995	1994	1993
No. of Fires	5	7	8	10	7	12	6	4	13	6

5.2 2002 Fire Safety Upgrades

5.2.1 Residence Fire Safety

Housing and Conference Services continued their efforts to address fire and related safety issues in residences. As part of the Fountain Hall construction a diesel powered emergency generator was installed. The generator was sized to serve both the existing building as well as the new addition. Changes were made to the wiring in the older sections of Howe. The result now is that when the power fails either as a result of problems on the grid or an incident in the building, the emergency generator starts automatically providing emergency power to lights and other vital services in the building.

As part of the effort to fully fire separate rooms from exit halls, the hollow core doors were replaced with solid core doors in student rooms on two more floors in Shirreff Hall and Howe Hall.

During the summer of 2002, Studley House was rewired and new electrical outlets, television, telephone and data cabling was installed. Although some of these upgrades were designed to meet expectations of an increasingly information-age student body, the new wiring eliminates many of the fire safety problems created by antiquated electrical wiring systems.

In 2001, Housing and Conference Services took over a number of "University houses" when the Faculty of Arts and Social Sciences departments vacated them to move into the Marion McCain Building. In each of the houses that were converted for residence use, fire safety features, including local fire alarms were installed as required by the Fire and Building Codes. During the summer of 2002, each of these alarms was connected to Security's central monitoring facility. The Security duty desk is now automatically alerted when an alarm sounds in one of the houses in same way that an alarm in a traditional residence is transmitted to Security Services.

Finally, Housing had smoke detectors installed in the attic space over Howe Hall's Dining Hall in response to the mid-December fire.

5.2.2 Other Fire Safety Upgrades

Each issue of the National Building and Fire Codes of Canada, introduces new fire safety requirements. Although some of these changes cannot easily be accommodated within existing structures, Dalhousie tries, whenever practical, to meet these new standards. During 2002, we undertook to improve exit route safety by systematically installing latched stairwell doors. As a first step, doors on each of the Sir Charles Tupper Building floors were modified at a cost of about \$10,000. Over the coming years, we plan to make similar changes in each of the older University buildings.

During the year, a new fire panel was installed in the Life Sciences Centre. This work completed the first of a three-stage program. Upon completion, the complex will be served by a fully-modernized fire detection and alarm system.

6 MANAGEMENT OF HAZARDOUS MATERIALS

6.1 Asbestos

Many Dalhousie buildings were constructed during the period from 1945 - 1975 and thus contain appreciable quantities of asbestos. Along with most other Nova Scotia institutions, Dalhousie has been dealing with the presence of this asbestos in University buildings for well over a decade. In 1998, the University formally adopted an Asbestos Management Plan which documented the procedures that are followed when exposure to airborne asbestos fibres is possible. The Plan also set in place an asbestos training program designed to equip all Facilities Management staff with the skills necessary to deal safely with asbestos.

The University's approach to asbestos management has involved systematically removing the mineral from most accessible locations in University buildings, as well as removing any asbestos that might interfere with maintenance or renovation projects. During the past year, contractors who specialize in this work, carried out almost 50 asbestos removal projects, including work on all three campuses. The expenditures totalled slightly in excess of \$100,000.

In the mid-1990's, Facilities Management and the Safety Office co-operated to generate an inventory of locations where asbestos is present in University buildings. This information has helped properly plan projects and avoid unnecessary asbestos exposure. In conducting the survey, plaster samples were taken in a number of buildings. Results were generally negative. However, during a renovation in the Chemistry Building, it became apparent that portions of the building had been constructed with two plaster layers - a course layer beneath a finer, surface layer. Separate testing of these layers showed that, although the surface layer was free of asbestos, the underlying layer contained, in the order of 2% chrysotile asbestos. The NS Environment and Labour Department uses 2% as the dividing line between what, for the purposes of regulation, is regarded as non-asbestos containing and what is deemed to be asbestos-containing, and thus subject to regulation. Although the measured asbestos levels were low, a decision was made to treat the materials as asbestos-containing and a series of dust control steps were put in place for the renovation.

As our previous survey had only sampled surface plaster layers, a retesting program has been undertaken and we have found that similar amounts of asbestos are present in base plaster coats in several other buildings. This discovery has already impacted work in several buildings including a renovation of space occupied by Graduate Studies in the Henry Hicks Arts and Administration Building.

To protect the health of those involved in renovation work, there is a need to take additional steps to prevent even modest amounts of dust generation. These steps increase renovation costs somewhat. But staff who regularly work in these buildings are in no danger at all. The asbestos is firmly held in the plaster matrix and thus cannot easily become airborne. It is inhalation of significant quantities of such airborne asbestos fibre which causes disease in people. A further margin of safety is provided where the asbestos-containing layer is buried beneath another, non-asbestos containing plaster layer.

Given the extent of asbestos present in University buildings, managing these minerals will challenge Facilities Management for many years to come.

6.2 PCBs

Since the passage of PCB regulations by both Federal and Provincial agencies in the late 1970's, Dalhousie has been managing its operations to minimize human or environmental exposure to PCBs and to ensure compliance with the regulations. In the mid-1990's when the option first became available, Dalhousie disposed of the PCB waste which had accumulated over the previous decade. Shortly after amalgamation, Dalhousie disposed of the PCBs waste which had similarly accumulated in the former TUNS.

The University continues to operate five large PCB containing transformers. Because of the very significant costs associated with replacement, and the fact that these units still have years of useful life, we expect them to be in-service for quite some time.

In the meantime, Facilities Management continues to service the equipment and the fire detection and suppression systems and smoke control in these electrical vaults. To ensure that the University retains the ability to deal with waste PCBs that ongoing operations will produce, the University has maintained an approved waste PCB storage facility. During 2002, this work generated less than a kilogram of PCB contaminated waste which is in storage in the PCB storage vault.

6.3 Hazardous Waste

Since 1988, the Safety Office has coordinated the University's chemical waste disposal effort. The effort is carried out in two phases. During the academic year, the Safety Office collects waste solvents and related wastes each month. Using a small room in the Life Sciences Building, these wastes are bulked into 45 gallon drums with other compatible wastes and shipped for disposal to a fully permitted multinational waste disposal firm. The second phase during which we accept the full range of waste chemicals is carried out during the summer. This phase depends upon the availability of a vacant undergraduate chemistry laboratory and the assistance of a senior student, recruited to help with this work.

This system has proven to be very effective. The supervisors of laboratories, take full advantage of the regular collection to dispose of wastes. As a consequence, the volume of chemical waste in storage in University laboratories at any time is far less than it was in the early 1990's. As time has passed, however, researchers have become more demanding. Many are no longer satisfied to dispose only of their waste solvents each month. Instead, many researchers insist that they need to be able to discard any type of chemical waste at any time during the year. So, for example, it is now common for the Safety Office to be asked to look after the disposal of acids or reactive chemicals during the school year. Without access to the laboratory facilities which we use during the summer, we are forced to store these chemicals in an increasingly overcrowded waste solvent storeroom.

6.3.1 The 2002 Experience

During the year, the disposal program handled over 6200 individual wastes, ranging in size from a few milligrams to a few kilograms. In total, the program handled almost 8000 kg. - a quantity roughly on par with quantities processed during 2001. Of this total, about 3400 kg. was made up of oils, laboratory solvents and their associated dissolved solids. Included among the other wastes handled were:

Toxic and reactive metallic compounds	50 kg.
Scintillation waste	1050 kg.
Various reactive organic chemicals	140 kg.
Contaminated acids	75 kg.
Chemicals diverted to ChemEx	75 kg
Non-hazardous chemical wastes	470 kg.
Spent batteries (for recycling)	860 kg.
Metals (for reprocessing)	80 kg.
Sharps and other potentially infectious waste *	1380 kg.

Additionally, we decontaminated and recycled almost 750 kg. of glass chemical containers.

*This quantity represents only a fraction of the 24,500 kg. sharps, potentially infectious waste created by research and teaching laboratories and Clinics in Medicine, Dentistry and Science. Disposal of this material was handled by Facilities Management's Environmental Services.

Chemical disposal costs can be significant. Since 1992, when much of the chemical waste handling was taken over by the Safety Office, annual disposal costs have run in the \$10,000 - \$15,000. As the table shows, 2002 chemical disposal costs were, again, in this range.

* Expenditures do not include contributions to student support provided by Human Resource Development Canada's various student employment programs. In a typical year, HRDC's support is in the range of \$1000 to \$1500.

6.4 ChemEx

The Safety Office continued to operate ChemEx, the University's Surplus Chemical Exchange Program. Established in 1992, ChemEx diverts surplus chemicals from disposal to use in teaching and research. Although ChemEx primarily serves Dalhousie researchers and teachers, others representing schools, universities and research institutions across the Maritimes, also donate or receive chemicals. ChemEx neither pays for nor charges for chemicals. The Safety Office supervises shipments of chemicals between Dalhousie locations. External participants make their own shipping arrangements. To our knowledge, when ChemEx was launched, there were no similar exchanges operating at any other University. In the ensuing years, safety offices at a number of major universities across the continent have introduced similar programs.

Year	Annual Chemical Disposal Cost
1989	\$3,000
1990	\$8,000
1991	\$68,000
1992	\$27,000
1993	\$12,500
1994	\$11,200
1995	\$10,800
1996	\$13,700
1997	\$10,800
1998	\$13,500
1999	\$16,000
2000	\$14,250
2001	\$16,200*
2002	\$14,600

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Users continue to make heavy use of the web-based inventory/order system. Researchers across the University and in neighbouring institutions, are able to search the inventory on the world wide web and electronically place "orders" for items that they are able to use. During the year, ChemEx placed 516 items with a catalogue value of \$40,500, up 40% and 25% respectively over 2001 activity levels. As the table shows, 2002 activity brings the value of chemicals placed since 1992, to well over a quarter of a million dollars. The value of the exchanged chemicals under-estimates the avoided costs as it does not include shipping or brokerage costs associated with new purchases nor the disposal costs which otherwise have been incurred.

Year	2002	1992 -2002
Number of chemicals exchanged	365	5768
Value of chemicals exchanged	\$40,500	\$300,500

7 LEGAL MATTERS

During the year, there were no major changes in the Nova Scotia's Occupational Health and Safety or Environment Acts. In other areas, however, important legal changes took place.

7.1 Transportation of Dangerous Goods Regulations

Following several years of discussions, Transport Canada issued a new set of regulations under which dangerous goods are shipped in Canada. Although the Act which underpins the regulation was not changed, the regulations which run to several hundred pages were substantially altered. Because Dalhousie ships both chemicals (wastes for disposal and chemicals for use in field programs) and receives chemicals (at many locations across the University), the coming into force of the new regulation was an important event.

7.2 Smoke-Free Places Act

The Nova Scotia legislature passed the Smoke-Free Places Act. Generally, Dalhousie was not required to make changes to bring the University into compliance with the new Act. The Act, however, did cause the Student Union to change its policy regarding smoking in campus bars.

7.3 Department of Environment and Labour Inspections and Orders

7.3.1 Howe Hall Propane Incident

As indicated in the Fire Safety Section, the November incident in which an employee received superficial burns was reported to the Department of Environment and Labour. As the incident had the potential to cause serious injury or damage, the Environmental Health and Safety Committee carried out a formal accident review. The Committee recommended a series of procedural changes and upgrades to the propane controls to reduce the likelihood of a similar accident. When an Environment and Labour Inspector followed-up on the incident, he reviewed the Committee's report and the University's response. He took no further action on the matter.

7.3.2 Security Procedures

In November, responding to a concern about the manner in which Dalhousie Security Officers respond to disturbances and other situations in which officers might be at risk, an Environment and Labour Department Inspector met with W. Louch and G. A. MacDonald, Dalhousie's Chief of Security Services.

The Inspector reviewed Security's Standard Operating Procedures that guide officers' response to a variety of potentially dangerous situations. The Inspector has not taken any further action on this matter.

7.3.3 Central Services Building Ladders

In response to a concern, apparently raised by someone from outside the University, an Environment and Labour Inspector visited the Central Services Building to inspect the ladders which provide access to the CKDU radio antenna and the top of the boiler chimneys. Several years ago, Dalhousie installed a rail to which staff, who occasionally have to climb the chimney ladder, fasten a fall arrest device. This feature allows Dalhousie staff to climb the ladder in compliance with the Nova Scotia Work at Heights Regulation. No such system has been installed on the CKDU tower ladder.

The Inspector issued a series of orders directing Dalhousie, as owner of the building, to ensure that anyone who climbs the CKDU ladder, does so in compliance with the regulation. The Inspector also ordered that repairs be made to the railing on the platform at the top of the steam plant chimney. To ensure that the regulation is observed, Dalhousie has installed locked "gates" which bar access to either ladder. Over the coming months, CKDU will consider what steps it plans to take to allow service people to safely access the radio antenna. Dalhousie will repair the platform railing when warmer weather returns. In the meantime, access to the ladder remains locked. However, should it be necessary for a staff member to climb the ladder, the safety rail would provide a safe and fully compliant fall arrest system.

7.3.4 Student Union Building Construction Concerns

An employee of the Dalhousie Bookstore called the Environment and Labour Department, concerned that construction activity was generating potentially harmful dust. An Inspector visited the site and reviewed the changes that had already been made to improve the separation between the construction area and the Bookstore, as well as scheduling changes which had been made to minimize disruptions to Bookstore activities.

The Inspector issued orders requiring the Bookstore to improve communications to ensure that Bookstore employees are fully informed of construction activities which might impact on the work environment in the Bookstore. The Inspector also ordered the Bookstore to take steps to improve the employees understanding of the Occupational Health and Safety Act.

The Bookstore has responded to both orders and the Environmental Health and Safety Committee will look at the communications issue from a University-wide perspective early in 2003.

8 TRAINING

Although a number of units and departments across campus provide safety training, the Safety Office is one of the focal points for training. During 2002, the Safety Office delivered, or participated in, sessions which provide instruction and information to approximately 425 staff and students.

8.1 Workplace Hazardous Materials Information System (WHMIS)

WHMIS is a set of interlocking Provincial and Federal regulations created to give employers and employees information upon which they can develop procedures to work safely with chemicals. WHMIS regulation requires employees to be trained in WHMIS and in how to apply this information to daily work with chemicals. The Safety Office provides much of the WHMIS training for those whose exposure to chemicals arises in laboratories or clinics. Although the WHMIS regulation technically only applies to employees, many of those participating in these training sessions are students. During 2002, the Safety Office again conducted 9 training sessions for staff and students in Biology, Chemistry, Dental Hygiene, Dentistry, Facilities Management, Medicine and the School for Resource and Environment Studies' Eco-Efficiency Centre. For the first time, WHMIS training was provided to Housing and Conference Services and Communications Services. These staff were required to take training before they were permitted to work in the then still under construction Fountain House.

8.2 Student Security

As has been practice for 5 or 6 years, the Safety Office provided a half-day safety orientation session for members of Tiger Patrol, the Dalhousie Walk Home Escort Service, and for members of the Student Union Building Security Service.

8.3 Transportation of Dangerous Goods (TDG)

Both the Federal and Provincial Governments closely regulate the transportation of dangerous chemicals. These regulations require that everyone involved in any aspect of shipping these materials - shippers, receivers and vehicle drivers, all be trained at intervals no longer than every three years.

During early 2002, the Federal Government issued a new set of "clear language" TDG regulations. Although it had only been two years since we last offered a TDG course, the Safety Office organized a one-day training session to acquaint University staff and students with the new regulation. Indicative of the concern that departments have with properly managing dangerous goods, over 75 people attended the seminar. This represents more than twice the number of people who attended any previous session.

8.4 Radiation Safety Training

The Radiation Safety Office also conducts training for all staff and students working with radioactivity. The training meets the terms set in the consolidated licence issued to the University by the Canadian Nuclear Safety Commission. During 2002, the Radiation Safety Officer conducted 4 training courses to about 80 faculty, staff and graduate students. The Radiation Safety Officer also provides in-lab sessions for 80 people to acquaint them with the provisions of the Transportation of Dangerous Goods Act that impact the receipt of radioisotope shipments.

8.5 Autoclave Safety Training

Autoclaves employ steam under pressure to destroy pathogens. Dalhousie units use autoclaves in a variety of applications. Some are used in the Dental Clinic and Health Services to sterilize instruments and materials used in patient care. Effective sterilization in these applications is of paramount importance. Many of our research laboratories use autoclaves to sterilize equipment and media that are to be used in cell culture work. Failure to sterilize in such applications is soon apparent as unwanted organisms will be seen growing in experimental cultures. Such sterilization failures constitute a set-back from the researcher's perspective. But they do not present a hazard. In yet other laboratories autoclaves are used to sterilize waste prior to disposal. As this waste is subsequently handled in a fashion which minimizes the chance of human or environmental exposure, and much of it is destroyed by incineration, there is little likelihood that occasional sterilization failures would lead to harm.

During 2002, the Safety Office and the Biology Department co-operated to offer a half-day training session to 25 research laboratory staff and students.

9 OUTLOOK 2003

The Dalhousie Safety Office, like other administrative units across the University, faces continually escalating demands. People want more, faster and better services in areas such as chemical disposal, response to accidents and incidents, and resolution of air quality concerns. Meeting these expectations while addressing newly emerging issues, creates an environment which is challenging.

Among the issues which we expect to occupy the safety centre stage during 2003 are:

9.1 Laboratory Security

During 2003 we look forward to seeing major changes to the way in which we secure areas where chemicals are used and stored. Much of the ground work has now been completed and we look forward to seeing procedural changes and minor renovations actually put in place.

9.2 Smoking

Late in 2002 the Deans of Dentistry, Health Professions and Medicine suggested that the University restrictions on smoking be extended to include campus grounds. It is unclear as of yet, what direction the University will take in regard to this suggestion. But it is clear that both the Environmental Health and Safety Committee and the Safety Office will have roles to play.

9.3 New Construction

It seems that we will continue to undertake new construction and major renovations. There will inevitably be contributions required from the Safety Office in both the planning stages and in the actual construction. We welcome these as they often provide opportunities to resolve long-standing health and safety problems. These projects also create situations which will properly support campus life, work and learning for years to come.

APPENDIX

MILESTONES IN HEALTH AND SAFETY AT DALHOUSIE

- 1977** Appointment of A. Chisholm, Director of Safety (in addition to duties as an engineer within Physical Plant and Planning).
- 1980** Establishment of the Dalhousie Environmental Health and Safety Committee - a committee composed of both University and employee group representatives charged with providing policy advice and presenting an opportunity for the resolution of health and safety concerns.
- 1983** Appointment of Dr. J. Johnson as Director of Safety (part-time). Dr. Johnson, a physician with many years of service at Dalhousie Health Services, brought to the Program a professional stature and an important skill set.
- 1985** Enactment of the Nova Scotia Occupational Health and Safety Act. This Act mandated the creation of committees and introduced important new workplace rights and responsibilities.
- 1988** Appointment of Dr. J. Johnson as full-time Director of Safety.
- 1990** Appointment of Dr. Wm. Louch, Director of Environmental Health and Safety.
- 1995** Adoption of the Scent Reduction Program. Supported by the senior administration and each of the employee and student groups on campus, the Safety Office launched a program to encourage members of the University to avoid using scented personal care products. These products adversely affect some staff, faculty and students. The Program also encouraged Facilities Management to re-evaluate its practices to avoid unnecessary chemical exposure which may arise from maintenance and operations of Dalhousie buildings.
- 1996** Enactment of an amended Occupational Health and Safety Act.
- 1997** Amalgamation of Dalhousie University and Technical University of Nova Scotia. The Dalhousie Safety Office assumed responsibilities for environmental health and safety at the Sexton Campus. Under the former TUNS system, health and safety responsibilities were assigned to the Director of Physical Plant who was, from time to time, assisted by a series of contracted employees. The University appointed an employee from the Sexton Campus to the Dalhousie Environmental Health and Safety Committee.
- 2000** Amalgamation of Environmental Health and Safety and Radiation Safety Offices. Although the two units had worked closely together for a number of years, it was not until 2000, that the units were formally amalgamated. As part of the merger, changes were also made to the structure and composition of the Radiation Safety Committee and the range of radiation issues addressed by Radiation Safety.