Health and Safety

Annual Report 2006

Office of Environmental Health and Safety
Health and Well-being Programs and Services

UNIVERSITY of TORONTO
www.ehs.utoronto.ca

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1. 0 Introduction

The Terms of Reference of the Business Board require that the President or his designate prepare and submit to the Business Board an annual report on environmental health and safety activities including activities undertaken to ensure compliance with the *Occupational Health and Safety Act* and the *Environmental Protection Act*.

This report is submitted in conformance with these requirements and summarizes the major activities and progress made in addressing health and safety issues at the University of Toronto during the calendar year 2006. The report was prepared jointly by the Office of Environmental Health and Safety and Health and Well-being Programs and Services.

2.0 Health And Safety at the University Of Toronto

2.1 Organization

The University of Toronto is committed to the promotion of the health, safety and well-being of all members of the University community, to the provision of a safe and healthy work and study environment, and to the prevention of occupational injuries and illnesses. This commitment is expressed in the Health and Safety Policy, available at http://www.ehs.utoronto.ca/resources/manindex/policies/hspolicy.htm.

The University subscribes to a "line management" philosophy of accountability for health and safety. We expect managers and supervisors, whether academic or administrative, will take responsibility and accountability for the health and safety of individuals under their direction and workplaces under their charge. All members of the University community are expected to demonstrate their commitment towards a safe and healthy work and study environment by acting in compliance with the Health and Safety Policy.

The Vice-President, Human Resources and Equity is the senior officer of the University with accountability for Environmental Health and Safety across all campuses of the University. She is supported by the Office of Environmental Health and Safety (EHS), Health and Well-being Programs and Services (HWB) and specialist committees responsible for radiation protection, laser safety, asbestos and biohazards management. A network of Joint Safety and Health Committees also provides valuable input to the EHS agenda through identifying employee concerns, conducting workplace inspections and reviewing incident and accident reports.

A Senior Management Committee on Health and Safety, composed of senior academic and administrative managers of the University, provides advice and assistance to the Vice-President, Human Resources and Equity.

2.2 Office of Environmental Health and Safety

The EHS Office reports to the Assistant Vice-President, Human Resources. The Office provides technical advice and assistance to the University community on health and safety matters, participates in the development and implementation of health and safety policies, procedures and programs, and monitors and audits compliance with University policies, federal and provincial health and safety legislation and permit requirements. Office of Environmental Health and Safety staff are listed in Appendix A.

A Director for the Office of Environmental Health and Safety was recruited in February 2006. Peter Nicoll joined the University following a career in health, safety and environment management in industry and consulting.

One of the Director's first actions was to review the mission of the Office with the Vice-President, Human Resources and Equity and set priorities for action. The Office has established the following Mission Statement:

The Mission of the Office of Environmental Health & Safety

The mission of the Office of Environmental Health and Safety is to ensure that an environmentally responsible, safe and healthy work, research and study environment exists at the University of Toronto.

We do this by being proactive in identifying risks and anticipating emerging issues, and by developing and implementing innovative, practical and sustainable processes to manage them.

Through close collaboration with all members of the University community, we establish and maintain high quality health and safety systems, that support, without constraining, academic freedom and leading edge research, and that maintain the highest possible level of safety.

A key element of the EHS strategy is to foster a strong sense of ownership for safety by managers, supervisors, academic heads and principal investigators. This represents best practice - ensuring that those responsible for and most knowledgeable about the local work area are accountable for safety. It is also a requirement under the Occupational Health and Safety Act. EHS will be working with the Senior Management Health and Safety Committee to revise the EHS management system, more clearly setting out expectations and ensuring that managers, supervisors and academic administrators have the advice, guidance and support they need to carry out these responsibilities.

A greater emphasis is being placed on the training role of the department. A dedicated EHS training facility was established at 245 McCaul Street and much effort is being dedicated to developing high quality on-line training programs. An EHS orientation training module has already been developed for new employees and others are under development including WHMIS and EHS orientation for Trades employees. Introductory information about health and safety at the University is also now presented at the orientation session for all new employees. The Office of Environmental Health and Safety works with Faculties and Departments to present orientation programmes, especially related to laboratory safety, for graduate and summer students and new PIs.

The assurance activity is being increased, partly as a matter of due diligence and partly in response to increasingly stringent expectations by regulators. The University can expect ever increasing regulatory requirements and oversight in the form of audits and inspections.

With the recent retirement of the Manager, Radiation Protection, a new position, Manager, Laboratory Safety Assurance, has been created and a recruitment process started. This position

will integrate responsibility for chemical, biological and radiation safety in research and teaching laboratories, enhancing the resources available to promote health and safety in these areas.

Recruitment was also commenced in 2006 for a joint appointment between the Office of Environmental Health and Safety and the Mississauga campus for a Manager Environment, Health and Safety, UTM / Manager Systems Implementation, Office of EHS. This new position will manage health and safety at UTM and will also provide leadership in establishing a systemic health and safety risk assessment and management approach at the University.

2.3 Health and Well-being Programs and Services

Health and Well-being Programs and Services (HWB), reporting to the Assistant Vice-President, Human Resources, provides a single centralized resource for managers and employees (both faculty and staff) who require information and assistance associated with occupational health, sick leave, long term disability, workplace injuries, or accommodation. Health and Well-being staff is presented in Appendix A.

HWB staff work collaboratively with Divisional Human Resource Offices, EHS, departments and employees to return employees to the workplace in a timely and successful manner following injury or illness. The office also provides leadership to the University community on health and well-being issues in the workplace, including the development of inclusive, fair and proactive approaches in the accommodation of persons with disabilities. Some of the proactive strategies with respect to health promotion and accommodation of employees with disabilities are more fully outlined in the Human Resources and Equity Annual Report (www.hrandequity.utoronto.ca/news/reports/hre.htm)and the Ontarians with Disability Plan (www.hrandequity.utoronto.ca/news/oda.htm).

HWB manages the Workplace Safety and Insurance Board program for the University and tracks injury rates and severity. HWB works with academic and administrative departments and EHS to develop targeted responses to identified patterns in an effort to reduce the incidence and severity of workplace injuries.

2.4 Joint Health and Safety Committees

The Occupational Health and Safety Act of Ontario (OHS Act) requires employers to establish workplace joint health and safety committees (JHSCs) composed of worker and management representatives. The committees play an essential role in the maintenance of a safe and healthy work environment at the University and members meet regularly to discuss health and safety issues, conduct regular workplace inspections and make recommendations related to workplace health and safety. They are consulted in the development and review of health and safety policies and programs. Committees are required under the Occupational Health and Safety Act of Ontario and must meet at least four times a year. Each committee must have at least two certified members.

In 2006, the University had 45 operational joint health and safety committees representing faculties, departments, buildings and/or employee groups. With employee transfers, departures and heavy workloads, committees continue to face challenges in maintaining full worker and management membership and holding regularly scheduled committee meetings. Appendix B lists the committees and summarizes their status of compliance with respect to meeting at least once every three months (four times annually), and having at least two certified members to represent workers and management.

In 2006, 21 (47%) of the 45 committees met at least four times during the year, similar to the 46% meeting compliance noted in 2005, but a marked drop from the 85% compliance noted in 2004. It should be noted that 10 committees (22%) held three meetings in 2006, just short of the required four meetings. Fourteen (31%) committees held two or fewer meetings in 2006.

In order to address this issue EHS conducted a survey of Joint Health and Safety Committees in the fall of 2006 to obtain feedback from JHSCs, employee groups and management groups on how to improve the functioning of these committees. The survey questions focused on three areas:

- the level of compliance with the legislative requirements for meetings, certified members and regular workplace inspections;
- methods to encourage participation on committees; and
- strategies to highlight the significant role of the committees within the University's safety systems.

Responses were obtained from 26 JHSCs resulting in a 49% participation rate. A summary of the results with respect to compliance is attached as Appendix C to this report. Lower levels of compliance were reported in areas such as workplace inspections and selection of worker members. A number of very constructive suggestions for improvement were made by survey participants, identifying the need for:

- greater management support and participation, especially from senior management;
- a higher level of employee participation and more recognition of member participation;
- better communication and information sharing with other JHSCs; and
- more frequent training for committee members

In 2007 the survey data will be compiled and distributed to committees and EHS will work with committee members and accountable line managers to ensure improved compliance.

3.0 Occupational Hygiene and Safety

The EHS Occupational Hygiene and Safety group provides advice on health and safety issues, evaluates potentially hazardous situations involving chemical, physical and ergonomic stressors, develops and assists in the implementation of health and safety programs, and evaluates the effectiveness of these programs.

With the continued growth of the academic and administrative units within the University, and the increasing awareness of health and safety issues in the University community, there have been ongoing and increasing demands on EHS occupational hygienists.

3.1 Hazard Control Programs

Asbestos

Significant revisions to the asbestos regulation (O. Reg. 278/05) under the Ontario Occupational Health and Safety Act came into effect in November 2005. The amendments included a range of more protective changes impacting the way in which asbestos work is carried out at the University. EHS, Facilities and Services, and Capital Projects have actively continued to communicate, implement and enforce the new requirements of the regulation. EHS, in consultation with the Asbestos Advisory Committee, is updating the University's Asbestos Control Policy and Program to reflect the changes to the regulation.

The Asbestos Advisory Committee, consisting of management and worker members, met once in 2006. The committee meets to identify and provide direction on major asbestos-related issues at the University, review asbestos incidents on campus, and to provide input on changes to the Asbestos Control Program. Members of the Asbestos Advisory Committee are listed in Appendix D.

EHS provided training courses to update managers and employees about the changes to the regulation, and to train new employees who work around asbestos materials and are likely to disturb such materials.

The University remains committed to proactively removing asbestos wherever feasible with a long term objective of removing as much asbestos as practicable from University buildings. During 2006, the Environmental Hazards and Safety section within Facilities and Services continued to work with individual departments to ensure that the maximum possible amount of asbestos is removed during renovation or maintenance projects.

Asbestos Building Surveys

In 2006, the Environmental Hazards and Safety group within Facilities and Services contracted external asbestos consultants to conduct asbestos surveys of friable and non-friable materials in University properties. Previous surveys had primarily focused on friable asbestos-containing building materials such as sprayed fireproofing, mechanical and pipe insulation, and textured plasters. The new survey, covering 38 University buildings with a total area of 6.6 million square feet, provides a detailed assessment of the location of non-friable materials such as vinyl asbestos floor tiles, asbestos-cement products and ceiling tiles. This information will be helpful in planning future renovations of our buildings and in ensuring the work can be done safely and efficiently. Asbestos surveys will continue to be carried out in 2007 for other University buildings.

To manage the large amount of data generated through asbestos surveillance Facilities and Services has developed an electronic database that will store the inventories of asbestos-containing materials in each University building. The data obtained from all building asbestos surveys conducted from 2006 on will be imported into the *Asbestos Tracker* system, and will allow for ready access to room-by-room listings of asbestos-containing building materials.

The database will be valuable to University departments who manage or contract out work on building materials, ensuring that the presence of any asbestos is factored into the work plans. It will also allow us to efficiently meet the more stringent reporting requirements of the new asbestos regulations.

Asbestos Incident Reporting

As part of the University's Asbestos Control Program, Facitlities and Services reports and follows up on incidents that occur involving asbestos. This allows us to learn from incidents and continuously improve our procedures. Each incident is investigated and a report is circulated to the responsible departments summarizing details of the incident and the recommended corrective actions to be taken. The F&S group maintains a summary log of these asbestos incidents.

In the last ten months of 2005, there were 48 incidents. Corrective actions taken to address these incidents in 2005, including electronic notification of asbestos work, asbestos training, and proper scoping of asbestos work, have contributed to the reduction of incidents in 2006 to 24.

All departments involved in managing and contracting asbestos work demonstrate an ongoing commitment for to vigilance in ensuring that external contractors fully comply with the University's Asbestos Control Program.

Table 3.2 Number of Asbestos Incidents

Involving Asbestos Work by	2005 (10 Months)	2006
U of T Employees	25 (52%)	5 (21%)
External Contractors	23 (48%)	19 (79%)
Total # Incidents	**48**	**24**

Confined Spaces

On Sept. 30, 2006, a new Confined Space Regulation (O.Reg. 632) came into effect. A confined space is one which is not designed and constructed for continuous human occupancy, and in which atmospheric hazards can occur. The new regulations change the definition of a confined space and include more stringent requirements with respect to entry, training and documentation. While the existing University of Toronto Confined Space Program already has many of the required components in place, revisions to the Program have been drafted by EHS to comply with the new regulation; the revisions will be finalized in 2007. EHS continues to work closely with the Confined Space Subcommittee (of the Trades/Utilities JHSCs) and Facilities and Services management to implement the new requirements.

Noise Control

The Noise Control Program applies to all employees who work in noise hazard areas or who have the potential to develop noise-induced hearing loss as a result of their occupation. EHS continued its program of identification and education of additional employees who are potentially "noise-exposed" at the University.

Lockout/Tagout

Effective processes for locking and tagging out machinery and equipment are essential to protect employees from the hazards associated with inadvertent or accidental start-up during servicing, maintenance or other activities. The various forms of energies associated with such equipment can lead to the risk of severe injuries such as electrocution, burns, crushing injuries or amputations.

In September 2006, EHS assembled a team to investigate an incident involving the removal of a lockout system from a steam isolation valve in a mechanical room. The team included worker and management employees from Facilities and Services. The investigation revealed a number of systemic inconsistencies with implementation of the University's Lockout Tagout procedures. A number of recommendations were made, including staff retraining, broad dissemination of the procedures, the use of a common

identification system for locks and lockout devices, and strict adherence to the lockout and lock cutting procedures.

Facilities and Services management have already implemented several of the recommendations of the report, and following discussion on specific aspects of implementation, will address the remainder in 2007. EHS has developed a new training program for employees that incorporates the recommendations, and has begun conducting training of managers and supervisors. All other employees who may be required to conduct lockout procedures will be retrained in 2007. EHS will continue to work with Trades and Utilities departments to review the lockout-tagout procedures to ensure that they remain effective.

Hydrogen Fluoride Safe Handling and Emergency Protocol

Hydrogen Fluoride (Hydrofluoric Acid, HF) is a very toxic and corrosive acid. It differs from other acids because the fluoride ion can readily penetrate the skin, and lead to destruction of deep tissue layers. A review of existing handling and emergency procedures identified the need for a written detailed protocol for individuals who work with HF. Because the medical treatment of HF exposure is specialized and differs from the treatment of other inorganic acid exposures, such a protocol would define the required medical treatment as well as providing general safe work and storage practices.

In 2006, EHS developed the HF Protocol after a review of practices used at other organizations, and in consultation with the Occupational Health Physician, Health and Well-Being Programs and Services (HWB). The HF Protocol includes information on health effects, safety precautions, first aid treatment, and a reference to medical treatment.

To ensure that appropriate emergency medical treatment would be available in case of an accident, arrangements have been made with the Emergency Centre, Mount Sinai Hospital, to designate this centre as the University's emergency treatment centre for HF exposure. EHS has prepared an emergency package that would accompany any accident victim to Emergency, which includes the appropriate treatment protocol, as outlined by the Director, Emergency Centre, Mount Sinai Hospital.

EHS is compiling an inventory of all users of HF at the University and developing an online training course for all users of HF to be launched in 2007.

Lifting Devices

Lifting devices, including cranes, lift trucks, hoists, winches, and scissor lifts, are required to be inspected and maintained to ensure they operate safely. In 2006, EHS compiled an inventory of lifting devices at the University and worked to promote the implementation of the University's Lifting Devices Standard.

Fall Protection

Employees who access elevated locations are faced with the risk of falling. The University's Fall Protection Standard addresses the requirements for ensuring that such work is conducted safely. In 2006, EHS continued to deliver fall protection training to employees.

Workplace Hazardous Materials Information System (WHMIS)

All employees who work with or around chemicals or other hazardous materials must be provided with appropriate training to ensure they can work safely. In 2006, EHS continued to provide assistance to individual departments in complying with WHMIS requirements for appropriate labelling, material safety data sheets (MSDS), and worker education and training. The EHS web site includes links to a number of electronic MSDS databases. WHMIS training is provided to employees and graduate students in a range of departments. To facilitate in-house departmental training, EHS also provided WHMIS Train-the-Trainer training.

Working in Hot Environments

A hot work environment is one in which conditions in the workplace provide a tendency for harmful body heat storage. The result of the body's inability to deal with the heat burden may lead to heat disorders, disability or even death. The program documents the responsibilities of various pertinent individuals/groups, provides employees with an overview of the health and safety hazards associated with working in hot environments and alerts them to the precautions which should be taken to prevent injuries and other problems due to heat stress. In 2006, EHS continued to conduct heat stress training to employees.

Slips, Trips and Falls

In 2006, EHS conducted a series of training sessions that targeted Grounds Services employees to increase their awareness of slips, trips and fall hazards in their workplaces. This is one of the most significant risks for this group.

Fume Hood Alarm Monitor Recalibration/Fume Hood Performance Testing Program

The "Ventalert" monitor and alarm system provides continuous monitoring of the operating efficiency of by-pass fume hoods, and sounds an alarm to warn the fume hood operator of a failure of the exhaust system. EHS coordinates a program of annual testing and recalibration of all alarm monitors, as well as monitoring the performance of these fume hoods. In 2006, approximately 1,200 fume hoods were tested and the Ventalerts revalidated.

Office Ergonomics

EHS uses a "participative" approach for office ergonomics, encouraging staff members to attend a seminar to learn how to adjust their own work areas to fit them taking into account the way they perform their work. In 2006, seven Office Ergonomics sessions covering workstation design, posture, lighting and job design, were held at the three main campuses. In addition, an ergonomic session was held for the Carpenters from Trades Services. Follow-up assistance was provided where necessary.

EHS also continued to provide ergonomic input to Health and Wellbeing Programs and Services on WSIB, return to work, and job accommodation cases.

Mould

EHS provides assistance and expertise on the assessment of mould hazards, and the implementation of the University's Mould Control Program. In 2006, the number of assessments significantly increased from the previous year, in part due to greater awareness of property managers and employees about the hazards of mould, and the need for prompt corrective action following floods and water leakage issues. Assessments for mould were conducted at eighteen locations across campus. Approximately one-third of the assessments were negative for mould contamination. Most of the assessments followed episodes of water intrusion where concerns arose due to visible water damage and signs of mould. These assessments were broadened to assess general indoor air quality.

Recommendations included identification and repair of the source of the water intrusion in order to prevent future mould growth. Where mould was identified, recommendations were made to have the contaminated areas properly remediated. About 75% of these areas were remediated shortly after the assessment while the remaining 25% involved further determination of the source of water intrusion, and are ongoing.

Drinking Water Quality

Drinking water quality concerns ranging from discolouration to poor taste are generally expressed by occupants of older University buildings. Two drinking water quality assessments were conducted in 2006.

Indoor Air Quality

EHS investigated a number of indoor air quality concerns, ranging from poor temperature control, to lack of air movement, to dustiness. Nine buildings were assessed during 2006.

3.2 Other Health and Safety Issues

EHS also responds to a variety requests for workplace hazard assessments on a range of issues including:

- heat exposure, especially in mechanical rooms;
- proper handling and use of a variety of chemicals and substances in research and/or animal care protocols; and
- appropriate clean up procedures after a sewage leak.

In each case EHS investigates, identifies any risks, recommends appropriate procedures and assists the departments to implement these recommendations. Further details regarding a number of these issues are provided in Appendix E of this report.

3.3 Health and Safety Awareness and Educational Events

EHS has continued to promote its resources and services by participation in a number of organized University events, including:

- March 2006 – U of T Libraries Workplace Health Fair, Robarts Library
- May 2006 – Take Our Daughters and Sons to Work Day, Chemical Safety Workshop, Facilities and Services
- September 2006 – SGS Graduate Student Orientation, Hart House

In 2006 the University launched a half-day orientation program for all new appointed employees, including both staff and faculty. The program includes a component on health and safety in the workplace and the rights and responsibilities of managers and employees.

EHS also worked with academic departments to provide specific courses or workshops as part of their academic programs, including:

- Respiratory Protection - Quantitative Fit Testing, Occupational Hygiene MHSc Students, Gage Occupational and Environmental Health Unit (GOEHU)
- Air Sampling for Formaldehyde during Anatomy Dissection Laboratories, Occupational Hygiene MHSc Students, GOEHU
- Noise Sampling Exercise, Occupational Hygiene MHSc Students, GOEHU
- Chemical Safety and WHMIS training, Pre-Service Ontario Teacher Education Program, OISE/UT

3.4 Ontario Universities Networking

The Office of Environmental Health and Safety represents the University on the Council of Environmental Health and Safety Officers (CEHSO), an affiliate group of the Council of Senior Administrative Officers (Council of Ontario Universities). In 2006, representatives from the EHS departments of the participant Ontario universities met quarterly to network and share information and programs on health and safety initiatives.

3.5 University Safety Group Program

Since 2003, the University of Toronto has participated in the University Safety Group along with 15 other Ontario Universities. The Safety Group program is a five year voluntary program established by the Workplace Safety and Insurance Board (WSIB) as an initiative to recognize and reward organizations that incorporate effective workplace injury and illness prevention measures into their daily business practices.

As part of the Safety Group Program, the University is required to develop an action plan for implementing five new health and safety programs annually. In addition to the benefits of the individual programs, the University has received financial rebates from WSIB for the successful completion of its annual action plan.

In 2006, the University completed the following initiatives as part of this program:

- Asbestos Regulation (O.Reg. 278/05) Lobbying
- Respiratory Protection Program
- Confined Spaces Program
- Industrial Radiography Program
- Radioactive Liquid Waste Management Program

4.0 Radiation Protection Service

The role of the Radiation Protection Service (RPS) is to ensure the safe use of all substances and devices which emit ionizing or non-ionizing radiation. This includes the use of nuclear substances and radiation devices in our academic research facilities, teaching laboratories, research irradiators, industrial radiography by outside contractors, x-ray generating equipment, lasers, electromagnetic, static electric and magnetic fields, radiofrequencies and microwaves. We also ensure authorized and safe procurement, usage, storage, and disposal of radioactive materials and devices at the University and security of radioactive materials and radiation devices.

The management of radioactive materials is subject to the regulations and requirements of the of the Canadian Nuclear Safety Commission, the Ontario Ministry of Labour, Ontario Ministry of Environment, Environment Canada, Health Canada and City of Toronto by-laws. The federal regulator is becoming more and more prescriptive in the requirements for compliance with the regulations, particularly with regard to security for nuclear substances and radiation devices. The University has experienced several audit and inspections in 2005 and 2006 and can anticipate increasingly stringent expectations requiring increased diligence and likely increased costs as well to meet these requirements. Similarly the Ontario Ministry of Labour is currently placing greater emphasis on x-ray and laser safety. Consequently, the University can expect increased inspection of its research x-ray machines and lasers.

The University Radiation Protection Authority (UTRPA) oversees the protection programs for ionizing and non-ionizing radiation, with members appointed by the Vice-President, Human Resources and Equity (see Appendix E). The UTRPA met twice during 2006 and discussed the Canadian Nuclear Safety Commission (CNSC) Audit, the CNSC Physical Security inspection, the CNSC Type 2 Inspection of our waste license, and the measures taken by the University to comply with the regulatory requirements. All requirements resulting from the audit and inspections have been complied with. Membership of the UTRPA is shown in Appendix G.

In 2006 the RPS trained 595 members of the University community on Radiation Safety and conducted more than 600 on-site investigations to assess risk and compliance, not including follow-up evaluations.

The scope of work of the RPS is expanding to deal with emerging concerns, both with ionizing radiation (particularly extended security of radioactive sources) and non-ionizing radiation such as high frequency EMFs.

4.1 Ionizing Radiation

Nuclear Substances and Radiation Devices Licences

In order to be able to use radioactive sources, the University must apply for and receive Nuclear Substances and Radiation Devices Licences. The University currently operates under three Licences; *Consolidated Nuclear Substances and Radiation Devices Licence*, *Developing and Testing Licence*, and the *Waste Nuclear Substances Licence*.

To meet the licenses requirements, the University administers a permit system for individual researchers and administers controls on their use. The Radiation Protection Service is responsible for ensuring all the conditions of the licences are met to ensure the safety of the University community and that the important research and teaching activities which they support can proceed without interruption or constraint.

Permits and Compliance

There are 192 radioisotope permit holders across the University. In accepting a permit, the permit holder assumes the responsibility of a "supervisor" as defined under the law and agrees to abide by the terms and conditions of the permit, the policies and procedures set out by the UTRPA and the requirements of the Canadian Nuclear Safety Commission and other regulators as described above.

The high turnover and the large number of staff using and/or potentially exposed to ionizing radiation has implications for radiation safety and safeguarding the University's Licences, and emphasizes the need for timely and appropriate training, effective control programs, and robust processes for ensuring that we consistently meet all legislative requirements.

A Physical Security Inspection was conducted by a CNSC inspector on September 7, 2006. The inspection resulted in two Action Notices. Both Action Notices have been successfully addressed and the matter is considered closed.

A Type 2 CNSC Inspection was conducted on June 6, 2006 of the U of T Waste License. The inspection resulted in three Action Notices and 1 Directive. The University successfully addressed all actions and the directive. The CNSC considered this matter closed.

4.2 Non-Ionizing Radiation

The RPS is responsible for all non-ionizing radiation at the University, recognizing growing concerns with the potential hazards of Lasers, electromagnetic fields, static electrical and magnetic fields, as well as radiofrequency (wireless communication) fields.

Laser Safety

The laser safety program consists of training, risk assessments, medical surveillance, inspections and follow-up to assess the controls and event investigation. Any concerns identified are reported to the responsible senior management and the Laser Safety Committee to be used as guidance in program development, audit and training improvements. Members of the Laser Safety Committee are shown in Appendix J of this report.

Vision examinations are required for every laser worker who operates an open beam class 3b or class 4 laser. Ninety new laser workers underwent medical surveillance in 2006.

Every new class 3b and class 4 laser is registered with the Radiation Protection Service. Before work can begin with the new lasers a hazard assessment is performed by the Laser Safety Officer (LSO). The required engineering and administrative controls are indicated to the Principal Investigator (PI), and their implementation is verified during an inspection of the new system. Currently there are 209 class 3b and class 4 lasers registered under the direction of 59 Principal Investigators in 81 locations across the University. In 2006 150 Class 3b and Class 4 lasers were inspected.

The Office of Environmental Health and Safety Laser Safety web page contains information about the U of T Laser Safety Program, laser registration, laser training, laser safety procedures, and administrative and engineering controls.

Electro-Magnetic Field (EMF) Surveillance

To ensure that occupational or general population limits for EMFs are not exceeded in U of T work areas, a program for electro-magnetic field (EMF) surveillance has been established for areas under the University's control.

Wireless Communication

New wireless technology employs radiofrequency waves. We will need to increase our capacity to measure the range of possible wavelengths that are being used as this technology becomes more pervasive and as community concerns about possible health effects grow.

Further information on RPS activities is shown in Appendix I of this report.

5.0 Biosafety

Research and teaching activities at the University that involve the use of potentially hazardous biological agents must be conducted in accordance with the requirements of the University's Biosafety Manual and applicable legislation.

In 2006 the vacant biosafety officer position was filled. The biosafety function is now managed together with radiation safety, resulting in more efficient use of biosafety and radiation protection staff who both inspect laboratories for compliance with regulated requirements and permit conditions. In 2007 there will be further integration with the appointment of a Manager of Laboratory Safety Assurance, who will have oversight of radiation safety, biosafety and chemical safety in the research and teaching laboratories. This will allow an integrated risk-based approach to be taken to laboratory safety and will allow for considerably greater efficiencies in compliance assurance.

5.1 Biosafety Committee

The Biosafety Committee ensures that all activities involving the use of hazardous biological agents are conducted in a safe manner and conform to the requirements of the Biosafety Manual. The membership of the committee is listed in Appendix F.

In 2006 a revised Biosafety *Policies and Procedure Manual*, incorporating information from the revised Laboratory Biosafety Guidelines issued by Health Canada, was issued and is available online at www.ehs.utoronto.ca/services/biosafety.htm. This more comprehensive manual addresses issues such as biosecurity, decontamination and use of biological safety cabinets. It addresses, in greater detail, the required safe operational practices for laboratories and the commissioning and certification of Level 3 and 4 Laboratories. More information is presented on the regulatory aspects of handling infectious substances.

5.2 Biosafety Certificates

Biosafety containment levels are established to ensure the safe handling of biological hazards in a laboratory setting. The level of containment increases with the level of risk associated with a given biological agent, and includes engineering, operational, technical and physical considerations. Most University laboratories using biological agents operate as Containment Level 1 or 2 laboratories. There are two Containment Level 3 laboratories at the University where researchers work with higher risk organisms. Both of these locations are secured against unauthorized entry and have special procedures.

A University biosafety certificate is required for all research and teaching laboratory activities which use potentially hazardous biological agents. A new biosafety certificate application form has been drafted and 163 biosafety application forms were received and approved by the

Biosafety Committee in 2006. Biosafety certificates issued for Containment Level 1 are valid for a period of two years. Those for Containment Level 2 and 3 are valid for one year only.

This year the Biosafety committee decided to discontinue issuing biosafety certificates to external facilities, such as the hospitals. The University's Biosafety organization does not inspect laboratories in facilities off-campus to ensure conformance with permit conditions and therefore it was deemed no longer appropriate to issue such certificates.

5.3 Steam Sterilizers / Autoclaves

During 2006, a survey was conducted of autoclaves/sterilizers in use across the University. Approximately 100 steam sterilizers/autoclaves are located on the three campuses, with a large number being located in the Faculty of Medicine. A priority action for 2007 will be to establish procedures for the management of pressure vessels, to review which units are still required, to ensure that these are safe and compliant and to remove redundant and/or non-compliant units from service.

5.4 Importation Permits for Biological Agents

The Public Health Agency of Canada (PHAC) and the Canadian Food Inspection Agency (CFIA) require permits for the import of biological agents used in research laboratories. Both agencies require the principal investigator to submit extensive documentation. The Biosafety officer conducts a physical inspection of the laboratory and completes and signs these documents. Twelve import documents were completed during 2006 for the Canadian Food Inspection Agency and the Public Health Agency of Canada.

5.5 Level Three Laboratories

The University currently operates two Level Three laboratories. One has just been recertified by PHAC. A second level three laboratory is a new facility awaiting commissioning by CFIA. The emergency response protocols for Level Three laboratories were reviewed and modified in 2006. This task was performed with the involvement of all stake holders, (users, fire department, campus police, Medical Sciences Building security and EHS office)

6.0 Health and Safety Training

6.1 H&S Training

EHS provided courses to employees and graduate students on a range of topics, including Asbestos, Chemical Safety and WHMIS, Office Ergonomics, Confined Spaces, Fall Protection, Health and Safety for Managers and Supervisors, Lockout, Manual Materials Handling, Mercury Awareness, Mould Awareness, Respiratory Protection, Noise, and Slips/Trips/Falls, Radiation Safety and Biosafety. The training courses provided by EHS are summarized in Appendix H. Members of the Office of Environmental Health and Safety teach courses on occupational health and safety in the Graduate Department of Community Health in the Faculty of Medicine.

6.2 Online Training

In October 2006, EHS launched an online Health and Safety Orientation course for new University employees. The course is hosted on the University's Blackboard System maintained by the Resource Centre for Academic Technology. In 2007 this will become a standard part of the integration process for new staff. Further online courses, including those for Trades Health and Safety Orientation, Asbestos Awareness and Chemical Safety/WHMIS training are planned for 2007.

6.3 Biosafety Training

A new Biosafety Training Program was established providing information regarding the potential hazards of laboratory work with biological agents, and the safe work practices and procedures approved by the University Biosafety Committee. The program was delivered three times in 2006 and attendees were awarded Certificates of Training.

Five Biosafety orientation training sessions were held in September to expose more than 500 graduate and undergraduate students to the Biosafety structure within University. Attendees were trained in the basics of biosafety and how to work safely around biohazardous materials that may be in their laboratories, including recognition of warning signs. They were also provided with contact information to address concerns or in case of emergencies.

6.4 Radiation Training

All users of radioactive materials are required to successfully complete a Radiation Safety Course. The course addresses the risk involved in the use of radioactive materials in a wide variety of research activities. The potential biological effects and methods of control of these hazards are stressed in order to prevent internal and/or external exposures. Instrumentation used to detect contamination and dosimetry and bioassays to assess exposures are explained. The regulatory and administrative requirements of the University are reviewed and emergency response measures are discussed.

Following successful completion of the course, a certificate of training is delivered to the graduate, at which time an inspection is performed of the risks and safe handling precautions specific to the user's laboratory to ensure the newly authorized user is aware of the University's expectations prior to commencing work with radioactive materials.

The RPS also offers specific training for:

- Use of irradiators, which contain highly hazardous radioactive sources
- Use of x-ray generating devices
- Summer and Special Project Students
- Other University staff such as Housekeepers, Facilities and Services staff, Campus Police etc, who may potentially come into contact with radioactive sources or devices while carrying out their duties.

In 2006 the RPS provided refresher training to all Permit Holders and authorized users that have not received training in the past 3 years.

In response to increasing training requirements and to improve communication with radiation workers, the RPS has prepared web-based Radiation Protection calculations and training modules which have been posted on the RPS website. Online radiation refresher training was developed in 2006 and will be implemented in 2007.

6.5 Laser safety training

Laser safety training is mandatory for all class 3b and class 4 lasers users. A written examination must be successfully completed; a preliminary inspection of the user's laser facility is also performed to confirm understanding of the hazards specific to the user's work place. In 2006 a total of 120 new laser workers were trained. Awareness sessions in non-ionizing radiation were provided for the training of 38 Certified Workers and other staff in 2006.

The Laser Safety Committee requires mandatory refresher training every three years. To facilitate this, an online laser safety refresher training course was developed in 2006 (to be implemented in 2007).

7.0 Work-Related Injuries and Illness

7.1 Types of Injuries and Days Lost

The University monitors accident rates and trends as part of a program to reduce the risk of workplace injury. All injuries and illnesses that are 'critical injuries', require a health care appointment or result in lost time must be reported to the Worker's Safety and Insurance Board. Figure 7.1 (below) indicates the number of claims, by level of severity, for the period 1999 to 2006. The average number of days lost per incident is presented in Table 7.1.

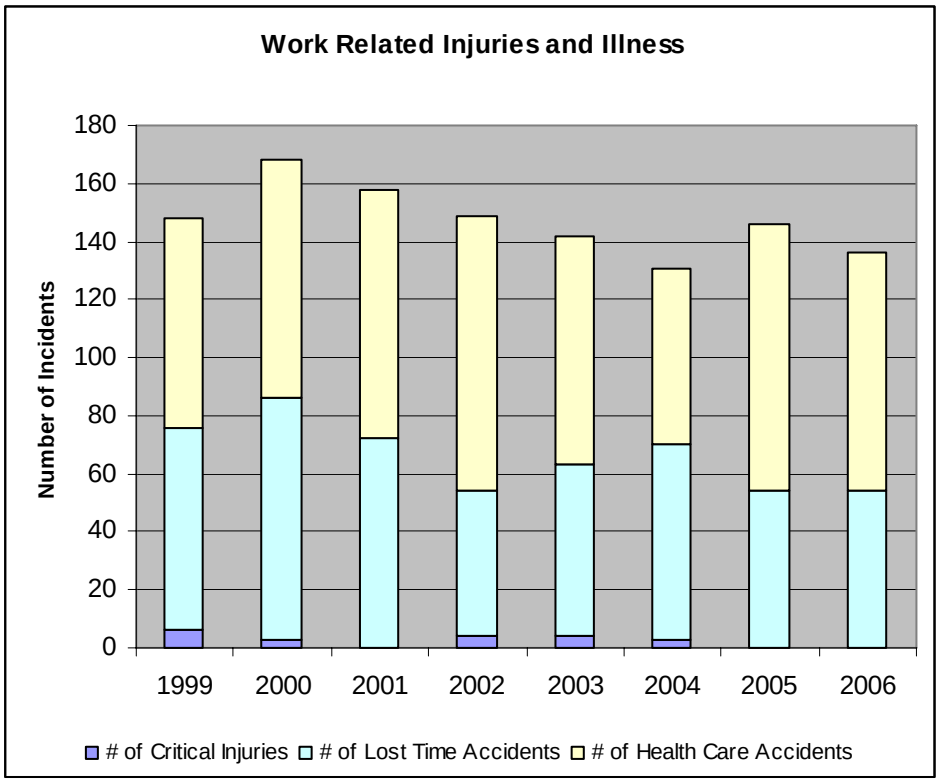

Figure 7.1

Table 7.1

Total Number of Days Lost and Average Number of Days Lost per Accident

	1999	2000	2001	2002	2003	2004	2005	2006
# of Days Lost	777	1017	1570	744	901	1689	717	773
Average Number of Days Lost Per Accident	11.1	12.3	21.8	14.8	15.23	24.12	13.3	14.31

Critical Injuries

Critical injury has a specific definition under the Occupational Health and Safety Act. A critical injury is one that is of a serious nature because it:

- places life in jeopardy;
- produced unconsciousness;
- results in substantial loss of blood;
- involves the fracture of a leg or arm but not a finger or toe;
- involves the amputation of a leg, arm, hand or foot, but not a finger or toe;
- consists of burns to a major portion of the body; or
- causes the loss of sight in an eye.

There were no critical injuries in 2006.

Health Care Accidents

A health care accident is one which requires professional medical attention but involves no time lost from work past the day of the accident. There were 82 allowed health care accidents in 2006, which was a decrease from 92 claims in 2005.

Lost Time Accidents and Accident Severity

There were 54 allowed lost time accidents in 2006, the same number as 2005. However, there was an increase in the total amount of time lost due to accidents in 2006 compared with the previous year (805 days vs. 717 days lost). This continues to represent a significant decrease from 2004 when the University had 1,689 days lost due to work related illness and injury. The average number of days lost per accident in 2006 was 15 days.

The distribution of incidents categorized by length of absence is presented in Figure 7.2. As the graph indicates, there was an increase in the number of absences of greater than 30 days from 2005 to 2006. This increase occurred mostly in accidents involving musculoskeletal injury resulting in more than one but less than two months absence.

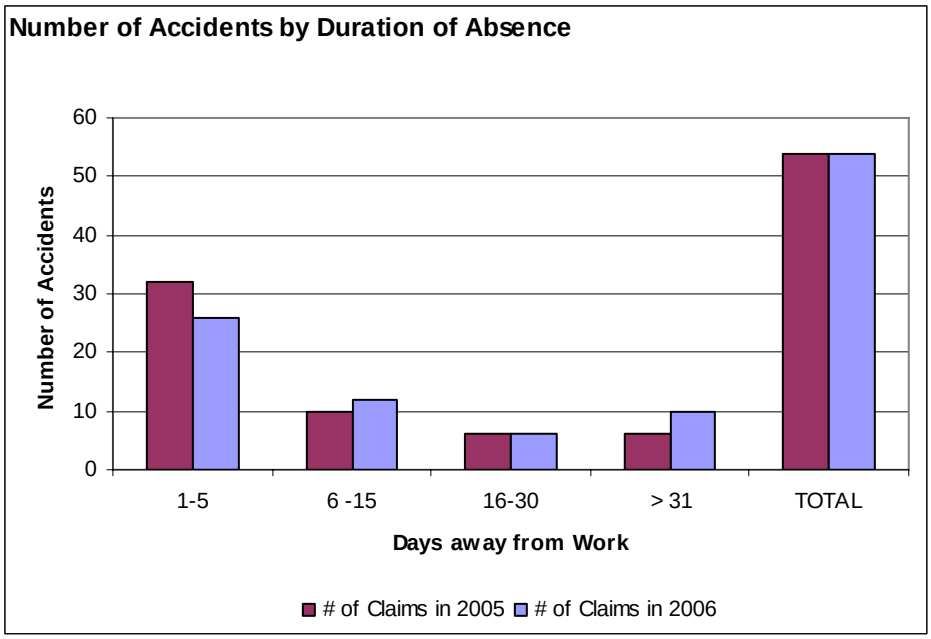

Figure 7.2

Lost Time Accident Frequency

Lost time accident frequency (LTAF) is commonly used as an indicator of safety performance. It represents the number of accidents per 100 employees in any employee group. Using this indicator, the performance of the University in comparison with our peer group, Ontario universities, is presented in Figure 7.3. It indicates a somewhat variable performance year over year with the University of Toronto's LTAF ranging between 0.3 and 1.3. Figure 7.3 also indicates that this variable pattern is typical for the University sector and confirms the need for a more systematic approach to safety management at U of T.

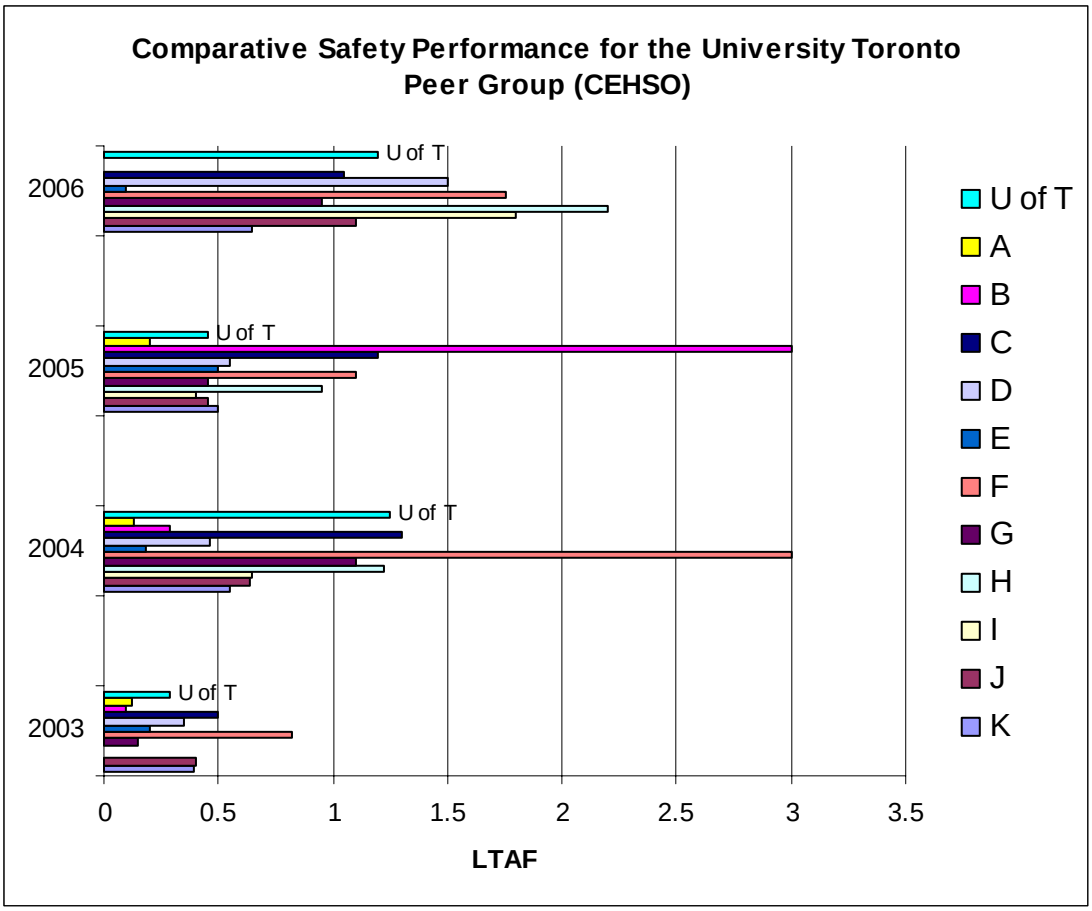

Figure 7.3

Table 7.2. below shows the breakdown of lost time claims by employee group. The Lost Time Accident Frequency for these groups is presented graphically in Figure 7.4.

Table 7.2. Number of Incidents resulting in Lost Time by Employee Group

Group	*Number of Employees (2006)*	2002	2003	2004	2005	2006
CUPE 3261	*603*	23	34	29	32	23
Trades	*67*	9	6	8	2	2
CAW (Operating Engineers)	*87*	0	0	5	1	2
CUPE 1230	*179*	1	2	1	3	1
CUPE 2484	*35*		1	2	0	0
OPSEU (Police)	*46*		2	2	2	0
HERE 75 (89 Chestnut)	*79*		1	4	1	4
USWA	*3265*	9	6	15	11	15
Admin (non-union)	*Approx. 800*	7	3	2	2	5
Academic/Librarian	*Approx. 3300*	1	4	2	0	1

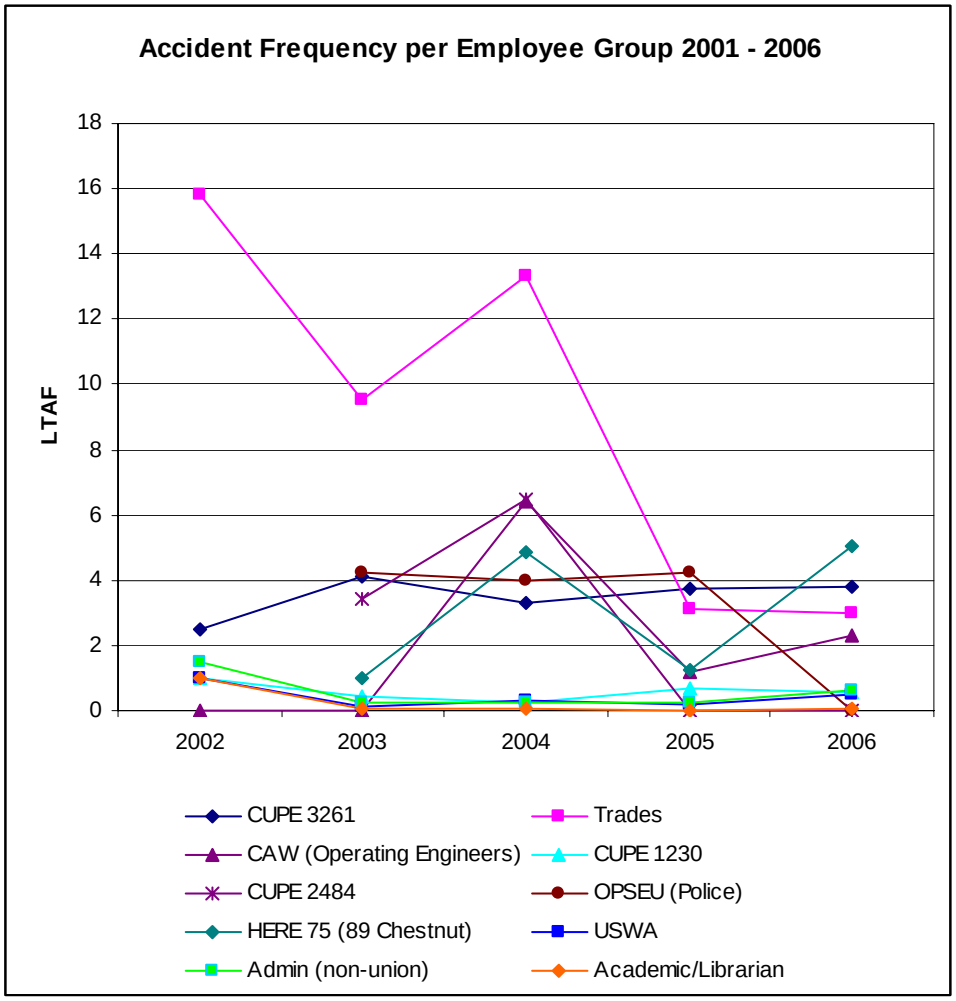

Figure 7.4

Table 7.2 indicates that CUPE 3261, while experiencing a reduction in the number of lost time accidents in 2006 as compared to 2005, continued to have the highest number of lost time claims in the University (42% in 2006). This is a fairly large group of 603 employees, comprised of caretaking and grounds staff at the St. George, Mississauga, Scarborough campuses, Hart House, and animal care workers in Medicine and Zoology. A Caretaking Research Project (in which Health and Well-being Programs and Services examined the impact of automated equipment use on job satisfaction) is now complete. While there was no significant difference found between the staff in buildings where the equipment was introduced compared to the staff in buildings where there was no change, other data obtained from this study will provide direction to EHS, HWB and Facilities and Services in future targeted interventions to continue to reduce injury and accident rates.

The highest Lost Time Accident Frequency, with a LTAF of 5.6, was among the 79 members of the HERE group who work at 89 Chestnut. This group experienced four accidents in 2006.

Two were back injuries involving lifting and refresher training is being provided.

CUPE 3261 and the skilled trades group followed HERE with LTAF's of 3.81 and 2.98 respectively. Figure 7.4 indicates that with the exception of the Trades group, the accident frequency for most groups of employees has remained relatively consistent over the last five years. The Trades group has experienced a significant decline in lost time accident rate over the past five years, from a LTAF of 21 in 2001 to three in 2006.

Claims Breakdown by Type of Accident for 2005

The majority of accidents continue to be due to falls, contact, sprains and strains. (Figure 7.5) These three account for 94% of all WSIB claims.

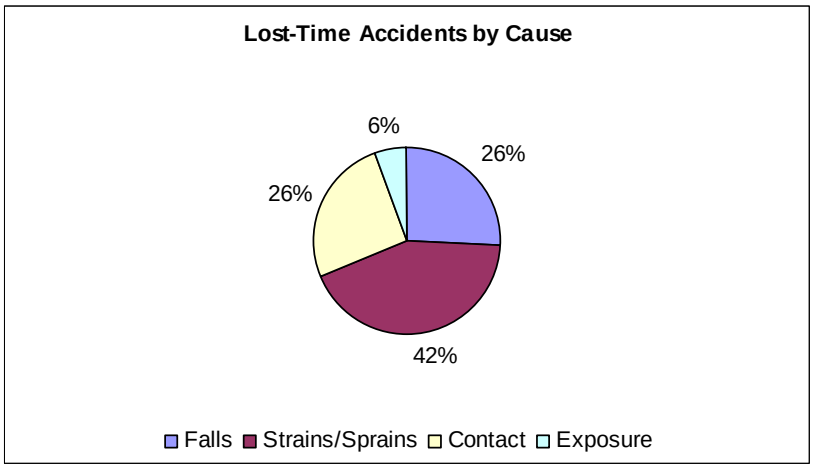

Figure 7.5

The major contributors to lost days are strains and sprains with 23 claims resulting in 53% of the lost days. Fourteen accidents caused by falls represent 27% of all lost days. This year there were three WSIB claims for exposure to noxious substances. An employee who developed an allergy to animals in the laboratory resulted in the majority of the 134 days lost this year in this category. With this exception the breakdown of lost days by accident type has remained fairly consistent over the last several years.

Health and Well-being and EHS continue to work together to identify accident/injury trends and develop targeted interventions to reduce and prevent workplace injury and illness. Our action plans for 2007 include developing and communicating more useful and timely accident performance data in order to be able to allow a more proactive approach in addressing safety concerns.

Accident Costs

The University pays Workers Safety and Insurance Board (WSIB) a premium each year based on the number of employees at the University. At the end of each year, the University pays a

surcharge or receives a rebate depending on the number and severity of the injury claims in comparison to other similar organizations and the costs of the claim.

In 2006, the University returned to the desirable position of receiving a significant rebate. As documented in the 2005 report, in 2005, four claims resulted in significant lost time days. In these four cases, the incidents were unrelated to the specific work of the employees but occurred on University property. The University actively and successfully appealed the decisions of two of the claims resulting in cost relief.

Long Term Disability

Health and Wellbeing also provides support to employees on sick leave and long term disability (LTD). Information regarding LTD cases is reported here to provide a more complete picture of the unit's activities with respect to facilitating the return to work of ill or injured employees. Table 7.3 shows the number of LTD cases over the last three years. While approximately 65% of approved claims are longer term and less likely to return, at any one time HWB is actively working with 60 to 80 employees on LTD to facilitate a return to work as soon as possible. In 2006, 39 employees were returned to work from LTD, a positive step for these employees and a substantial savings for the University. Five of these had been absent for more than two years prior to returning. The University is not currently able to provide data on sick leave utilization. We are currently implementing a system to centrally track sick leave on HRIS to ensure better data in the future.

Table 7.3 Long Term Disability Statistics

	Total Number of Claim Files[1]	Approved Claims[2]	New Claims[3]	Return to Work
2004	247	165	55	27
2005	266	178	59	36
2006	287	190	81	39

[1]Total number of active files (includes approved claims, declined claims, pending claims and claims terminated during the year)
[2]Total number of approved claims being paid during the year
[3]Cases opened during the year; not all approved.

7.2 Occupational Disease Prevention Programs

Occupational disease prevention relates to the actual or potential impact of biological, chemical, and physical hazards on workers. Based on legislation or specific identified risk factors certain worker groups are provided with baseline health evaluations, ongoing medical surveillance and provision of prevention strategies and of appropriate vaccines as indicated.

The major medical surveillance programs in effect in 2006 were:

Mercury Surveillance

A second mercury surveillance program was initiated in the fall 2005, to follow up on concerns expressed by a group of staff who did not participate in the first program. After routine testing throughout the fall, 2005 and winter and spring of 2006, test results indicate no mercury exposure in the workplace.

Asbestos Surveillance Program

The asbestos surveillance program was initiated in 2004. Following distribution of information about the voluntary medical surveillance program to managers and front line employees, a small number of employees choose to participate in this program.

CANFAR Level III Lab Medical Surveillance Program

The University opened a level III research lab in 2005. Every person who conducts research in the lab is required to participate in the medical surveillance program which includes surveillance and immunization. In preparation for this, a protocol was agreed upon by Health and Well-being Programs and Services and the Director and Principal Investigators of the CANFAR Level III Lab. There continues to be full compliance from those involved.

Zoonotic Diseases

Animal care workers undergo surveillance for exposure to Q Fever (exposure to sheep) psittacosis (exposure to birds) and Simian B Herpes (exposure to non-human primates). Immunization for Rabies, Hepatitis A and Hepatitis B are provided as required.

Laser Workers

Baseline histories and eye examinations are performed on workers using Class 3B and 4 Lasers.

Workers in Noise Hazard Areas

Audiograms are performed on employees who are risk of noise induced hearing loss due to the environment in which they work.

Influenza immunization

Influenza immunization clinics are held each year at all three campuses. UTM campus organized a clinic in conjunction with the Peel Public Health department.

Tuberculosis

Annual screening is offered to employees in University workplaces where a risk has been identified: dental clinics, student health services, animal care workers, campus police services and some research laboratory personnel.

7.3 Health Promotion

The Occupational Health staff promotes healthy living by identifying risks and developing strategies to protect workers from those hazards (e.g. distributing information and sunscreen to all grounds workers and campus police to prevent sunburn and skin cancer). Information sessions and programs are developed to maintain and enhance the health of employees in the University of Toronto; in cooperation with educators from the Kidney Foundation, the Occupational Health Nurse conducted blood pressure clinics at Health and Wellbeing Programs and Services and within Trades and offered several educational sessions on “Healthy Heart Tips” that were very well attended.

Health and Well-being Programs and Services staff participated in a University-wide employee health and benefits fair at the Faculty Club, and a Health and Safety Fair in the Robarts Library, and the second annual Achieving Work-Life Balance Month. Other initiatives included biweekly massage clinics, continuation of the walking groups, and weekly yoga classes.

7.4 Advice and consulting on occupational health matters

Health and Well-being Programs and Services staff provides a clinical service to any employee requiring occupational/medical assistance or advice. Employees access this service by making confidential appointments with the nurse or the physician.

Other Health and Well-being Programs and Services staff responsible for long-term disability, sick leave and WSIB consult with medical team members to assist in planning or strategizing in complex cases or in facilitating referrals on behalf of employees to external medical providers.

Table 7.3

Summary of Occupational Disease Prevention Activities by Number of Participants

Influenza Vaccinations	450
Immunizations (Tuberculosis, Hepatitis B, etc.)	159
Serology (Blood Tests)	106
Audiograms	160
Other Procedures and Assessments	178
Health Risk Assessments	86
Vision Tests	112
Blood Pressure Tests	127
Other Lab Tests: Mercury, Varicella	23
Chest x-ray follow ups	15
Pulmonary Function Tests	35

8.0 Environmental Protection Services

Environmental Protection Services (EPS) supports research and teaching activities by managing a hazardous waste disposal program for chemical and radioactive wastes. EPS also responds to major chemical spills, and provides training, information and advice relating to disposal of hazardous materials, including regulated requirements.

The job description of the Radiation Technicians was reviewed and their duties expanded to include responsibility for laboratory inspection to enhance our compliance assurance capability. As part of the University's crisis planning they will also receive additional training to provide a resource for chemical spill response.

A review of options for more cost-effective hazardous waste disposal was conducted by EPS.

8.1 Chemical Waste Management

The Office of Environmental Health and Safety continues to look at options to establish a new Waste Facility which could incorporate several waste streams into one facility and better handle the increasing volumes of waste produced at the University. The average monthly cost for chemical waste disposal has risen from $8,000 prior to demolition of the central waste management facility at the end of 1999 to nearly $20,000 per month, averaged over the last three years. Chemical wastes are now removed directly from all buildings generating chemical wastes by an external waste disposal contractor.

The volume of chemical waste increased by 34% in 2006 (Table 8.1). The increase in volume is largely attributable to better awareness of our service, additional buildings requiring service and cleaning of the old buildings.

Table 8.1 Amount of Waste Generated at the University of Toronto

Year	Waste Generated (kg)	Number of Drums Shipped
2006	124,000	1230
2005	92,000	1115
2004	70,000	930
2003	77,000	1055
1999	65,000	400

EPS continued to work with U of T Recycling to recycle more than 2,950 kg of batteries during 2006, including alkaline and lead acid. A Hazardous Waste Collection day was performed at the Mississauga campus to help encourage labs to remove old or unwanted chemicals from their areas and resulted in 17 drums of chemical waste - almost double the normal pickup from the Mississauga campus.

The Ministry of the Environment (MOE) completed a full environmental audit of the Scarborough campus during 2006. The inspector made some minor notations which have all been addressed. Similar audits like these should be expected at both the Mississauga and St. George campuses in the near future.

8.2 PCB Waste Management

PCB waste awareness has increased on campus and EPS has been more heavily involved in maintenance projects and in sampling oils from possible PCB related equipment. The PCB storage container at the Scarborough campus was decommissioned during 2006 and will only be used for short term storage of PCBs. PCB waste identified on campus during 2006, consisted mostly of ballasts from fluorescent lights and this has been packaged and disposed.

In 2006, five PCB containing transformers from the campus were decommissioned to meet the regulatory requirements established by Environment Canada, leaving approximately 20 more PCB transformers still to be removed.

8.3 Radioactive Waste Management

The volume of radioactive waste generated by the University continues to increase, as does the cost of disposal. The University pays $2,900 per drum for disposal of compacted solid radioactive waste. A new more powerful radiation waste compactor was installed in July 2005, reducing the number of solid radioactive waste drums sent for disposal despite increasing volume. In past years it was not uncommon to have as many as 60 drums over a year, but in 2006 we produced only 30 drums for shipment.

The Delay and Decay program manages radioactive liquid wastes with a half-life of less than ninety days, accounting for approximately 455 bottles in 2006. Short half-life isotopes are stored for ten times the half-life, after which they are sampled to confirm that they can be disposed of as non-hazardous waste. Liquid wastes with greater than ninety days half life are individually tested to ensure they meet the criteria for release as non-hazardous waste. This year, 544 bottles were disposed and every bottle that is “delay and decayed” for non-hazardous release represents a saving to the University of approximately $145.

Approximately 200 students and staff on the St. George campus were trained in the proper handing of both chemical and radioactive waste.

8.4 Spills Management

The Hazardous waste management group responded to 23 spills in 2006, including broken bottles of solvents and acid, several calls for elemental mercury spills and larger spills involving fuel oil. Three spills were reported to the Ontario Ministry of the Environment, including two releases of freon from chillers and an incident involving dye dumped by students into a storm drain following a student campus event. No follow up action was required by the MOE for any of these spills.

A spill of fuel oil caused by an overflow from a newly installed storage tank in the basement of the New College Residence required the services of an external spill response company to clean up and dispose of the spilled material. As the spill was contained on site it was not reportable to the MoE.

The University has one site on campus that continues to be monitored for environmental impact after a leak occurred during the removal of underground storage tanks which formerly contained fuel oil.

9.0 Ministry of Labour Orders

The Ministry of Labour orders issued to the University during 2006 and their status on December 31st, 2006, are summarized as follows:

Issued	Description of Orders	Status
March 2006	**Civil Engineering** Galbraith Building, 33 St. George Street • Columns of soil to be tested for presence of vinyl chloride • Employer to take reasonable precautions in the circumstances for the protection of worker • Employer to ensure that existing protocols and procedures for hazardous substances reflect current status of the workplace and are enforced	**Completed**
April 2006	**Capital Projects** OISE, 252 Bloor Street West • Constructor responsibilities • Notice of Project to be filed • Appoint a competent person as supervisor	**Completed**

Appendix A

Office of Environmental Health and Safety

Director, Environmental Health and Safety	Peter Nicoll
Administrative Assistant	Shamin Ramjit
Secretary	Anita Morehouse
Coordinator, Hazardous Waste Management	Robert Provost BSc.
Chemical Technician	Mario Reyes BEng.
Radiation Service Technician	Luis Ponte
Radiation Service Technician	Peter Smith
Manager, Occupational Hygiene and Safety	Margaret Fung BSc., MASc., CIH
Biosafety Officer	Ayoob Ghalami
Occupational Hygienist and Safety Specialists	Sandra Deike BSc., MHSc. CHRSP
Occupational Hygienist and Safety Specialist	Michael Zitnik BSc., MHSc
Manager, Radiation Protection	TBA
Radiation Safety Officer/Laser Safety Officer	Sandu Sonoc BSc., MSc., PhD
Radiation Safety Officer	Tanya Neretljak BSc.,
Radiation Safety Officer	Hector Rocca BSc., MSc

Health and Well-Being Programs and Services

Manager, Health and Wellbeing	Myra Lefkowitz, MSW
WSIB Administrator	Anne Chreptak
Disability and Accommodation Consultant	Kirsty Forrest Marton
Disability and Accommodation Consultant	Francilla Charles
Counsellor	Anna Maria Petrone
Occupational Health Nurse	Glenna Hilborn, R.N. OH.N.
Consulting Physician	Gabor Lantos, PEng. MBA MD

Appendix B

Joint Health and Safety Committees
Meetings and Certified Members in 2006

	Committee	# Meetings	# Certified Members		Committee	# Meetings	# Certified Members
1	Trades/Utilities	10	12	24	Forestry, Faculty of	2	1
2	Police	2	3	25	Law, Faculty of	4	2
3	Library (CUPE 1230)	4	2	26	Rotman School of Management	5	1
4	CUPE 3261	9	5	27	Music, Faculty of	5	2
5	USW 1998	2	2	28	Nursing, Faculty of	2	2
6	U of T at Mississauga	5	4	29	OISE/UT	5	4
7	U of T at Scarborough	5	6	30	Pharmacy, Faculty of	1	1
8	Faculty of Applied Science & Engineering	3	5	31	Physical Education and Health, Faculty of	8	5
9	Aerospace Studies, Inst. of	3	1	32	Social Work, Faculty of	2	2
10	Chemical Engineering	3	2	33	1 Spadina Crescent	0	2
11	Civil Engineering	4	3	34	21 King's College Circle	3	1
12	Electrical and Computer Engineering	3	2	35	215 Huron Street	2	2
13	MIE/IBBME	4	2	36	Admissions and Awards	4	2
14	Sidney Smith Hall	2	1	37	Borden Buildings	1	2
15	Chemistry, Dept. of	3	2	38	School of Continuing Studies	3	1
16	Geology, Dept. of	1	0	39	School of Graduate Studies	0	2
17	McLennan Building	4	2	40	Koffler Student Services	5	5
18	Medicine, Faculty of	4	6	41	Robarts Library Complex	3	5
19	500 University Ave	3	2	42	Simcoe Hall/Visitors Centre	4	3
20	FitzGerald Building	1	1	43	89 Chestnut Residence	4	4
21	Medical Sciences Building	4	5	44	Early Childhood Learning Centre	3	3
22	Architecture, Landscape & Design, Fac. of	1	1	45	Hart House	5	3
23	Dentistry, Faculty of	4	7				

Notes re changes in JHSC structure in 2006:

- The Departments of Botany and Zoology were restructured to form the Departments of Ecology and Evolutionary Biology (EEB) and Cell and Systems Biology (CSB). The new JHSC's will be operational in 2007.
- The Dept. of Economics is undergoing a building renovation; employees are represented on the Sid Smith JHSC.
- There were no committees established in the Best Building, the Banting Building and the Tanz Building. Until individual building committees are established, these areas will be represented by the Faculty of Medicine JHSC.
- The Materials Science & Engineering JHSC lost a significant portion of its membership due to retirement and is currently represented by the Faculty of Applied Science & Engineering JHSC.

Appendix C

JHSC Survey – Fall, 2006

CRITERIA	Yes	No	% Compliant
Meets at least once every 3 months	21	5	81%
At least 1 worker and 1 management certified member	22	4	85%
Monthly workplace inspections	18	8	69%
At least one worker member on inspection team	23	3	88%
Worker members make up at least 50% of committee	26	0	100%
Worker members selected by the workers they represent or by the trade union, if present	18	8	69%
Committee has management and worker co-chairs	25	1	96%
Worker co-chair selected by worker members. Management co-chair selected by management members	19	6	76%
Names and work locations of members posted in workplace	21	4	84%
Minutes kept of all meetings	25	1	96%
Copy of minutes forwarded to EHS	23	2	92%

Appendix D

Asbestos Advisory Committee

Ms. Christina Sass-Kortsak (Co-Chair)	Assistant Vice-President, Human Resources
Mr. Ron Swail (Co-Chair)	Assistant Vice-President, Facilities & Services
Mr. Doug Colby	Certified Worker Co-Chair, Trades/Utilities JHSC
Mr. Ron Dmytrenko	Member, Trades/Utilities JHSC
Mr. Rudy Won	Certified Member, CUPE 3261 JHSC
Mr. Tony Kopteridis	Member, Trades/Utilities JHSC
Mr. Nick Zouravlioff	Director, Capital Projects
Mr. Jim Derenzis	Director, Facilities Management, UTSC
Mr. Paull Goldsmith	Assistant Director, Facility Resources, UTM
Mr. Irfan Miraj	Manager, Environmental Hazards and Safety, F&S
Ms. Margaret Fung	Manager, Occupational Hygiene and Safety, EHS
Mr. Peter Nicoll	Director, Environmental Health and Safety

Appendix E

Examples of specific health and safety assessments conducted by EHS in 2006:

1. Concerns were expressed regarding heat exposure in the Mechanical Rooms of Sir Daniel Wilson and Morrison Hall Residences. The assessment showed that, based on the existing conditions, the workers could not continuously work in the two mechanical rooms for extended periods of time. Recommendations were made to establish a proper work-rest schedule for the individuals working in the mechanical rooms. Engineering controls were also recommended, including insulation of heat radiating equipment, and provision of ventilation for the area.

2. Concerns were expressed by the Division of Comparative Medicine (DCM) about the proposed use of methyl mercury chloride in an animal use protocol, given the high toxicity associated with this chemical. EHS worked with both the Pharmacy research team and the DCM animal care staff to develop safe procedures for the use, transport and disposal of materials containing methyl mercury chloride, and to ensure that proper controls (e.g. fume hoods, personal protective equipment) were in place. Medical surveillance for affected staff was provided by Health and Well-Being, and the Hazardous Waste Coordinator (EHS) advised on proper disposal methods for all contaminated materials. This cooperative effort helped to ensure that adequate protective measures for both research and animal care staff were in place while allowing the research to continue on schedule.

3. A researcher requested assistance on the proper handling and disposal of BrdU (5-bromo-2'-deoxyuridine) contaminated materials such as wastes, bedding and carcasses. BrdU is a potentially mutagenic with chronic exposure. After consulting with the Hazardous Waste Coordinator (EHS) and DCM staff, EHS provided suggestions on disposal and control measures to include in the development of a standard operating procedure for the safe handling of hazardous agents and carcinogens. The departments also obtained an external protocol to assist them in developing their procedures.

4. Leakage of sewage contaminated water from the sanitary drain system in the basement of the Medical Sciences Building resulted in flooding of several areas. EHS attended to assess the situation, and to address the health and safety concerns of the area occupants and the property manager. EHS made recommendations on the wastewater cleanup procedures, the cleanup and disinfecting procedures to be used by the cleanup contractor, and the use of appropriate personal protective equipment by individuals involved in the cleanup.

5. EHS conducted an assessment of an operation involving the use of Veriflex^{TM}, a polymer resin material, in the Mining Building. The existing protocol required the resin to be used in a fume hood or to be sealed in a mould in order to minimize exposure. The assessment showed the handling of the resin to be of low risk under normal use, but identified the potential for exposure in the event of a spill.

Recommendations were made and implemented, including strict adherence to the existing written protocol for the process, use of proper hygiene practices and proper personal protective equipment and the preparation of a written spill response procedure.

6. Concerns were expressed regarding the proper use and storage of fluorine gas in an a laboratory in the Sandford Fleming Building. Fluorine gas poses a health risk because of its highly corrosive and highly toxic nature. An assessment revealed that there were inadequate emergency controls and procedures in place, particularly in the event of a fluorine gas leak. Recommendations included the preparation of written emergency procedures, and the installation of a fluorine monitor to detect the presence of any gas leakage. EHS reviewed the emergency procedures and conducted a number of follow-up inspections to ensure the fluorine monitor was properly installed. The fluorine monitor has since been installed and the emergency procedures are posted in the lab.

7. Concerns were expressed by a laboratory in the Galbraith Building, regarding the procedures used to handle hazardous substances in the laboratory. EHS worked with the Civil Engineering joint health and safety committee and the laboratory supervisor to review and revise the Research Plan Questionnaire currently in place. Recommended revisions included improved planning for the experiments, better documentation and detailed written procedures for handling and disposal of hazardous substances used or generated in experiments. The revised Research Plan Questionnaire was adopted by the department.

Appendix F

University of Toronto Biosafety Committee

Dr. A. Bognar (Chair)	Medical Genetics & Microbiology
Dr. M. Brown (Medical Sciences Building)	Medical Genetics & Microbiology
Dr. Jun Liu (Canfar Laboratory MSB)	Medical Genetics & Microbiology
Dr. Jennifer Griffin (Tanz Building)	Centre for Research in Neurodegenerative Diseases
Dr. S. Cheifetz (FitzGerald Building & Dentistry)	CIHR Group in Matrix Dynamics
Dr. David S Guttman (Earth Sciences Centre)	Botany
Dr. Fang Liu (Centre for Addiction and Mental Health (CAMH), Clarke Site)	Psychiatry
Dr. Julie Guzzo (CCBR)	CCBR
Dr. T. Westwood (UT Mississauga)	Biology, UT Mississauga
Dr. A. Marks (Best Institute)	Banting and Best Department of Medical Research
Dr. M. Ringuette (Ramsay Wright Building)	Zoology
Dr. P. O'Brien (Pharmacy Building)	Pharmacy
Dr. James Scott (Gage Building, Banting Institute, All other locations without an on-site local coordinator)	Public Health Sciences
Dr. D. Riggs (UT Scarborough)	Botany, UT Scarborough
Mr. Peter Nicoll Director, Environmental Health and Safety (ex-officio)	Office of Environmental Health and Safety
Ms. C. Sass-Kortsak Assistant Vice President HR(ex-officio)	Vice President, Human Resources and Equity
Dr. R. Zand Director, Ethics Review Office (ex-officio)	Vice-President, Research & Associate Provost
Ms. A. Cheung Director, Research Grants (ex-officio)	Director, Research Grants, ORS
Dr. P. Lewis Vice-Dean, Research (ex-officio)	Vice-Dean, Research, Faculty of Medicine
Ayoob Ghalami University Biosafety Officer (ex-officio)	Environmental Health and Safety

Appendix G

University of Toronto Radiation Protection Authority

Prof. David Hampson	Pharmacy	Chair
Prof. Maurice Ringuete	Zoology	Vice-Chair
Prof. Sela Cheifetz	Dentistry	Member
Prof. Angela Lange	UTM	Member
Prof. James Smith	Chem-eng.	Member
Prof. David Williams	Biochemistry	Member
Prof. Herbert Kronzucker	UTSC	Member
Prof. Jane Mitchell	Pharmacology	Member
Prof. Dana Philpott	Immunology	Member
Prof. Adria Giaca	Physiology	Member
TBA	CCBR	Member
Ms. Christina Sass-Kortsak	Ass. VP-HR	Ex-officio member
Mr. Peter Nicoll	EHS	Ex-officio member
Mr. Rob Provost	EHS	Ex-officio member
Ms. Shamin Ramjit	EHS	Recording secretary
Dr. Sandu Sonoc	EHS	Ex-officio member

Appendix H

Summary of Training Provided by EHS in 2006

COURSE	DESCRIPTION	# of COURSES	# of ATTENDEES
Accident Investigation	This two-hour seminar provides the basic steps involved in conducting an accident investigation, and looks at identifying root causes of accidents so that effective controls be implemented.	4	57
Asbestos Regulation Update	This two-hour seminar provides attendees with an update of the new asbestos regulation effective November 2005.	9	133
Asbestos: Evaluating and Controlling the Hazard	This one-day seminar provides employees with classroom-style instruction about the hazards of asbestos and the work procedures to follow when working with or in close proximity to asbestos-containing materials.	1	9
Small Scale, Short Duration Asbestos Activities (Classroom)	This half-day classroom session provides employees with the information on asbestos procedures for safely conducting Type 1 and Type 2 asbestos activities.	1	7
Small Scale, Short Duration Asbestos Activities (Workshop)	This half-day workshop session provides employees with practical training on conducting Type 1 and Type 2 asbestos activities.	1	7
Managing Asbestos Projects	This three-hour seminar is specifically designed for supervisors, project managers and property managers at the University who manage, coordinate or contract others to do Type1, Type 2 or Type 3 asbestos activities.	1	6
Asbestos Awareness	This two-hour seminar provides employees with an overview of the types of asbestos-containing materials present at the University, the hazards associated with asbestos exposure, and the asbestos management program at the University.	3	270
Chemical Safety and WHMIS (Workplace Hazardous Materials Information System)	These 1-3 hour seminars provide basic information on the potential hazards of working with chemicals, the safety practices and procedures that can reduce the risks, and the elements of the WHMIS system. EHS provides training to summer employees (mainly students) and participates in seminars organized by departments.	10	336
Chemical Safety and WHMIS Train-the-Trainer	This one-day seminar provides individuals with the knowledge and tools to conduct chemical safety and WHMIS training to employees in their own department.	1	14
Working in Confined Spaces	This half-day seminar provides employees with an overview of the health and safety hazards associated with working in confined spaces, and focuses on the precautions which must be followed when entering and working in confined spaces.	4	38
Occupational Health and Safety Orientation for Employees	This one-hour session provides an overview of the rights, roles and responsibilities of all employees for workplace health and safety, and a description of common hazards in the workplace. It provides them with an overview of pertinent health and safety-related legislation and policies, and the health and safety resources at the University.	1	50
Occupational Health and Safety for Managers and Supervisors	This half-day seminar emphasizes the role and responsibilities of managers/supervisors with respect to health and safety. Included is an overview of health and safety at the University, the responsibilities of the various workplace parties, pertinent legislation and policies, and health and safety resources at the University.	1	36
Manual Materials Handling	This half-hour session provided employees with an awareness of the types of hazards associated with manual handling of materials in their workplace and measures to prevent injuries.	1	16

Ionizing Radiation Protection Course (Laboratory)	Successful completion of this 8 hour course and examination provides Principal Investigators, graduate students, technical staff and other users with training on radiation hazards, safety procedures, regulations and authorization to use sources of ionizing radiation	12	171
Ionizing Radiation Protection Course (Undergraduates)	Successful completion of this 4 hour course provides undergraduate students (summer, special projects) with training on radiation hazards, safety procedures, and authorization to use sources of ionizing radiation under direct supervision	6	56
Laser Safety Course	Successful completion of this 8 hour course and examination provides laser owners, supervisors, and users with training on lasing radiation/other hazards, safety procedures, registration conditions and regulations, and authorization to use laser generating equipment	10	120
Refresher Training (laboratory)	Successful completion of this one hour course and examination provides updated information on the current requirements of the University and regulatory bodies	17	144
Irradiator Training	Successful completion of this one and a half-hour course provides information on safe use of the irradiators/x-ray generating devices and current requirements of the University and regulatory bodies	6	10
Radiation Awareness Training for Facilities and Services Staff (Housekeeping, Trades, Utilities, Certified Workers)	This two hour course provides staff with an overview of the potential hazards of ionizing and non-ionizing radiation which they may encounter in their work. The RPS programs and requirements are explained, the precautions taken, and the known results of assessments presented.	6	38
X-ray Training	This new two hour course is made available to users of X-ray emitting devices, obviating the need for them to take the full Ionizing Radiation Protection Course	9	56
TOTAL		170	1574

Appendix I

Radiation Protection Program – Further Details

Academic Research Activities

The RPS is responsible for the radiation aspects of academic research activities in approximate 600 locations on all 4 campuses, as well as off-campus radiation usage in locations under the control and authority of the University. This responsibility includes 85 Radiation Devices, 80 X-ray machines, the calibration of 150 contamination meters and 42 LSCs annually, and the control of highly radioactive materials in irradiators and industrial radiography sources. This level of research activity requires considerable effort to maintain the records of purchasing of sources, inventory control, permit tracking and revisions to permits.

In 2006, 244 permit revisions were required. This large number of permit revisions was due to changes in room designations from Intermediate to Basic level (as required by the CNSC audit), commissioning of the new Pharmacy Building, decommissioning of the old Pharmacy Building, and routine changes to accommodate research with radioactive materials. The RPS also provided oversight for the commissioning of 40 new radioisotope laboratories and the decommissioning of 121.

In accordance with our permit requirements, dosimetry and exposure assessment was conducted using more than 1,000 Thermo-luminescent Dosimeters (TLDs) and 41 bioassays were conducted for potentially exposed people.

Performance Metrics

Operational monitoring of the RPS incorporates both leading and trailing indicators of performance. Metrics include numbers of active Radioisotope Permits in place and locations; purchases of radioactive materials; exposure monitoring of staff, numbers of designated nuclear energy workers; inspections of laboratories and other facilities such as irradiators, neutron pool, x-ray machines; numbers of radiation protection courses offered and level of attendance. Data on these measures is included in the table below:

Radiation Protection Services Operational Statistics

Operational Statistics	2003	2004	2005	2006
Active Radioisotope Permits	257	255	250	192
Revisions to Permits	89	95	89	244
Exposure Dosimetry of staff	1100	1150	1120	1011
Nuclear Energy Workers	11	12	14	23
Thyroid Bioassay Program	33	30	27	41
Urinalysis Bioassay Program	2	6	3	3
Leak tests on sealed sources	60	56	61	51
Ionizing Radiation Laboratory Inspections	362	613	752	541
Lasers Inspected	-	48	99	150
X-ray Machines Inspected	32	35	36	35
Radiation meters calibrated	85	115	109	150
Total Number of Staff Trained	361	588	1036	595

Issues of non-compliance with permit and regulated requirements are tracked and trends analyzed to establish priorities for future action. Such action normally includes follow-up with the laboratories regarding the issues of concern and a renewed emphasis on such issues in the training and refresher sessions.

Industrial Radiography

In order to facilitate construction and renovation work at the University, it is necessary to use radiography sources of considerable energy. For example, radiography of concrete may be required to identify hidden reinforcing steel bars, plumbing, or conduit within the concrete. To minimize the potential hazard from this type of work an industrial radiography program and permit system are in place at the University and managed by RPS. The permit system requires that the radiography source and user are licenced, the potential for exposure has been assessed, that necessary safety measures are in place to minimize any possibility of exposure, and that relevant JHSCs, workers, students, and staff are aware of the testing and the precautions to be taken.

During 2006, Industrial Radiography Permits were issued for four assessments in locations including Lash Miller, Dentistry, and Woodsworth College Residence (2).

Bioassay for Human Subjects

Health Canada provides an inter-comparison between several organizations using radioactive materials and which conduct in-house bioassays to assess potential exposure. The University of Toronto participates in this annual quality assurance program. The Radiation Protection Service was again successful in obtaining competence certification (Certificate of Achievement from Health Canada) for the thyroid bioassay and urinalysis bioassays for tritium and Carbon-14 in human subjects. Obtaining certification to perform these assessments provides a third party measure of the competence of the Radiation Protection Service and provides the University staff with confidence in our ability to perform such assessment.

Appendix J

University of Toronto Laser Safety Committee

Name	Department	Function
Prof. Robin Marjoribanks	Physics	Chair
Prof. Li Qian	Electrical & Computer Engineering	Member
Prof. David McMillen	Chemical and Physical Sciences, UTM	Member
Prof. Aephraim Steinberg	Physics	Member
Prof. Christopher Yip	CCBR	Member
Prof. Gilbert Walker	Chemistry	Member
Dr. Venkat Venkataramanan	Institute for Optical Sciences	Member
Mr. Nikolay Stoev, CLSO	Consultant	Member
Mr. Peter Nicoll	EHS	Ex-officio member
Ms. Tanya Neretljak	EHS	Ex-officio member
Dr. Sandu Sonoc, CLSO	EHS	Ex-officio member