

**BRANDON UNIVERSITY**

**Workplace Health & Safety Committee**

**CRITICAL JOB INVENTORY**

**Re: Hazard Identification and Control**

**Accident Investigation Procedures / Policy**

**Asbestos Control Procedures**

**Chemical Safety Plan**

**Chemical Spill Procedures**

**Compressed Gas Safety Procedures**

**Electrical Safety Procedures**

**Equipment Operation And Maintenance Procedures**

**Ergonomics Safety Procedures**

**Excavation Procedures**

**Fall Protection Safety Procedures**

**First Aid Procedures**

**Grounds Keeping Equipment Operating Procedures**

**Hearing Conservation And Noise Control Procedures**

**Hot Work Safety Procedures**

**Ladder Safety Procedures**


**Personal Protection Equipment**

**Training Procedures**

**Working Alone Procedures**

**Working In Confined Spaces Procedures**

**Work Refusal Procedures**

 <b>BRANDON</b> <b>UNIVERSITY</b> <small>Founded 1899</small>	<b><i>POLICY:</i></b>  <b>Accident Investigation</b>		<b><i>Approved By:</i></b>  <hr/> <b><i>Workplace Health &amp; Safety Committee</i></b>
<b><i>Policy Manual</i></b>	<b><i>Reviewed:</i></b> June 2003	<b><i>Updated:</i></b> September 03; March 2004; July 2005	

## INTRODUCTION:

An Accident Investigation, basically, is a report of an incident containing an analysis, evaluation, and recommendations based on information gathered by an investigator. It will answer questions such as what happened, how it happened, why it happened and what should be done to prevent it from happening again.

While investigation of accidents is generally seen as a reactive process, a good accident investigation is an effective proactive measure in the prevention of injury or illness at the workplace. Accidents are rarely caused by one single factor. Through a systematic process to find the facts, the true underlying causes are determined and failures of management systems identified. When action is taken to address each of the factors found as a result of investigation, not only is the likelihood of a similar incident minimized, it may be instrumental in preventing accidents of a different nature in which one of these factors may play a part.

## DEFINITION:

There are many and varied definitions of accidents and incidents. For the purpose of this policy an accident shall be defined as:

***“Any unplanned event that causes, or has the potential to cause, a fatality, an injury or illness to a person(s) and/or damage to property or equipment”.***

## SCOPE:


This policy applies to all employees, contractors, students and visitors at any on-campus or off-campus location at which work, study or any other University-sanctioned activity is being conducted.

## PURPOSE:

Accident investigations are conducted to determine the underlying causes of accidents, including failures in management systems, so that action can be taken to prevent further accidents. The focus of accident investigation is one of analysis, not blame fixing. It is therefore the purpose of this policy to ensure that a consistent approach is taken for accident investigations across campus. Accurate recording of the University’s accident experience can be used to determine the most efficient use of resources in accident prevention strategies.

**POLICY:**

- 1) All accidents at the University shall be reported and investigated in accordance with Brandon University's "Accident Investigation Procedures" and appropriate corrective action will be taken. Notwithstanding this, the University Health and Safety Office shall be informed of all accidents and will be involved in any investigations.
- 2) All reports and investigations will be recorded and retained centrally by the University Safety and Health Office, and the information will be analyzed by appropriate individuals and the University Safety and Health Committee to monitor the University's accident experience.
- 3) Investigative team members shall receive appropriate instruction in accident reporting and investigation techniques.

 <b>BRANDON</b> <b>UNIVERSITY</b> <small>Founded 1899</small>	<b>Procedure:</b>  <b>Accident Investigation</b>		<b>Approved By:</b>  <hr/> <b>Workplace Health &amp; Safety Committee</b>
<b>Procedure Manual</b>	<b>Reviewed:</b> June 2003	<b>Updated:</b> September 2003; March 2004; July 2005	

## **INTRODUCTION:**

Manitoba Workplace Safety and Health Act regulations and Brandon University policy, require that all accidents or incidents that result in either personal injury or illness, and/or damage to University property shall be properly reported and investigated. Although accident/incident investigation is a reactive process, a comprehensive accident reporting and investigation process is a proactive measure that can effectively prevent or minimize future accidents/incidents. This operating procedure establishes a systematic process to ensure that accidents are properly investigated in a timely manner, that all causes, both direct and contributory are thoroughly identified and that the appropriate corrective measures are implemented.

## **DEFINITION:**

For the purpose of these procedures, an accident will be defined as:

***“Any unplanned event that causes, or has the potential to cause, a fatality, an injury or illness and/or damage to property or equipment”.***

Incidents can range from serious incidents and emergencies to “near miss” incidents where there is no actual injury or damage.

## **PURPOSE:**

The purpose of this procedure is to ensure that all accidents/incidents are reported and investigated according to legislative requirements. A consistent approach is necessary across campus. Comprehensive investigation will determine the most efficient use of resources in preventive strategies thus become an effective proactive measure in the prevention of work-related injury or illness.

## **SCOPE:**

The following are examples of accidents, incidents or dangerous occurrences that require investigation where they arise out of a work activity:

- 1) “Non-Injury/near miss incidents. An incident that does not result in personal injury or illness, or property damage, but had the potential to do so.
- 2) Any minor injury or illness requiring medical treatment.

- 3) A major accident/incident. This would involve any injury or illness that results in:
- a) Death
  - b) Loss or loss of use of a body part
  - c) Loss of consciousness
  - d) Damage to, or loss of property or equipment of the University
  - e) Fire or flood
  - f) Spillage, escape or loss of any hazardous substance

**NOTE:** These procedures apply to all employees, contractors, students and visitors at any on-campus or off-campus location at which work, study or any other University-sanctioned activity is being conducted.

**PROCEDURES:**

- 1) Order of reporting an accident/incident:

<b>PERSON REPORTING</b>	<b><u>PERSON TO RECEIVE A REPORT</u></b>
Staff member	Area/Department Supervisor
Student	Their Instructor at the time of the accident/incident
Contractor	Area/Department Supervisor
Visitor	The Supervisor of the area in which the accident/incident occurred

20 An investigation, basically, is a report of an incident containing an analysis, evaluation, and recommendations based on information gathered by an investigator(s). It will answer such questions as:

- **WHAT** happened?
- **WHO** was involved?
- **WHERE** did it happen?
- **WHEN** did it happen?
- **HOW** did it happen?
- **WHY** it happened and what should be done to prevent it happening again.

- 3) The University Safety and Health Office shall be notified as soon as possible of an accident or dangerous occurrence. Any subsequent investigation process shall be coordinated through the University Safety and Health Office.
- 4) An investigation team shall be created and shall routinely involve:
- applicable immediate supervisor or his/her delegate
  - applicable Safety and Health Committee representative
  - University Safety and Health Officer.
- Additional persons may be involved in the investigation process.
- 5) All accident investigations shall commence immediately upon notification. All investigations shall be conducted in an impartial, objective, non-threatening and conscientious manner and shall not accuse, blame, demean, harass or intimidate.
- 6) The accident team shall attend the scene of the accident/incident and ensure that the area involved is not unnecessarily disturbed until the investigation is

completed. All person(s) involved, witnesses and all other relevant person(s), (e.g.: suppliers of equipment, substances, etc.) will be interviewed.

- 7) All evidence shall be collected (e.g.: details of spilt chemicals, parts of failed equipment, etc.) and relevant policies; work procedures, maintenance regimes, etc. shall be reviewed. If deemed necessary, a diagram will be drawn of the accident scene, including measurements of distances and dimensions and photographs shall be taken. All physical evidence that did, or may have contributed to the accident or dangerous occurrence shall be collected.
- 8) All other relevant factors, such as weather conditions, lighting, ventilation, noise, machine condition and adequacy, shift work; work scheduling, time frames etc. shall be recorded.
- 9) Factors that shall be established:
  - a) What all person(s) involved were actually doing immediately before and at the time the accident/incident occurred.
  - b) Whether or not the supervisor had ascertained that the employee, student or contractor was qualified to carry out the task(s) assigned.
  - c) Whether or not any equipment in use was suitable for or capable of carrying out the task(s) assigned.
  - d) The existence and effectiveness of any training, standard work procedures and control systems.
  - e) The communication or instruction given prior to the accident/incident.
  - f) Whether the employee, student or contractor understood precisely what was expected of him/her.
  - g) Was the accident, incident, “near miss” or unsafe condition caused by one of the following three factors:
    - unsafe acts
    - unsafe conditions
    - a combination of unsafe conditions and unsafe acts or omissions
    - Was there any deviation from standard or routine procedures or methods?
- 10) All relevant points brought out during the investigation must be accurately recorded.
- 11) The accident team will analyze the information gathered from the incident, identify the underlying causes and recommend appropriate action. An accurate analysis requires direct comparison of statements from witnesses, details from applicable policy/procedures and /or work methods.

## **REPORT:**

The investigation team will compile an Accident Report. The original copy of the Accident Report will be placed on file with the University Safety Officer. Copies of the report will be distributed as follows:

- 1) University Safety and Health Committee

- 2) Supervisor involved
- 3) Department Head/Director
- 4) Vice-President Administration and Finance

## EVALUATION:

- 1) The quality of all accident/incident investigations will be evaluated and include:
  - a) Accuracy and completeness of information.
  - b) Clarity and completeness of the description of the sequence of events leading to the accident/incident.
  - c) Correct identification of all causal factors
  - d) Clarity and completeness of the description of causal factors
  - e) Corrective actions already taken
  - f) Recommendations made for appropriate remedial action that may be in one of the following forms:
    - Modification of a procedure
    - Initiation /modification of appropriate training
    - Improvement of the method of communication
    - Replace, repair or modification of equipment

Results of the evaluation process will be used to determine training needs in any identified area.

- 2) The immediate supervisor must ensure that any proposed action is implemented to prevent a recurrence of the accident/incident. If the solution is beyond the authority or resources of the immediate supervisor he/she must make the Department Head/Director aware of the situation and put interim procedures in place. **The hazards identified in the investigation process must not be allowed to remain, without attention, while any proposed/recommended action is pending.**
- 3) The University Safety and Health Office will monitor proposed corrective action and maintain a computerized database to provide statistical data to the University Health and Safety Committee and the University community.
- 4) The University Safety and Health Committee will review incident statistics, identify trends and recommend the appropriate use of resources on a priority basis.

The investigation process is not complete until some positive action has been initiated to alter the circumstances that would allow an accident/incident to recur.

BRANDON UNIVERSITY

**ACCIDENT INVESTIGATION**

**SUMMARY REPORT**

**Summary of**

**Events:** \_\_\_\_\_

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**Recommendations:**

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[illegible]

## Statistical Summary:

### Type of Accident:

All Those

(√)

Applicable)

Caught between a stationary and a moving object	
Caught in or between objects	
Collapse	
Contact by inhalation, ingestion, injection or absorption of harmful substances	
Contact with hot substances or objects	
Exposure to or contact with extreme temperatures	
Exposure to or contact with electric current	
Exposure to or contact with harmful substances or radiations	
Falls (from heights)	
Falls (same level)	
Overexertion in handling or throwing objects	
Overexertion or strenuous movements	
Overexertion lifting objects	
Overexertion pushing or pulling objects	
Slides and cave-ins	
Stepping on objects	
Strenuous movements	
Striking against stationary objects	
Struck by falling objects	
Struck by moving objects	
Accidents not otherwise classified	

### Injury Classification:

- |   |   |  |
|---|---|--|
| <input type="checkbox"/> Abrasions      | <input type="checkbox"/> Cut              | <input type="checkbox"/> Maltreatment      |
| <input type="checkbox"/> Amputations    | <input type="checkbox"/> Electrical Shock | <input type="checkbox"/> Muscle Stress     |
| <input type="checkbox"/> Asphyxiation   | <input type="checkbox"/> Eye              | <input type="checkbox"/> Poisons           |
| <input type="checkbox"/> Burn           | <input type="checkbox"/> Fractures        | <input type="checkbox"/> Puncture          |
| <input type="checkbox"/> Chemical Burns | <input type="checkbox"/> Hearing          | <input type="checkbox"/> Repetitive Motion |
| <input type="checkbox"/> Collision      | <input type="checkbox"/> Infection        | <input type="checkbox"/> Scalds            |
| <input type="checkbox"/> Contusion      | <input type="checkbox"/> Insect Bites     | <input type="checkbox"/> Other             |

### Body Part Injured:

- |                                  |  |   |  |
|----------------------------------|--|---|--|
| <input type="checkbox"/> Abdomen | <input type="checkbox"/> Foot            | <input type="checkbox"/> Leg            | <input type="checkbox"/> Teeth           |
| <input type="checkbox"/> Ankle   | <input type="checkbox"/> Hand            | <input type="checkbox"/> Multiple Sites | <input type="checkbox"/> Toes            |
| <input type="checkbox"/> Arm     | <input type="checkbox"/> Head            | <input type="checkbox"/> Neck           | <input type="checkbox"/> Wrist           |
| <input type="checkbox"/> Back    | <input type="checkbox"/> Hearing         | <input type="checkbox"/> Ribs           | <input type="checkbox"/> Other (Specify) |
| <input type="checkbox"/> Ear     | <input type="checkbox"/> Hip             | <input type="checkbox"/> Shoulder       |  |
| <input type="checkbox"/> Eyes    | <input type="checkbox"/> Internal Organs | <input type="checkbox"/> Sight          |  |

### Accident Consequence:

- ☐ First Aid
- ☐ Medical Attention
- ☐ Lost Time

- ☐ W.C.B. Notification
- ☐ None

**Accident Potential for Harm:**

- ☐ Maximum
- ☐ Reasonable
- ☐ Minimal

### **INDIVIDUAL DESCRIPTION OF EVENTS**

Date of Occurrence: \_\_\_\_\_

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## SCENE DURING THE OCCURRENCE

Describe the sequence of events that occurred during the accident/near miss (include times if possible):

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Describe conditions at the scene during the accident/near miss (include diagrams, photographs if available and documentation as necessary):

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## SCENE AFTER OCCURRENCE

Describe the sequence of events that occurred after the accident/near miss (include times if possible):

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Describe conditions at the scene after the accident/near miss (include diagrams, photographs if available and documentation as necessary):

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# ACCIDENT INVESTIGATION

## INVESTIGATION TEAM COMPILATION REPORT

Occurrence Description Submitted By: \_\_\_\_\_

Place of Occurrence: \_\_\_\_\_

Date of Occurrence: \_\_\_\_\_

### SCENE PRIOR TO OCCURRENCE

Describe the sequence of events that occurred **prior** to the accident/near miss (include times if possible):

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Describe conditions at the scene **prior** to the accident/near miss (include diagrams, photographs if available and documentation as necessary):

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Describe the activities **prior** to the accident/near miss:

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Were activities routine or unusual? \_\_\_\_\_

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What, if any, changes had taken place in:

a) Persons involved:

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b)

Worksite: \_\_\_\_\_

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c)

Equipment: \_\_\_\_\_

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d) Procedures:

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## SCENE DURING THE OCCURRENCE

Describe the sequence of events that occurred **during** the accident/near miss (include times if possible):

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Describe conditions at the scene **during** the accident/near miss (include diagrams, photographs if available and documentation as necessary):

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Describe the activities **during** the accident/near miss:

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Were activities routine or unusual? \_\_\_\_\_

\_\_\_\_\_

What, if any, changes had taken place in:

a) Persons  
involved: \_\_\_\_\_

\_\_\_\_\_



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b)

Worksite: \_\_\_\_\_

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c. Equipment:

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d.


Procedures: \_\_\_\_\_

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 <b>BRANDON</b> <b>UNIVERSITY</b> <small>Founded 1899</small>	<b><i>Procedure:</i></b>  <b><u>Asbestos Control</u></b>	<b>Approved By:</b>  <hr/> <b><i>Workplace Health &amp; Safety Committee</i></b>
<b><i>Procedure Manual</i></b>	<b><i>Reviewed:</i></b> June 2004	<b><i>Updated:</i></b> July 2005

## INTRODUCTION:

Asbestos presents a potential hazard when damage or decay of the surface allows individual fibers to be released into the air we breathe. Subsequently measures must be taken to ensure that all sources of asbestos are identified and controlled. The presence of asbestos in the form of thermal insulation on pipes, boilers, and ceilings, fire protection on structural steel beams or asbestos-containing materials such as ceiling tiles, acoustic spackles and vinyl asbestos floor tiles require that certain care is needed when working with or near these materials. These procedures have been developed to address that need.

## PURPOSE:

Asbestos Control Procedures are designed to provide information and guidelines for the safe handling of asbestos-containing materials and to promote awareness of its presence and location in facilities at Brandon University. The goal is to ultimately prevent incidents of uncontrolled disturbance.

## DEFINITIONS:

**ACM:** Asbestos-Containing Materials

**Asbestos:** Any fibrous silicates such as Chrysotile, Amosite and Crocidolite

### **Asbestos**

**Process:** Any activity that may release asbestos dust and includes:

- sawing, cutting or sanding of asbestos containing materials;
- repair, maintenance, replacement or removal of asbestos surfaces;
- cleaning or disposal of asbestos materials;
- mixing or application of asbestos shorts, cements, grouts, putties or similar compounds;
- storing or conveyance of materials containing asbestos;
- demolition of structures containing asbestos.

**Asbestosis:** The severe scarring of the lungs that generally follows years of inhaling asbestos fibers, which usually results in cardiac arrest caused by increased heart strain.

### **Friable**

**Material:** Material that when dry can be crumbled, pulverized or powdered by hand pressure and includes such material that is crumbled, pulverized or powdered.

**HEPA**

**Filters:** High Particulate Aerosol filters.

**Peritoneum:** The lining of abdominal cavity.

**Pleura:** The lining of chest cavity

**HAZARDS:**

Asbestos is hazardous when airborne. Medical studies have proved conclusively that exposure to asbestos fibers causes cancer and asbestosis in humans. Bronchial and lung cancers and malignant tumors of the pleura and peritoneum (Mesotheliomas) have all been confirmed in workplace studies. Asbestos containing materials are primarily found in:

- Cementitious texture coatings on ceilings and as overspray above ceilings
- Fume hood linings and ductwork
- Floor tiles
- Building and underground piping systems
- Insulation on pipes, pipe elbows and boilers
- Asbestos board backing radiators

Asbestos on campus in its present condition poses no health threat to anyone as long as it is not disturbed (e.g. drilled into, cut or sanded, etc.).

**RESPONSIBILITY:**

Compliance with these procedures is the responsibility of the supervisors of personnel at all levels within administrative, faculty and ancillary operations; or supervisors of contracted activities where workers may come in contact with asbestos-containing materials.

**CLASSIFICATION OF ASBESTOS WORK:**

Type 1:

- a) Installation or removal of manufactured asbestos products.
- b) Cutting and shaping of asbestos products with hand tools.
- c) Cutting, grinding or abrading an asbestos product with a power tool equipped with a dust collection device and HEPA filter.
- d) Drilling a manufactured asbestos product.
- e) Drywall removal where asbestos joint filling compounds were used.

Type 2:

- a) The removal of a false ceiling with a significant quantity of friable asbestos containing material on its surface.
- b) Minor removal or disturbance of friable containing material.

- c) Enclosure of friable material containing asbestos.
- d) Application of tape, a sealant or other covering to pipe or boiler insulation containing asbestos.
- e) Work with asbestos not classified as Type 1 or Type 3.

Type 3:  
material.

- a) Removal (other than minor removal) of friable asbestos-containing material.
- b) Spray application of a sealant to friable asbestos-containing material
- c) Cleaning or removal of air-handling equipment in a building that has sprayed fireproofing containing asbestos
- d) Repair, alteration or demolition of a kiln or furnace made, in part, of asbestos-containing refractory materials
- e) Cutting, grinding or abrading an asbestos product with a power tool not equipped with a dust collection device and HEPA filter.
- f) Repair, alteration or demolition of a building in which asbestos products were manufactured.

**GENERAL PROCEDURES:**

- 1) A trained/competent person shall inspect the conditions of all friable asbestos containing material on campus as required.
- 2) All asbestos-containing materials on campus must be identified and an accurate inventory prepared and maintained by the University Physical Plant.
- 3) The inventory shall be examined anytime repair work is performed on or near asbestos-containing materials.
- 4) Inspect all asbestos-containing material identified from the inventory and determine if any existing damage exists. Care must be taken to ensure that any activity in the area of the asbestos does not damage the asbestos in any way. If the asbestos is already damaged, action must be taken to repair the damage as soon as possible.
- 5) Every asbestos process shall be carried out in a manner that prevents, to the extent that is reasonably practicable, the release into the air of asbestos dust.
- 6) The asbestos surface shall be kept wet while the surface is being disturbed.
- 7) In the process of repairing asbestos damage, care shall be taken to determine the most appropriate method of eliminating potential asbestos exposure. Addressing damaged asbestos material could include:
  - removal of all or part of the asbestos.
  - sealing the surface of the asbestos (encapsulation)
  - enclosing the asbestos behind an airtight barrier.

Each of these methods has specific advantages and disadvantages and should be evaluated on a case by-case basis. Many factors, including:

- use of the asbestos (thermal insulation, ceiling or floor tile, or acoustical treatment)
  - amount of damage
  - concentration of asbestos in the material
  - potential for fiber to be released (friability)
  - accessibility to contact will determine what control method should be considered.
- 8) All asbestos dust and contaminated debris must be removed by means of a vacuum cleaner equipped with a HEPA filter or by wet mopping, wet sweeping or wet wiping, unless wetting creates a hazard or causes damage,
  - 9) Accumulated asbestos material on the floor will be repeatedly sprayed with water to ensure complete saturation. This material will be shelled into 6 mil poly bags on an ongoing basis.
  - 10) Compressed air must not be used to clean up or remove dust and debris from contaminated surfaces.
  - 11) University staff and contractors shall not attempt to handle or work in close proximity to ACM without first obtaining appropriate training. The Manitoba Department of Labour or other recognized agencies may provide training.
  - 12) All handling, renovations, maintenance activities, construction, demolition and other projects in areas containing ACM must be performed in accordance with relevant to Workplace Safety and Health Regulations.
  - 13) If it is necessary to disturb asbestos containing materials during major building renovations, maintenance or repair work, it is the University's intention to retain external contractors to undertake asbestos removal. Removal work is strictly regulated by the Manitoba Department of Labour.
  - 14) All University generated ACM waste must be double-packaged in approved asbestos bags and transported to a designated waste-holding facility on the University premises at the completion of work.
  - 15) When required, asbestos waste must be transported to an approved landfill site and must be transported to such site in compliance with Manitoba Workplace Safety and Health Regulations and the Transportation of Dangerous Goods Act and Regulations.
  - 16) All workers who are anticipated to be exposed to asbestos dusts for at least 100 hours per year shall annually have:
    - a screening chest radiograph
    - a lung function test (LFT)
    - a medical examination
    - an occupational exposure history review.


#### **PERSONAL PROTECTION EQUIPMENT:**

- 1) When the chance of exposure is low, non-powered, reusable air-purifying dust respirators (with a HEPA filter) may be used.
- 2) When working with friable asbestos a powered air-purifying, respirator or a supplied-air, pressure-demand respirator with full-face piece may be required.(CSA Standard Z94.4).
- 3) Approved protective clothing that when worn will exclude asbestos dust.
- 4) Rubber boots
- 5) Gloves
- 6) Washing Facilities

**NOTE:** Protective clothing will be disposed of as asbestos waste after use.

**REFERENCES:**

University of Western Ontario  
Manitoba Department of Labour  
Workplace Safety and Health Division  
Simon Fraser University  
Canadian Standards Association

 <b>BRANDON</b> <b>UNIVERSITY</b> <small>Founded 1899</small>	<b><i>Procedure:</i></b>  <b><u>Chemical Safety Plan</u></b>		<b><i>Approved By:</i></b>  <hr/> <b><i>Workplace Health &amp; Safety Committee</i></b>
<b><i>Procedure Manual</i></b>	<b><i>Reviewed:</i></b> June 2004	<b><i>Updated:</i></b> July 2005	

## **PURPOSE:**

To protect Brandon University employees and students from exposure to hazardous chemicals and to ensure employees and students are adequately informed about hazardous chemicals in the workplace. To provide information which will enable University employees and students to protect themselves and prevent work-related injuries and illnesses from hazardous chemicals.

## **SCOPE:**

All employees and students who may be exposed to hazardous chemicals while performing their duties or pursuing their studies.

## **RESPONSIBILITIES:**

- 1) **Brandon University** shall arrange for the development and maintenance of a chemical safety program for employees and students who may be exposed to hazardous chemicals during the performance of their duties/studies. The chemical safety plan will be designed to achieve regulatory compliance and to provide a means for all concerned to be better informed about protection from hazardous chemicals.
- 2) **The Brandon University Safety and Health Office** shall develop, implement and maintain the University's chemical safety plan, arrange for appropriate training, safety audits to determine compliance status and promote regulatory compliance and a safe environment.
- 3) **Departments and units** will identify employees/students who may be exposed to hazardous chemicals and ensure that these employees/students attend chemical safety training prior to initial assignment and are provided the protections required by the chemical safety plan.
- 4) **Employees/students** who use chemicals during the performance of their duties/studies shall use safe work practices, appropriate personal protective equipment, attend available safety training classes and comply with all provisions of the chemical safety plan.

## **PLAN:**


- 1) Plan must be readily available to employees/students, representatives and appropriate regulatory agencies.
- 2) Employees/students shall read and comply with the requirements of the Chemical Safety Plan.
- 3) The University Safety and Health Office shall be responsible party for implementation and facilitation of the Chemical Safety Plan shall be designated.
- 4) A current and complete chemical inventory will be maintained and a copy provided to the University Safety and Health Office on an annual basis.
- 5) Material Safety Data Sheets will be readily available to every employee/student who shall know the location of the Material Safety Data Sheet and be familiar with the safety information for each hazardous chemical in use.
- 6) All containers of hazardous materials shall be appropriately labeled.
- 7) Each department shall create and implement specific standard operating procedures unique to their area.
- 8) All training requirements will be completed and individual employees/students are provided training specific to the area in which they will be working. The University Safety and Health Office will be available as a resource in training needs.
- 9) Criteria for control measures to reduce/minimize employee/student exposure(s) will be established.
- 10) In consultation with the University Physical Plant the need for chemical fume hoods and other engineering controls will be identified and where required appropriate action taken. Containment and ventilation systems will be serviced and maintained on a regular basis.
- 11) Employees/students shall be provided with copies of the Chemical Spill Safety Procedures to ensure the workplace is properly cleaned and that decontamination procedures are adhered to.
- 12) A permit system for particular laboratory operations, procedures or activities of significant hazard will be implemented.
- 13) Employees/students shall be required to follow an established check-in/check-out procedure.
- 14) Provisions for medical consultation and medical examinations shall be established.
- 15) Appropriate personal protective equipment shall be made available to applicable employees/students along with maintenance instruction. Criteria provisions for additional personal protective equipment shall be established.



- 16) The University Safety and Health Office shall conduct an annual safety audit and provide a written copy of the report detailing any safety violations and recommendations for change. Corrective action for all violations identified in a safety audit report shall be implemented.
- 17) Accident reports shall be prepared and forwarded to the University Safety and Health Office.
- 18) Employees/students shall notify their respective supervisor if there is any reason to believe that there has been an exposure or over-exposure to a hazardous chemical.
- 19) At the conclusion of any work day employees/students shall be required to identify, place in storage, or dispose of all chemicals, samples and hazardous wastes. When placing the chemical(s) in storage employees/students shall refer to the appropriate Material Data Sheet(s) to ensure that the material is properly stored.

**REFERENCES:**

Manitoba Department of Labor, Workplace Safety and Health Division

 <b>BRANDON</b> <b>UNIVERSITY</b> <small>Founded 1899</small>	<b><i>Procedure:</i></b>  <b><u>Chemical Spill</u></b>		<b><i>Approved By:</i></b>  <hr/> <b><i>Workplace Health &amp; Safety Committee</i></b>
	<b><i>Procedure Manual</i></b>	<b><i>Reviewed:</i></b> June 2004	<b><i>Updated:</i></b> July 2005

## **INTRODUCTION:**

Brandon University is committed to providing a safe working environment and believes employees and students have a right to know about health hazards associated with their work. The ranges and quantities of hazardous chemical substances used on the Brandon University campus require preplanning in order for accidental chemical releases to be handled in a safe manner. The following procedures have been developed to minimize the severity of damage to human health and the environment in the event of an unexpected hazardous materials release.

## **EMERGENCY CHEMICAL SPILL:**

A chemical spill is classified as an Emergency Spill when it:

- 1) Causes personal injury or chemical exposure that requires medical attention.
- 2) Causes a fire hazard or uncontrollable volatility
- 3) Requires a need for self-contained or supplied air breathing apparatus to handle the materials involved.
- 4) Involves or contaminates a public area.
- 5) Causes airborne contamination that requires local or building evacuation.
- 6) Causes damage to property that will require repairs.
- 7) Involves any quantity of metallic mercury
- 8) Cannot be properly handled due to a lack of properly trained personnel and/or equipment to perform a safe effective clean up.
- 9) Requires a prolonged clean up.
- 10) Involves an unknown substance.

## **SPILL CLASSIFICATIONS:**

Chemical spills are typically classified as either minor or major. Brandon University uses the following definitions to differentiate between a minor or major spill.

### Minor Spills:

A minor chemical spill is one where the individual(s) responsible for the spill feel that they are capable of handling the spill safely without the use of respiratory protection or the assistance of specially trained safety and emergency response personnel. In the event of a minor spill:

- a) Alert people in the immediate area of the spill.
- b) Wear protective equipment as needed, including safety goggles or face shield, gloves, and long-sleeved lab coats or aprons when addressing the spill.
- c) Avoid breathing vapors from the spill. Increase area ventilation by turning on fume hoods and opening windows.
- d) Confine the spill to a small area with absorbent materials.
- e) Notify the University Safety and Health Office.
- f) Minor spill clean up procedures include:
  - Use an appropriate spill kit to neutralize and absorb inorganic acids and bases. For other chemicals absorb spill with vermiculite, dry sand, diatomaceous earth or paper towels.
  - Collect residue, place in a container and label the container.
  - Clean spill area with water.
  - If broken glass is involved do not pick it up with your gloved hands. Use a scoop or tongs to place it in a plastic bag then place the bag in a strong cardboard box or plastic container.
- g) A minor spill is the responsibility of the department where it occurred.

### Major Spills:

In the event of a major spill of hazardous material:

- a) Arrange for the immediate evacuation of the area and notify emergency response personnel.
- b) Attend to injured or contaminated persons and remove them from exposure. In the case of personnel contaminated, remove affected clothing and flush the contaminated skin with water for at least fifteen minutes. **SEEK MEDICAL ATTENTION IMMEDIATELY.**
- c) Alert people in the surrounding area to evacuate.
- d) If there is no health or safety risk, turn off sources of ignition and heat, maintain fume hood ventilation and open windows to increase ventilation.
- e) Close doors to affected area once the area has been evacuated
- f) The University Safety and Health Office shall be notified of the incident immediately.
- g) Have someone knowledgeable of the incident and the laboratory assist emergency personnel upon their arrival.
- h) Only qualified personnel shall perform a major chemical spill clean up. Janitorial and housekeeping staff do not have the appropriate training to clean up a chemical spill.
- i) Major spill clean up procedures include:

- evacuate the area and restrict access if the spill poses an immediate danger or involves an unknown
- attend to injured or contaminated persons
- in the event of a fire, follow the fire plan for that building
- shut off all ignition sources if safe to do so
- attend to any injured persons if safe to do so
- try to control spread of spill if safe to do so
- notify the University Safety and Health Office
- if chemical vapors or gases are being spread through the building's ventilation system, contact the Physical Plant and inform them to shut off the ventilation system.
- arrange for cleanup personnel to attend at the scene, provide them with the Material Safety Data Sheets for the product involved and inform them of other possible hazards in the area.

## **GENERAL CLEAN UP PROCEDURES:**

Never proceed to clean up a spill if you do not know the hazards associated with the chemical or if you are unsure of how to clean up the spill, vacate the area and notify your supervisor.

### 1) Liquid Spills Other Than Flammable Liquids:

- a) Alert other persons to the spill and the need to evacuate the area.
- b) Determine the degree of hazard before attempting clean up and take the necessary preventive measures (i.e. protective equipment, eye protection, etc.)
- c) Confine or contain spill to smallest area possible.
- d) Wear protective equipment, goggles and face shield, gloves appropriate for the situation
- e) For small quantities of acids use a neutralizing agent or absorbent mixture (i.e. soda ash, sodium bicarbonate or diatomaceous earth. Bases can be neutralized by using citric acid or boric acid. Check area with pH indicating paper to ensure complete neutralization.
- f) For small quantities of other materials, absorb the materials with non-reactive materials (i.e. vermiculite, clay, dry sand or towels.
- g) Mop up the spill, wringing out the mop in a pail equipped with rollers. Do not use your hands.
- h) Carefully pick up any broken glass using mechanical means such as tongs or broom and dustpan.
- i) Double bag contaminated clean up materials and seal. These
- j) Materials must be disposed of as hazardous waste.
- k) When clean up operations are complete, wash hands with soap and water for at least one minute. Check any non-disposable personal protection equipment (boots, respirators, etc) for contamination. Clean and dry completely.

### 2) Flammable Liquid Spills:

- a) Control all sources of ignition.

- b) Lay the chemical spill pads over the spill. These pads are designed to suppress the vapors emitted by a volatile liquid.
- c) Allow pads to completely soak up the liquid.
- d) Pick up pads with tongs or any other device that minimizes direct contact with the gloved hand.
- e) Place in a polyethylene bag.
- f) Wipe the area down with a wet paper towel.
- g) Dispose paper towel with the waste generated from the spill clean up.
- h) Seal bag with tape and attach a completed hazardous waste sticker to the bag.

3) Solid Spills:

- a) Alert other persons to the spill and the need to evacuate the area.
- b) Determine the degree of hazard before attempting clean up and take the necessary preventive measures (i.e. protective equipment, eye protection, etc.)
- c) Generally solids of low toxicity can be swept up into a dustpan and placed in a container compatible with the chemical. Damp toweling should be used to pick up and transfer materials of a higher toxicity level to a compatible waste container. Make sure the material is not water sensitive before using this procedure.
- d) Care should be taken so as not to create dust or cause the contaminated powder to become airborne.
- e) Dispose of residue as hazardous waste
- f) Use a plastic scoop to place the spilled material into a polyethylene bag.
- g) After the bulk of the material is cleaned up, wet a spill pad and wipe the area down.
- h) Place the pads into a polyethylene bag. Wipe the area down with a wet paper towel. Dispose of paper towel with the waste generated from the spill clean up. Seal bag with tape and attach a completed hazardous waste sticker to the bag.

NOTE: The information contained in Material Safety Data Sheets with respect to spill and leak procedures provides the most effective means of dealing with chemical spills.

**SPILL KIT:**

(Generic List of Supplies - Individual Needs May vary)

- Universal absorbent chemical spill pads: Suitable for the absorption of virtually all liquid chemical spills. These pads are nearly a stand-alone spill kit.
- Plastic bucket with sealable lid
- Heavy gauge polyethylene bags with closure twist ties, cable ties, etc.
- Granular absorbent material, inert absorbent materials such as kitty litter, vermiculite, etc.
- Chemical resistant disposable gloves. Nitrile is resistant to a wide range of chemicals. However care should be taken in selecting the appropriate gloves for a particular lab. Nitrile is not suitable for protection against Phenol
- Protective eyewear: Safety goggles or face shield. Different spills will require different eyewear. Sealed goggles should be suitable for most lab spills
- Splash-proof coverall or apron and shoe protector

- Paper towels or rags
- Plastic scoop/dustpan and brush
- pH indicator paper
- Neutralizing agents for bases such as boric acid or citric acid

## **MERCURY SPILL PROCEDURES:**

- 1) Alert others in the area that a spill has occurred
- 2) Isolate the area to prevent others from entering the spill area and spreading the contamination.
- 3) Determine whether the spill is a simple or complex spill:
- 4) A simple spill is one caused by a laboratory thermometer or other small device involving less than 15 milliliters, where all the mercury is accessible on a non-porous surface.
- 5) A complex spill is one that involves more than 15 milliliters or is located on a porous surface (carpet, etc) or is widely spread.
- 6) Prior to starting clean up procedures remove all gold or silver jewelry.
- 7) Wear a pair of chemical resistant gloves (nitrile or silver shield) a lab coat and eye protection.
- 8) Starting at the outside perimeter and using a scraper push the scattered mercury droplets together into larger droplets.
- 9) Aspirate the larger mercury droplets and place them into a zip-lock bag or screw top container. A disposable syringe or handheld mercury vacuum can be used to aspirate the mercury droplets. Do not use a regular vacuum as this disperses the droplets, increases the airborne level of mercury vapor and contaminates the equipment used.
- 10) Use a flashlight to illuminate smaller beads of mercury. Mercury droplets can be pinhead in size or smaller. Clean the spill area and perimeter if necessary. Pay close attention to cracks and crevices that may hide small beads of mercury.
- 11) Place any materials used for the clean up procedures into a plastic bag for disposal.  
**DO NOT MIX THESE MATERIALS WITH ANY FREE MERCURY YOU MAY HAVE COLLECTED.**


**Supplies: Mercury Spill Kit** (generic list of supplies. Individual needs may vary):

- 20-liter plastic pail (or equivalent tight closing plastic container) identified as “SPILL KIT”. Used to contain spill equipment. When emptied is also useable as a disposal container for contaminated absorbents.
- Black garbage bags to use as a liner for the 20-liter pail.

- Decontamination spray: Useful for decontaminating areas that have been exposed to a spill of radioactive material.
- Duct tape. Many creative uses exist for duct tape. They include temporary fixes for damaged containers and temporary seals for damaged lids. Remember that duct tape is a TEMPORARY solution.

## **REFERENCES:**

University of Manitoba  
Environment Canada

 <b>BRANDON</b> <b>UNIVERSITY</b> <small>Founded 1899</small>	<b>Procedure:</b>  <b>Compressed Gas Safety</b>	<b>Approved By:</b>  <hr/> <b>Workplace Health &amp; Safety Committee</b>
<b>Procedure Manual</b>	<b>Reviewed:</b> May 2004	<b>Updated:</b> July 2005

## INTRODUCTION:

Many industrial and laboratory operations require the use of compressed gases for a variety of different operations. Compressed gases present a unique hazard. Depending on the particular gas, there is a potential for simultaneous exposure to both mechanical and chemical hazards. Gases may be:

- Flammable or combustible
- Explosive
- Corrosive
- Poisonous
- Inert
- Or a combination of hazards

If the gas is flammable, flash points lower than room temperature compounded by high rates of diffusion present a danger of fire or explosion. Additional hazards of reactivity and toxicity of the gas as well as asphyxiation can be caused by high concentrations of even “harmless” gasses such as nitrogen. Since the gases are contained in heavy, highly pressurized metal containers, the large amount of potential energy resulting from compression of the gas makes the cylinder a potential rocket or fragmentation bomb.

## PURPOSE:

Ensure that all employees at Brandon University handling compressed gases are adequately informed and trained in the inherent hazards of compressed gas cylinders and their contents, as well as proper handling, storage and use according to regulations.

## HAZARD CONTROL:

Engineering Controls – Each gas application will have its own engineering controls depending on the types of hazards and application. Examples of engineering controls are:

- Fume hoods
- Gas Cabinets
- Ventilation systems
- Smoke detectors
- Sprinkler systems
- Flow restrictors
- Scrubbers
- Leak monitors



- Gas cylinder storage areas.

Administrative Controls – Compressed gas program administrative controls include:

- Employee training
- Segregation of gas containers
- Inspections and audits
- Signs
- Assignment and use of Personal Protection Equipment
- Procedures for receipt, use and storage of compressed gas.

### **CLASSES OF COMPRESSED GAS:**

Class 1: *Inert Gases* – gases which are non-flammable and non-toxic but which may cause asphyxiation due to displacement of oxygen in less than adequately ventilated spaces.

Class 2: *Flammable, Low Toxicity Gases* – gases which are flammable (at a concentration in air of 13% by volume or have a flammable range wider than 13 % by volume) but act as non-toxic, simple asphyxiates (e.g. hydrogen. Methane).

Class 3: *Pyrophoric Gases and Liquids* – gases or liquids that spontaneously ignite on contact with air at high temperatures.

Class 4: *Corrosive, Toxic and Highly Toxic Gases* – gases which may cause acute or chronic health effects at relatively low concentrations in air.

Class 5: *Compressed Gases in Fume Hoods.*

### **LABELLING:**

- 1) No compressed gas cylinder should be accepted for use that does not legibly identify its contents by name.
- 2) If the labeling on a cylinder becomes unclear or an attached tag is defaced to the point the contents cannot be identified, the cylinder should be marked “contents unknown” and returned to the supplier.
- 3) Never rely on the color of the cylinder for identification. Color-coding is not reliable because cylinder colors may vary with the supplier.
- 4) All gas lines leading from a compressed gas supply should be clearly labeled to identify the gas, the laboratory or area served and the relevant emergency telephone numbers.
- 5) Signs should be conspicuously posted in areas where flammable compressed gases are stored, identifying the substances and appropriate precautions.

### **STORAGE and HANDLING PROCEDURES:**

Storage:

- 1) Compressed gas cylinders storage areas must be conspicuously placarded with the names of the gases being stored.
- 2) Do not store gas cylinders at temperatures higher than about 50 degrees C. Some small cylinders such as lecture bottles and cylinders of highly toxic gases are not fitted with rupture devices and may explode if exposed to high temperatures.
- 3) All cylinders containing flammable gases should be stored in a well-ventilated area.
- 4) Oxygen cylinders, full or empty, shall not be stored in the same vicinity as flammable gases. The proper storage for oxygen cylinders requires that a minimum of 20 feet between flammable gas cylinders and oxygen cylinders or the storage areas be separated by a firewall at least 5 feet high with a fire rating of 0.5 hours.
- 5) Greasy and oily materials shall never be stored around oxygen, nor should oil or grease be applied to fittings.
- 6) Cylinders containing flammable gases such as hydrogen or acetylene must not be stored in close proximity to open flames, areas where electrical sparks are generated, or where other sources of ignition may be present.
- 7.) Cylinders of all gases having a health rating of 3 or 4 and cylinders of gases having a health hazard rating of 2 with no physiological warning properties shall be kept in a continuously mechanically ventilated enclosure. There should be no more than 3 cylinders of these hazard ratings per fume hood or other continuously mechanically ventilated enclosure per laboratory.

Handling:

- 1) All persons handling or using compressed gas cylinders must receive appropriate training prior to handling or using compressed gas cylinders.
- 2) Compressed gas cylinders shall not be rolled or stored on their side, dragged or slid.
- 3) Where removable caps are provided by the supplier for valve protection, the user shall keep such caps on containers, except when cylinders are connected to dispersing units.
- 4) Cylinders shall not be lifted by their caps.
- 5) Gas cylinders must be secured at all times to prevent tipping. Cylinders may be attached to a bench top, individually to the wall, placed in a holding cage, or have a non-tip base attached. Chains or sturdy straps may be used to secure them
- 6) Upon receiving compressed gas cylinders the threads on cylinder valves, regulators and other fittings should be examined to ensure they correspond and are undamaged.
- 7) Cylinders should be placed with the valve accessible at all times.


- 8) The main cylinder valve should be closed whenever the cylinder is unattended or not operating. This is necessary not only for safety when the cylinder is under pressure but also to prevent the corrosion and contamination resulting from diffusion of air and moisture into the cylinder after it has been emptied.
- 9) Cylinders are equipped with either a hand wheel or stem valve. For cylinders with a stem valve, the valve spindle key should remain on the stem while the cylinder is in service.
- 10) Only wrenches or tools provided by the cylinder supplier should be used to open or close a valve. At no time should pliers be used to open a cylinder valve.
- 11) Cylinder valves should be opened slowly and main cylinder valves should never be opened all the way unless otherwise instructed.
- 12) When opening the valve on a cylinder containing an irritating or toxic gas, the user should position the cylinder with the valve pointing away from them and warn those working nearby.
- 13) Oxygen regulators should be used only on oxygen tanks. Contamination of oxygen regulators with the oil present in other gases can result in a serious explosion hazard when the regulator is again for oxygen.
- 14) Safety glasses, preferably with a face shield, shall be worn when handling and using compressed gases, especially when connecting and disconnecting compressed gas regulators and lines.
- 15) Leak-test all connections to a cylinder with a soap solution. CAUTION: Any gas regardless of its health hazard may cause asphyxiation by displacing oxygen.
- 16) The number of cylinders of flammable gases and oxygen should not exceed 3 per laboratory. Connect all cylinders containing flammable gases to an earth ground and use metallic tubing when connecting these gases to other equipment.
- 17) Cylinders should never be exposed to temperatures higher than 50 degrees C (120 degrees F).
- 18) A cylinder should never be emptied to a pressure lower than 20 psig. A slight pressure should be kept to keep contaminants out.

#### **FUME HOOD USE OF COMPRESSED GASES:**

Hazardous gas use in fume hoods is appropriate under the following conditions:

- 1) The experimental apparatus fed by the hazardous gas is located inside the same hood.
- 2) The experimental apparatus is appropriate to be stored in the hood.
- 3) The experiment involves low gas pressure and flow rates.

- 4) The experiment will be attended.
- 5) The engineering controls used for the hazardous gas in the fume hood provide equivalent safety to a gas cabinet installation.
- 6) Requirements for fume hood applications:
  - 7) The smallest possible cylinder should be used for the experiment. Make an effort to obtain gas cylinders in returnable bottles. Order bottles with the lowest cylinder pressure possible.
  - 8) Use a flow restricting orifice or needle valve to restrict flow to only that needed for the experiment.
  - 9) Toxic and corrosive gases must be used with a normally closed pneumatic shutoff valve, located immediately downstream of the cylinder regulator, which closes with exhaust loss or power failure. This valve should be fed from a pneumatic air (or nitrogen) supply valve, located at the entrance to the lab. Activation of this quarter turn valve causes the pneumatic cylinder valve to close in the event of an emergency.
- 10) Where determined necessary, run reactive or toxic gases through a suitable scrubbing media, then directly into the exhaust hood plenum (scrubber output hose should be placed into the exhaust slot).
- 11) Place the cylinder at the rear of the hood. High-pressure leaks can readily escape the hood and capture is best in the rear of the hood.
- 12) Assure all components in the experiment can withstand full bottle pressure or incorporate pressure relief (run relief line into a hood slot)
- 13) All gas lines connected to the hazardous gas source, including purge lines and gas supply lines must be completely contained inside of the hood.

 <b>BRANDON</b> <b>UNIVERSITY</b> <small>Founded 1899</small>	<b>Procedure:</b>  <b>Electrical Safety</b>		<b>Approved By:</b>  <hr/> <b>Workplace Health &amp; Safety Committee</b>
	<b>Procedure Manual</b>	<b>Reviewed:</b> May 2004	<b>Updated:</b> July 2005

## INTRODUCTION:

These safety operation procedures provide information that is vital to every member of the Brandon University community. Electrical shock statistically accounts for a large percentage of injury and death on a national level. Improper or faulty electrical wiring accounts for an equally large percentage of fire related incidents.

## PURPOSE:

These procedures outline Brandon University's restrictions with regard to the installation, repairs and maintenance of electrical outlets and devices within the University.

## PROCEDURE:

### A. General Safety:

- 1) No unauthorized person or persons shall tamper with electrical fuse boxes, alter existing wiring, or install electrical wiring.
- 2) All electrical equipment, acquired or used on Brandon University premises shall be approved in accordance with the provisions of the Canadian Electrical Code and certified for use by the Canadian Standards Association.
- 3) Electrical equipment and electrical wiring shall be installed and maintained in conformity with the Canadian Electrical Code.
- 4) There shall be no work performed on energized electrical systems over 50 volts, except in instances where it is determined to be absolutely necessary and such work has been approved by Physical Plant Director. Work on energized circuits must be performed by qualified personnel, in the presence of qualified supervision.
- 5) All electrical distribution switches and controls shall be clearly marked to indicate the machinery or equipment, which they serve.
- 6) Immediately stop using electric equipment that runs erratically or when its use produces an electrical tingle, as these are warnings that an electrical problem exists which could cause dangerous shock injuries. The equipment should be tagged as defective and be repaired before reuse.

- 7) Circuit breakers are not designed to protect people from electric shock, their function is to prevent wiring overloads leading to fires. Similarly, equipment fuses are designed solely to protect equipment and are generally of little use in terms of personal protection.
- 8) Do not overload circuits with multiple attachments to a single outlet.
- 9) Metal ladders or wire-reinforced wooden ladders shall not be used in proximity to energized electrical equipment.
- 10) The requirements for lockout of energized electrical equipment shall be followed whenever such equipment is to be worked on.
- 11) All electrical tools and equipment must be grounded or double insulated.
- 12) Never replace a blown fuse with a larger capacity fuse.
- 13) Cover plates should be in place on all switches and outlets.
- 14) Always make certain that plug connector configurations match. They are intentionally designed that way to prevent hazardous, or even fatal electrical connections
- 15) Avoid using electrical tools and equipment in or around damp or wet areas.
- 16) Defective electrical equipment must be reported to your Supervisor immediately.
- 17) Clearly illustrated instructions for resuscitation of persons suffering from electric shock should be conspicuously posted in all mechanical rooms.
- 18) Sufficient access and workspace shall be provided and maintained around all electrical equipment to permit ready and safe operation and maintenance of such equipment. Working space shall not be used for storage.
- 19) Conductors shall be spliced or joined with mechanical splicing devices approved for the use. All splices and joints and the free ends of conductors shall be covered with an insulation equivalent to that of the conductors.
- 20) Each outlet box shall be provided with a cover. Openings through which conductors enter shall be adequately closed. Unused openings in boxes and fittings shall be effectively closed to afford protection substantially equivalent to that of the wall of the box or fitting. Boxes shall be securely and rigidly fastened to the surface upon which they are mounted.
- 21) Ducts and Air Handling Spaces: No wiring shall be installed in ducts.
- 22) Where a power bar is used in a workshop it is the responsibility of the individual staff member and his/her supervisor to ensure the total current draw from the equipment to be used does not exceed 10 amps.

**B. Portable Appliances:**

- 1) Portable appliances and equipment designed to be grounded shall be grounded.
- 2) Each appliance shall be provided with a means for disconnection from all ungrounded conductors. Switches on hand-held tools shall be of a type which must be manually held in the closed position.
- 3) Flexible cord shall be used only in continuous lengths without splice or tape:
  - Flexible cords and cables and their associated fitting shall be suitable for the conditions of use and location
  - Worn or frayed electrical cables shall be discarded.
- 4) Jacketed electrical cords should be used with portable electric tools and with extension lamps in boilers, tanks or other grounded enclosures.
- 5) Non-conductive material should be used to form the handles on portable hand lamps and there should be no metallic connectors between the lamp guard and the socket shell.

**C. Flexible Electric Cords:**

- 1) Use only flexible cords and cables containing an equipment grounding conductor (three-prong plug) to power electrical equipment that is not hard-wired. This does not include portable tools protected through built-in double insulation.
- 2) Do not alter or modify attachment plugs or receptacles in any manner that disrupts continuity of the equipment-grounding conductor.
- 3) Do not use plug adapters which interrupt the continuity of the equipment grounding connection with tools or equipment designed with grounding prongs. However, plug adapters with pigtailed attached to an electric ground are allowed.
- 4) Before each new use, visibly inspect all flexible cord sets, including extension cords for external damage. Do not use defective cords, dispose or repair them as appropriate.
- 5) Do not unplug an electric device by pulling the cord as this stress can cause internal cord short circuits.
- 6) To prevent internal damage leading to electrical shorts, do not use electric cords to hoist or lower electric equipment or tools. For the same reason do not fasten flexible cords with staples or locate them in areas where doors, drawers or other equipment could pinch and damage insulation.
- 7) When operating energized electric equipment or flexible cord sets in highly conductive environments (e.g. areas inundated with water) use only

equipment which is specifically designed to operate safely in such environments. Ground fault circuit interruption devices may be sufficient in some cases.

- 8) Flexible cords shall not be used for the following:
  - as a substitute for the fixed wiring or a structure
  - where run through holes in walls, ceilings, or floors
  - where run through doorways, windows or similar openings
  - where attached to building surfaces
  - where concealed behind building walls, ceilings or floors

**D. Use of Multiple Adapters in the Office:**

- 1) Any general-purpose electrical outlet is to provide power to no more than double adapter or three piggyback plugs and sockets or one only power bar.
- 2) Where a power bar is utilized it shall contain no more than four outlets for distribution and no further double adapters or piggyback plugs may be utilized in this circuit.
- 3) Where a four-outlet power bar is to be used, the maximum current rating of electrical components to be used in this circuit is to be calculated to ensure the total current draw cannot exceed 10 amps for a standard general-purpose outlet.

**E. Fire:**

- 1) For fire prevention keep all combustible items (plastics, fabric, lumber, solvents, etc) at least 18 inches away from electric heaters or other heat producing equipment.
- 2) Do not energize electric equipment capable of releasing sufficient electric or heat energy to ignite a flammable air mixture until sufficient ventilation is established to prevent the accumulation of ignitable fuel/air concentrations. Such flammable fuels include solvents, paints, glues, and other volatile combustible materials.
- 3) Fire extinguishers of type “BC” (carbon dioxide) or “ABC” (multipurpose dry chemical) should be readily available in the event of an electrical fire. Type “A” (pressurized water) shall not be used on electrical fires. Halon type extinguishers are acceptable but are no longer manufactured.
- 4) Synthetic fibre type clothing can be readily be ignited and melted by an electrical flash. Flame-retardant garments made of either cotton or wool fabrics are recommended for employees working with electricity.

**PERSONAL PROTECTION EQUIPMENT:**

Personal Protective Equipment, which might be needed for protection against electric shock, includes but are not limited to:

- 1) Nonconductive hard-hats




- 2) Gloves
- 3) Foot protection or insulating mats.
- 4) Wear government approved eye and face protection whenever there is danger of injury to eyes or face from electrical arcs, flashes, or flying objects resulting from electrical explosion.
- 5) Use protective shields, barriers or appropriate insulating materials for protection from shock, burns or other electrically induced injuries when working near exposed energized components or where dangerous electric heating or arcing is possible (includes fuses and circuit breakers).
- 6) Insulated tools or handling equipment.

Additionally, other ways of protecting employees from the hazards of electrical shock will be implemented, including insulation and guarding of live parts. The insulation must be appropriate for the voltage and the insulating material must be undamaged, clean and dry.

#### **REFERENCES:**

Canadian Electrical Code  
Electrical Safety Act  
Manitoba Construction Safety Association  
Simon Fraser University

 <b>BRANDON</b> <b>UNIVERSITY</b> <small>Founded 1899</small>	<b>Procedure:</b>  <b>Equipment Operation &amp; Maintenance</b>	<b>Approved By:</b>  <hr/> <b>Workplace Health &amp; Safety Committee</b>
<b>Procedure Manual</b>	<b>Reviewed:</b> June 2004	<b>Updated:</b> July 2005

## INTRODUCTION:

Brandon University is responsible for establishing safe operating procedures and training for students and employees who operate or work near hazardous or potentially hazardous equipment.

## PROCEDURES:

### Pre-Start Up Inspection Checklist:

- 1) If applicable, a walk around is to be performed prior to starting up the equipment.
- 2) A checklist of items, specific to each piece of equipment is used to ensure completeness.
- 3) The check will identify:
  - frequency of use (i.e. daily, weekly, seasonally, etc.)
  - what items are to be checked
  - what remedial action is to be taken when a problem is identified
  - operator who performs the checklist and the date it is performed.
- 4) The checklist items may include such things as:
  - all guards are in place
  - all manufacturers safety features are intact and operational
  - there is no excessive wear
  - everything is fastened together properly/nothing is broken
  - all mounts are secured
  - gauges, pressure, temperature, etc
  - no employee can become endangered by start-up.

## **SAFETY PRECAUTIONS:**

- 1) All precautions that an employee must take while running the equipment, or working in the immediate area shall be listed in order to prevent injury to the employee or others.
- 2) Employees using or handling the equipment must be informed of all information concerning any potential dangers that may be encountered through the use or handling of the equipment.
- 3) Areas of concern which may be included are:
  - electrical grounding
  - voltage
  - danger of burns from hot or very cold items
  - extreme heat
  - flying sparks
  - explosive materials
  - hot liquids
  - acidic or caustic substances
  - skin irritants or drying agents
  - toxic fumes
  - flammable fumes or liquids
  - high pressure areas
  - sharp edges or grinding wheels of machines
  - dangerous moving parts of machinery
  - equipment shields
  - excessive noise
  - oil on floor
  - pits or holes to avoid
  - pinch points

Information about what to do in emergency situations (i.e. location of emergency eye wash/shower, emergency stopped, etc) shall be included in areas of concern.

## **PERSONAL PROTECTIVE EQUIPMENT:**

- 1) Employees shall be informed of all personal protective equipment that shall be worn when operating specific equipment.
- 2) Personal Protective Equipment may include such items as:
  - head protection
    - hard hat,
    - sun exposure
  - eye protection
    - safety goggles
    - face shield
  - hearing protection
  - respiratory equipment
    - filter masks
    - full face mask

- protective clothing and gloves
- foot protection

## **PREVENTIVE MAINTENANCE and CRITICAL SPARE PARTS:**


- 1) A checklist of items, specific to each piece of equipment shall be used to ensure completeness and may parallel the type of list typically found in the owner's manual.
- 2) The qualifications of the inspector/tester (i.e. mechanic, electrician, technician, etc) that will be required shall be identified.
- 3) A maintenance checklist shall, where applicable, identify:
  - frequency of use (i.e. daily, weekly, seasonally, etc.)
  - items are to be checked
  - standards are to be met
  - results observed
  - the remedial action will be taken when a problem/deviation is identified
  - operator who performs the checklist and the date it is performed.
- 4) Some maintenance activities may not be performed on a fixed time schedule, but rather when circumstances present themselves. In these cases the procedure identifies:
  - condition/signal which triggers the need for maintenance
  - maintenance activities are to be performed
  - action taken
- 5) For critical equipment, where minimum down time has a serious effect on operation, a list of essential spare parts shall be developed and maintained (i.e. standby generator).

## **OPERATION:**

All employees whose duties involve the use/handling of the various pieces of equipment in the workplace must be informed in detail how to operate and maintain the equipment. The instruction must be as complete and as easily understood as possible. Starting with the first step, all steps of the operation are to be addressed sequentially and explanation given for how, as well as what, things are to be done. The instruction will be stated as simply and concisely as possible, assuming that the operator has no prior knowledge of the equipment/process.

## **REFERENCES:**

Brandon Regional Health Authority  
Simon Fraser University

 <b>BRANDON</b> <b>UNIVERSITY</b> <small>Founded 1899</small>	<b>Procedure:</b>  <b>Ergonomic Safety</b>		<b>Approved By:</b>  <hr/> <b>Workplace Health &amp; Safety Committee</b>
	<b>Procedure Manual</b>	<b>Reviewed:</b> June 2004	<b>Updated:</b> July 2005

## INTRODUCTION:

Equipment, furniture, work habits and material handling/lifting can put employees at risk for ergonomic injuries. To avoid the physical stresses that can result from awkward postures, repetitive motions and excessive force, Brandon University adheres to the view that a workstation should be adjusted to fit the employee. Additionally the University will, so far as is practicable, ensure its employees are not exposed to workplace hazards that have the potential to cause manual handling injuries.

## OFFICE ERGONOMICS:

Equipment, furniture and work habits can put employees at risk for ergonomic injuries. To avoid the physical stresses that can result from awkward postures, repetitive motions, and excessive force, a workstation should be adjusted to fit the employee.

### 1) Furniture and Equipment:

Incorrect posture can be associated with occupational overuse syndrome and poor posture is usually caused by inappropriate furniture and equipment. Check your posture before commencing assigned tasks and adjust your furniture to enable you to work comfortably and safely.

#### a) *Fixed Height Desks*

- The chair should be adjusted so it fits to the individual using it.
- The height of the chair should allow the thighs to be at a 90-110 degree angle to the floor (parallel).
- There should be sufficient leg and knee room under the desk/table.
- Feet should touch the floor or rest comfortably on a footrest.

#### b) *Adjustable Height Desks*

- The chair should be adjusted so that your feet are flat on the floor and your hips are slightly lower than your knees.
- Adjust the desk so that your elbow tips are at the same level as the visual display unit's working surface.

#### c) *Fixed or Adjustable Height Desks*

- Lumbar Support - adjust the height of the backrest to support the lumbar curve (small) of your back. To find your lumbar curve, hold your arms behind your back and comfortably clasp the opposite forearm near the elbow.

- Seat Depth - adjust the seat depth so that you are firmly supported by the backrest and can still fit 3 fingers between the front of your seat and your calves.
- Screen – adjust the top of the screen to the level of your eyes. Position the screen at a comfortable viewing distance usually between 500 – 600 mm.
- Document Holder - adjust the top to eye level and ensure the viewing distance is the same as the screen.

Fully adjustable chairs, footrests and copy holders are considered essential equipment for keyboard operators. Other furniture and equipment include:

- adjustable tables,
- forearm supports,
- task lighting,
- screen adjusters,
- screen filters
- appropriate dividing screens are also necessary in some cases.

## 2) Keyboard and Mouse:

- Adjust your furniture to enable you to maintain a good posture while keying.
- The keyboard height should be at a 90-degree or greater angle to the elbow. Consider using an adjustable keyboard tray if necessary.
- Arrange your work area in the most efficient way to ensure all materials, equipment and controls can be easily reached without stretching or twisting.
- The keyboard itself should also be placed at an angle that allows the back of the hand to be approximately parallel with the forearm. It may be necessary to flatten or even reverse angle the keyboard to attain this posture.
- Start keyboard work slowly each day to warm up to the task and cool down by reducing your keystroke rate at the end of each day.
- During intensive periods of typing or other keyboard work, breaks **MUST** be taken. Recommended rest breaks are:
  - 2 – 3 minutes in each 15 – 20 minute period, or
  - 5 minutes in each 30 minute, or
  - 10 minutes in each hour.

**NOTE: Non-repetitive work may be performed during these breaks.**

- Never accumulate work breaks.
- Gradually build up keying speed to your normal rate after any absence from keying, including holidays.
- For those personnel who use the mouse often, one additional recommendation is the use of the mouse by either hand. This will reduce the repetition and strain on one wrist.

- j) Consider the use of wrist pads at both the keyboard and the mouse. This will reduce the pressure placed on the wrists where they rest on the counter and enhance circulation in those areas.
  - k) Report breakdowns or malfunctions of your equipment immediately to your Supervisor.
- 3) Monitor:
- a) Raise the monitor so that the top of the screen is level with the eye. This will allow for the most ergonomically correct posture for the neck.
  - b) For personnel who have bifocals or trifocals consider purchasing glasses made for computer use. This will allow personnel to look straight ahead at the monitor instead of tilting their heads up to bring the reading lens into use.
  - c) For transcribing information from other documents, work supports attached to the side of the monitor or sitting in front of it will help prevent neck strains.
  - d) Anti-glare screens for monitors can reduce eyestrain associated with reflected light. It can also help posture if poor positions are assumed in order to see the screen

4) Telephones:

Personnel using telephones, especially while working at a computer often cradle the phone between the shoulder and ear. This is a poor posture. Telephone cradles can help reduce the strain. For employees that multitask, consider a cordless, hands-free headset.

5) Other Ergonomic Issues:

- a) Carpal tunnel syndrome (CTS) is often associated with extensive typing. However, any repetitive action involving the hands or fingers can lead to CTS. Work requiring wide grips (such as lifting thick files from cabinets) or hard grips (staplers) can all contribute to CTS. No one person should be consistently tasked with this type of work. Electric staplers can also reduce the potential for problems.
  - b) Standing in place for long periods is also fatiguing and may lead to foot, leg or back problems. Anti-fatigue mats cushion the feet and help to reduce these stresses.
- 6) Health Care:
- a) A staff member who experiences continued pain and discomfort which might reasonably be considered to be caused by daily work tasks shall consult his/her personal physician for advice and diagnosis.
  - b) Symptoms for occupational overuse syndrome generally develop in stages:
    - *Stage 1:* consistent pain in wrist, arm, elbow, shoulder, neck or other areas subject to repetitive stress. Pain may subside when at rest at night and start again when repetitive tasks are resumed.

- *Stage 2*: a persistent pain which does not subside after rest.
  - *Stage 3*: severe and constant pain restricting mobility of the affected limb.
- It is important to obtain early treatment before Stage 2 is reached.

- Particular care must be taken when returning from periods of leave as this is a time of increased risk. During the first week of resuming duties, staff must avoid long periods at the keyboard and high-speed entry.

## **MATERIAL HANDLING/SAFE LIFTING:**

### 1) Maximum Comfort Zone:

Handle boxes and materials within the maximum comfort zone, which is roughly the area just below the shoulders and just above the knees. Repeatedly lifting or carrying objects above shoulder height can put unnecessary strain on the neck and shoulders. Moving objects that are low to the ground (such as the bottom shelf of a storage rack) can put strain on the lower back.

### 2) Plan The Lift:

Lifting an object from the ground is more stressful than lifting the same object from several inches off the ground. When possible, store objects on platforms (i.e., shelves or pallets) that raise them off the ground. Starting positions that are at a level between the knee and waist are the least stressful to the back.

- Face the load squarely, and use legs to lift.
- Bend at the knees not at the back.
- Position your feet about shoulder width apart with one foot slightly in front of the other.
- Get a firm grip on the object using your hands and fingers. Use handles when they are present.
- Never lift anything if your hands are greasy or wet.
- While keeping the weight of the load in your legs, stand to an erect position.
- If you must change direction while lifting or carrying the load, pivot your feet and turn your entire body. Do not twist at the waist.
- If the load is too heavy or bulky, use lifting and carrying aids such as hand trucks, dollies, pallet jacks and carts or get assistance from a co-worker.
- Wear protective gloves when lifting objects that have sharp corners or jagged edges.
- The load should be lifted and carried as close to the body as possible. When the load is not carried close, the body is positioned out of alignment and more strain is put on the lower back. This may require bringing the object to the edge of the shelf or pallet in preparation for the lift. Do not reach over other objects.



k) Plan the placement/delivery. Once the object reaches its final destination, be sure to set it down in the same manner of lifting it:

- do not bend at the waist
- keep the object close to the body
- maintain a wide stance.

To prevent overuse injuries, pay attention to pain, numbness and/or tingling and take action to prevent further strain or injury. Have a co-worker observe the lifting technique to see if there are position changes that can be made. Change the routine, do not repeat the same activity over and over but alternate it with other activities. In some situations, there may be equipment or tools available that will reduce physical stress.


### 3- Reducing Push/Pull Forces:

Pushing and pulling are common material handling tasks performed in just about any work environment, from factory floors to offices to field installations. Three approaches to reducing the force required to push or pull when using a wheeled device:

- a) Lighten the load - make more trips with a lighter load particularly when pushing and pulling up an incline.
- b) Maintain your casters (wheels) - wear and tear on the castors can greatly increase push/pull force. Periodically check your casters to ensure that they are moving and turning freely.
- c) Select different castors - there are numerous sizes and materials available for castors. Selecting the right type can have a huge effect on push/pull force.

### **REFERENCES:**

National Institute for Occupational Health and Safety  
Workplace Safety and Health Act.  
Occupational Safety and Health Association (O.S.H.A.)

 <b>BRANDON</b> <b>UNIVERSITY</b> <small>Founded 1899</small>	<b>Procedure:</b>  <b>Excavation</b>		<b>Approved By:</b>   <b>Workplace Health &amp; Safety Committee</b>
	<b>Procedure Manual</b>	<b>Reviewed:</b> <b><u>April 2004</u></b>	<b>Updated:</b> July 2005

## INTRODUCTION:

During the course of routine maintenance and research activities entry into trenches and excavations is often a necessary work practice. It is the objective of Brandon University to reduce the potential risks to University employees involved with these types of activities. Some excavations are more hazardous than others. In general the more dangerous excavations are those that are in unstable soils, or are deeper than they are wide or are greater than four feet deep. The activities covered by these procedures include all excavations which involve the removal of earth to a depth greater than or equal to 5 feet or involve excavations with potentially hazardous atmospheres at depths four feet or greater.

## DEFINITIONS:

**Excavations:** Manitoba Workplace Safety and Health defines excavation as “ a man-made cavity or depression in the earth’s surface formed by earth removal and includes a trench, deep foundation, tunnel, shaft or open excavation.

### Open

**Excavations:** An open excavation means an excavation where the width is equal to or greater than the depth.

### Trench

**Excavations:** A narrow excavation (in relation to its length) made below the surface of the ground. In general the depth is greater than the width but the width of a trench is not greater than 15 feet.

**Shoring:** A structure such as a metal hydraulic, mechanical or timber apparatus that supports the sides of an excavation and which is designed to prevent cave-ins. All shoring shall be installed from the top down and removed from the bottom up.

## HAZARDS OF EXCAVATION:

- 1) The most serious hazard associated with excavations is the potential for cave- in. Soils are heavy, often weighing as much as 114 pounds per cubic foot or over 3000 pounds per cubic yard. A person buried under as little as a couple of feet of soil may experience enough pressure in the chest to prevent the lungs from expanding thereby suffocating or they may be crushed and suffer internal injuries, broken bones, etc.
- 20 Other hazards may include contact with utility lines, or oxygen deficiency resulting from the work performed within the excavation or site conditions, e.g. accumulation of exhaust vapors from surrounding traffic, welding fumes, etc.


## **EXCAVATION PROCEDURES:**

- 1) Manitoba Safety and Health must be notified in advance of any excavation where a trench excavation is in excess of 6 feet in depth or an open excavation exceeds 8 feet in depth.
- 2) No excavation shall commence until all the public utilities (telephone, hydro, gas, steam, etc) have been notified and the accurate location of all underground facilities has been determined.
- 3) A professional engineer must approve excavations greater than 20 feet deep.
- 4) An experienced and trained worker shall be designated to directly supervise each excavation project. This worker must be familiar with all aspects of excavation work, from shoring requirements to emergency rescue procedures. The supervisor must directly supervise all excavation work during the entire period the workers are in the excavation.
- 5) No worker shall enter or work in an excavation, which is deemed unsafe or has unsafe conditions and evacuate any excavation where hazardous or potentially hazardous situations have been identified.
- 6) A hazard assessment must be undertaken to determine the risks associated with workers entering an excavation. Possible hazards include:
  - explosive and toxic atmospheres
  - lack of oxygen
  - restricted access and egress
  - flooding
  - utility contacts
  - human factors (phobias, mental and physical conditions)
- 7) A suitable means of access and egress must be provided for workers entering an excavation. This is usually provided by means of a ladder or stairway.
  - Trenches 4 feet or more in depth shall be provided with fixed means of egress.
  - Spacing between ladders or other means of egress must be such that a worker will not have to travel more than 25 feet laterally to the nearest means of egress.
  - Ladders must be secured and extend a minimum of 3 feet above the excavation
  - Metal ladders shall not be used when electric utilities are present.
- 8) Work shall not be performed in an excavation in which there is accumulated water or in which water is accumulating unless precautions are taken. The precautions could vary with each situation but could include:
  - special support or shield systems to protect from cave-ins,
  - water removal to control the level of accumulating water,
  - use of a safety harness and lifeline.

- 9) When ladders are used in an excavation they must extend 3 feet above the top of the excavation. In trench excavation a ladder must be located within 10 feet of a worker's working position.
- 10) Shoring, or the proper sloping ( 45 degrees) of an excavation must be provided where a worker is to enter an excavation that is considered to be:
  - an open excavation exceeding 8 feet in depth
  - a trench excavation exceeding 6 feet in depth
- 11) The shoring support structure must be designed to withstand all external forces that may be caused by:
  - soil pressure
  - nearby structures
  - additional loadings and vibrations
- 12) If an open excavation exceeds 8 feet in depth then the walls of the excavation must be vee'd-out (45 degrees) or a shoring support structure designed and installed.
- 13) An excavation greater than 4 feet deep may be classified as a confined space and require issuance of a permit prior to entry.
- 14) If entry is required for an excavation greater than 4 feet deep, ladders or sloped exits must be placed no further than 25 feet apart.
- 15) Where the stability of adjoining buildings, walls, or other structures is endangered by excavation operations, support systems such as shoring, or bracing should be applied.
- 16) Excavations greater than 4 feet deep should be contracted out if there is not an employee meeting the required training who can attend the entry.
- 17) If the excavation is greater than 5 feet deep, sloping and/or a shoring/trench box must be used to prevent the sides from collapsing.

## **TRAINING:**

All University personnel who are or may be working in or around excavations shall receive training to familiarize them with Workplace Safety and Health excavation standards and other issues related to excavation projects. This awareness training shall include potential safety hazards, safe excavation work practices, hazardous atmosphere testing, inspection procedures, protective systems and standard rescue procedures.

 <b>BRANDON</b> <b>UNIVERSITY</b> <small>Founded 1899</small>	<b>Procedure:</b>  <b>Fall Protection Safety</b>		<b>Approved By:</b>  <hr/> <b>Workplace Health &amp; Safety Committee</b>
	<b>Procedure Manual</b>	<b>Reviewed:</b> June 2004	<b>Updated:</b> July 2005

## INTRODUCTION:

Many of the work related accidents on campus result from slipping, tripping or falling. Falls not only happen in traditionally hazardous occupation such as construction work, but also can and do occur in all types of environment. Brandon University accident records reveal that falls, of various descriptions, on an average account for approximately 40 percent of all reported accidents. Brandon University is committed to providing safety measures that satisfy the University's obligation to its staff, students and visitors.

NOTE: Since these safety procedures do not and cannot contain every rule necessary for the safe performance of work, employees and supervisors must use personal initiative.

## DEFINITION:

kN - Kilonewton = 224.8089 lbs. impact force.

## CATEGORIES OF FALLS:

- 1.) Fall to ground surface (i.e. slips)
- 2.) Fall against an object
- 3.) Fall from a moving vehicle/equipment
- 4.) Fall from stairs, ramps and ladders
- 5.) Fall from one work level to another
- 6.) Fall from edge of a work level
- 7.) Fall into/through an opening

## CONTROL MEASURES:

### Types of Fall Protection Systems:

- 1) Surface protection (non-slip flooring):
  - a) *Housekeeping* - In order to prevent slips and falls on the same surface, it is a matter of providing a work surface free from tripping and slipping hazards. Wear footwear that provides traction and proper protection. This can be accomplished by ensuring that good housekeeping practices are instituted at the workplace.
  - b) *Non-slip floors* - Floors that may become slippery due to weather conditions and/or wear should be provided with a non-slip type surface or coating that will provide a secure walking surface. Utilize mats or other non-slip surfaces should be used as appropriate. Material spills must be cleaned up immediately, especially if it creates a slippery surface.

2) Fixed barriers (handrails, guardrails):

In Manitoba an employer must ensure that a worker is protected from falling a vertical distance of 2.5 meters (8 feet) or more, as required by regulations under the Workplace Safety and Health Act.

A fixed barrier must be capable of stopping an employee from venturing into a fall/slip hazardous area or falling into a floor opening. Barriers may be permanent or temporary, depending upon circumstances at the workplace. Types include but are not restricted to:

- a) *Guardrails* - a permanent or portable structure system consisting of a top rail (at a height of 36 to 42 inches), a middle or intermediate rail (midway between the top rail and ground level) and a toe board secured to vertical posts intended to stop an employee from inadvertently stepping off a level and falling to a level below.
- b) *Handrails* - on the open side of stairs, ramps or other similar means of access, proper handrails must be in place. These serve as both a physical barrier and a means of support to an employee moving up and down the access way. Handrails should be designed the same as a guardrail - a top rail (at a height of 36 to 42 inches), a middle or intermediate rail (midway between the top rail and ground level) and a toe board.
- c) *Ladder Cages* - Manitoba Regulation 189/85, section 86 states that fixed ladders extending more than 5 meters must have fall protection devices. This may consist of a ladder cage or a fall arrest system:
  - A ladder cage is a permanent structure attached to a ladder that provides a barrier between the worker and the surrounding space. It serves only as a support to a worker, if the worker needs to rest against the barrier. It does not provide complete fall protection on its own. However it could be used in conjunction with a full body harness and lanyard. The worker would be able to secure to the rung or side rail of the ladder at any time during the climbing of the ladder. This still does not provide complete fall protection.
  - The best approach is to provide a complete fall arrest system into the ladder design. This could be a permanently installed metal rail or wire rope anchoring system with an automatic fall arresting device. The automatic fall arresting device would travel freely on the rail or cable, allowing the worker to use both hands while climbing up and down. Should the worker slip or fall, the device would lock instantly and limit the worker's fall to a matter of inches.
- d) *Warning barriers* - used to indicate to employees that they are approaching a hazardous area where a potential to falling exists. The warning barrier is used where it is not reasonably practicable to provide fixed barrier protection or a guardrail has been temporarily removed from an area.

3) Surface opening protection (removable covers, guardrails):

Surface openings in floors and other walking surfaces where employees have access, must be protected by guard railing or secured wood or metal covers. The covering must also be identified to indicate that there is an opening below. When plywood is used to cover openings, the minimum thickness shall be 19mm (3/4") with proper support for the plywood. If work must be undertaken near unprotected openings from which a worker could fall 2.5 meter (8 feet) or more access must be restricted to workers who are wearing full body safety harnesses and lifelines secured to proper anchorage.

4) Travel restraint systems (safety line and belt):

A travel restraint system is intended to limit a worker's movement so the worker is unable to reach a location where there is a risk of falling. The restraint system is made up of a safety belt (or safety harness), lifeline and/or lanyard and anchor. The safety belt is secured to a lifeline having a fixed length, which is attached to a secure anchor. The length of the lifeline is such that the worker can only proceed to within approximately 1 meter of an opening or edge. Under no circumstances should a travel restraint system be rigged so that a worker is in a position to fall.


5) Fall arrest systems (safety line and harness):

A fall arrest system differs from a travel restraint system. Unlike travel restraint, a fall arrest system does not prevent a fall, it reduces the chance of injury when a fall takes place. A complete fall arrest system consists of an anchorage point, lifeline, fall arrestor, lanyard, shock absorber and a full body safety harness. A 100 kg (220 lbs.) worker free falling 1.0 meters (app. 3 feet) generates an impact force of approximately 12 kNs (2700 lbs.)

The selection of the particular fall protection system to control the hazard to the employee is dependent upon the circumstances and/or the job task.

## **REFERENCES:**

Simon Fraser University  
Manitoba Department of Labor  
The Workplace Safety and Health Act  
The Construction Safety Association of Manitoba  
Canadian Standards Association (CSA)

 <b>BRANDON</b> <b>UNIVERSITY</b> <small>Founded 1899</small>	<b>Procedure:</b>  <b>First Aid</b>		<b>Approved By:</b>   <b>Workplace Health &amp; Safety Committee</b>
	<b>Procedure Manual</b>	<b>Reviewed:</b> April 2004	<b>Updated:</b> July 2005

## INTRODUCTION:

Brandon University is committed to providing a first aid service that satisfies the University's obligation to its staff, students and visitors. The following procedures specify minimum requirements for the provision of first aid services, including first aid personnel, their training, and equipment. The purpose of first aid is to positively affect the outcome of a work-related illness and/or accidental injury. This requires the capability to administer to a range of afflictions from minor injuries to those that are lethal.

## DEFINITIONS:

For the purposes of these procedures:

**Workplace:** A work site that is located not more than 5 miles from a hospital or medical facility.

**First Aider:** A person who is a holder in good standing of:

- an Emergency First Aid Certificate issued by St John Ambulance or the Canadian Red Cross
- a Heart Saver Cardiopulmonary Resuscitation (CPR) Certificate issued by the Heart and Stroke Foundation of Manitoba.

## THE DUTIES and RESPONSIBILITIES OF A UNIVERSITY FIRST AIDER:

### 1) Duties:

- a) Promptly provide a level of care within the scope of the first aider's training and the applicable regulations.
- b) Positively affect the outcome of work-related illnesses and injuries that occur in the workplace.
- c) Objectively record observed or reported signs and symptoms of injuries and illnesses.
- d) Refer to medical attention injuries and illnesses recognized as being serious or beyond the scope of the first aider's training.
- e) A first aider shall be in complete charge of first aid treatment of the injured until:
- f) a place of medical treatment is reached:



- the injured is passed to an ambulance service;
- responsibility for treatment is accepted by a first aider with a higher level of certification, a physician, or a registered nurse.

g) To apply basic first aid treatment to sick and/or injured persons as needed and consistent with their level of training and competence.

h) Assist in the referral of casualties to medical aid as required.

i) Burn ointments, salves, lotions or sprays shall not be used without a directive by a medical doctor stating the type and proper method of use.

2) Responsibilities:

- Ensure that their first aid certificate and cardiopulmonary resuscitation (CPR) certificates are current.
- Immediately after first aid treatment is given complete an "Incident Report".
- Ensure that the Incident Report form is appropriately forwarded as per form instructions.
- Ensure that expired first aid supplies (including sharps) are appropriately bagged and disposed of accordingly to regulations.
- Ensure that first aid kits are continually stocked.

**SPECIFIC PROCEDURES:**

3) Accidental Injection and Contaminated Cut(s):

- Wash surface with water.
- Apply pressure using a clean cloth.
- Put affected part on ice.
- Keep body part below level of heart.
- Inform attending medical personnel which chemicals and/or solvents were injected.

2) Breathing Stopped:

- Place the person on his/her back
- Remove any obstruction from the respiratory tract
- If no neck injury is suspected, tilt the head back to open the airway. If a neck injury is suspected open the airway by lifting the lower jaw.
- Pinch the nostrils and blow into the casualty's mouth so that the chest expands.
- If the chest does not expand, check again whether the respiratory tract is clear, tilt the head a little further back and blow again into the mouth.

- Let the victim exhale and then repeat the operation at 4 to 5 intervals.

3) Burns:

a) **Types of burns:**

- Dry heat burns, (caused by fire or contact with hot objects)
- Moist heat burns, (caused by steam or hot liquids)
- Chemical burns, (caused from sulphuric acid, caustic soda or other corrosive chemicals)
- Electric burns, (caused by the passage of electric current through the body, which result in deep injuries at the point of entry and at the point of exit.
- Radiation burns

b) Remove the casualty from the source of heat.

c) Reduce the temperature in the burned area by immersing the injured part in cold water or by applying towels soaked in cold water as soon as possible.

d) If dry corrosive chemicals are present brush off the powder and then flush the area with continuously running water for 10 to 15 minutes,

e) In cases of electrical burns shut off the electric source or remove live wires from the casualty,

f) Cover the burned area lightly with a sterile dressing, a clean towel or a sheet if the area is large.

g) Protect blisters so they do not break,

h) Give first aid to slow the progress of shock, which will always be present in burns.

i) Do not remove anything sticking to burn.

j) Do not breathe on, cough over or touch the burned area to prevent contamination.

k) Do not apply lotions, ointment, oils or butter to a burn that will need medical care.

l) Do not cover a burn with cotton wool or other fluffy material.

m) Cover burn loosely.

4) Chemical Splashes Into the Eyes:

a) If contact lenses are worn remove them immediately.

b) Flush the eye with clean water for at least 20 minutes (use fountain, eyewash station or tap water).

- c) While flushing the eye keep it open and roll it constantly to wash the mucous membranes of the eyelids.
- 5) Chemical Splashes Over a Large Area of the Body:
- a) Immediately flush with cool water for at least 20 minutes and remove contaminated clothes as quickly as possible.
  - b) While removing clothing, avoid further contamination of other parts of the body, especially the face and eyes.
  - c) Never use chemical neutralizing agents, ointments, creams, lotions or salves.
- 6) Chemical Splashes Over a Small Area of the Body:
- a) Rinse with cold water for at least 20 minutes, then wash with soap and water.
  - b) Remove jewelry and contaminated clothing to assure the removal of all traces of the chemical(s).
- 7) Choking:
- a) Determine if person is choking.
  - b) Hold person from behind.
  - c) Give abdominal thrusts (Heimlich Maneuver).
  - d) Chest thrusts, (to be used when abdominal thrusts cannot be used effectively)
  - e) Back blows,
  - f) Finger sweep or foreign body checks,
  - g) Lung ventilation.
  - h) Obtain medical attention as soon as possible.
- 8) Cuts and Lacerations:
- a) Apply pressure on the injury using a clean cloth.
  - b) Lay the person down in such a way that the wound is at a higher level than the heart. (elevation)
  - c) When the casualty is placed at rest in a sitting or lying position blood pressure is reduced and bleeding slows down,
  - d) Cover the victim to prevent shock.
- 9) Eye Injury:
- a) Warn the person not to rub the eye. This will only cause more pain and irritation.
  - b) Wash your hands before starting first aid
  - c) Close the person's eyelids and cover the injured eye with a soft pad of cotton wool large enough to extend beyond the eye.
  - d) Cover the uninjured eye. Because both eyes tend to move together, covering the uninjured eye will reduce its movement and prevent movement of the injured eye.
  - e) Transport the casualty to medical aid as soon as possible.

- f) In cases where large particles have penetrated or become embedded in the eyeball or in the tissue surrounding the eye:
- Do not attempt to remove these embedded objects.
  - Lay the casualty down,
  - Gently place dressings around the object,
  - Cover the eye with a paper cup or cone to prevent any pressure on the object,
  - Cover the good eye to reduce movement,
  - Secure the cup and dressing in place with a bandage,
  - Immobilize the casualty's head on a stretcher side to side movement.
  - Transport the casualty to medical aid.

10) Fainting:

- a) Have the person sit down with his/her head between the knees or lie them down with feet elevated 6-12 inches above the level of his head.
- b) Provide circulation of air and loosen tight clothing at the neck, chest and waist.
- c) Make the person who has fainted comfortable as consciousness returns and recommend that he remain lying down for 10 to 15 minutes.

11) Falls:

- a) Since there may be serious unseen injuries, do not move the patient unless there is a life-threatening situation.
- b) Keep the patient warm.

12) Fractures:

- Immobilize without disturbing fractures or suspected fractures.

13) Ingestion of Chemicals:

- a) Determine the exact nature of the ingested substance.
- b) Check label or Material Safety Data Sheet for treatment.
- c) call for medical assistance immediately.

14) Seizures:

- a) Protect the person from injuring himself or herself while seizure lasts.
- b) Do not use force to restrain the person.
- c) Only move the person if they are in danger.
- d) Do not put anything in their mouth.

15) Shock:

- a) Reassure the casualty

- b) Place the casualty on his/her back with the head low and the feet raised 6 to 12 inches. This will increase blood flow to the brain,
  - c) A pelvic injury may be aggravated by raising the legs subsequently this particular person is best kept flat on his/her back.
  - d) Handle the casualty gently to avoid causing pain,
  - e) Loosen tight clothing around the neck, chest and waist,
  - f) Keep the casualty warm with clothing, blankets, etc. Do not use hot water bottles.
  - g) Wipe his face, moisten his lips and comfort him.
- 16) Unconsciousness:
- a) Assess responsiveness.
  - b) Open the airway, check breathing and pulse. If not breathing give 2 breath - if no pulse begin CPR
  - c) Place breathing person on their side (recovery position)
  - d) Loosen clothing about the neck, chest and waist
  - e) Give nothing by mouth
  - f) Keep person comfortably warm

## **TRAINING:**

Every workplace that employs 5 or more workers shall provide first aid services in the workplace. The University shall endeavor to ensure that as far as reasonably practicable trained first aiders are available at all times to achieve and maintain the desired level of first aid coverage.

## **FIRST AID RECORD BOOK(S):**

First aiders are responsible for recording all injuries and manifestations of disease reported or treated in a First Aid Record Book. Each record must contain:

- full name of the injured
- date and time of injury or report of illness
- date and time the injury or illness was reported to the injured person's supervisor
- name(s) of witnesses
- description of how the injury occurred
- description of the nature of the injury or illness
- description of the treatment given and any arrangements made relating to the injured
- A description of any subsequent treatment given for the same injury or illness
- The signature of the attendant or person given first aid, and where possible the signature of the employee receiving treatment.


## **FIRST AID KITS:**

Legislation requires that approved first aid kits be located so that every part of the workplace has easy and quick access. Therefore, as a minimum requirement:

- up to 25 workers: one first aid kit,
- 25 to 50 workers: two first aid kits,
- 51 to 75 workers: three first aid kits,
- more than 75 workers: four first aid kits.

A first aid kit must contain not less than the following items:

- 1) General Items:
  - a recent edition of a first aid manual
  - 1 pair of disposable gloves
  - 1 disposable resuscitation mask (with a one-way valve)
  - 1 disposable cold compress
  - 1 dozen safety pins
  - 1 splinter forceps
  - 1 pair of 12 cm bandage scissors
  - 25 antiseptic swabs
- 2) Dressings (each item to be sterile and individually wrapped in order to maintain sterility):
  - 16 surgical gauze pads (7.5 cm squares)
  - 4 telfa pads (7.5 cm by 10 cm non-adhesive)
  - 32 adhesive dressings, 2.5 cm wide
  - 2 large pressure dressings
- 3) Bandages:
  - 3 triangular bandages (1 m each)
  - 2 conforming bandages (10 cm each)
  - 2 rolls of 2.5 cm adhesive tape
  - 1 roll of 7.5 elastoplast
  - 2 rolls of 7,5 cm tensor bandages
  - 1 roll of tubular finger bandage with applicator.

 <b>BRANDON</b> <b>UNIVERSITY</b> <small>Founded 1899</small>	<b>Procedure:</b>  <b>Grounds Keeping Equipment Operating</b>		<b>Approved By:</b>  <hr/> <b>Workplace Health &amp; Safety Committee</b>
<b>Procedure Manual</b>	<b>Reviewed:</b> June 2004	<b>Updated:</b> July 2005	

## INTRODUCTION:

University grounds keeping for the most part involves the operation and maintenance of mechanized equipment. As is normally the case when working with machinery safety becomes a prominent source of concern. In the interests of employee safety, Brandon University has created safety guidelines to assist in the prevention of accidents and injuries to employees whose job involves grounds keeping operations.

### HAND and POWER TOOLS:

- 1) Keep all tools in good condition with regular maintenance.
- 2) Use the right tool for the job.
- 3) When possible make sure the tool you use fits you properly. Handles on some tools such as some snow shovels can be adjusted depending on your height. Talk to your supervisor if a certain tool causes you to experience unusual pain or discomfort when you are working with it.
- 4) Examine each tool for damage before you do your job. **DO NOT** use damaged tools. Take action to label the tool “Do Not Use” to indicate it is damaged and turn it in for repair.
- 5) Operate and maintain tools according to the manufacturer’s instructions.
- 6) Use the right personal protective equipment for the tool and the job.
- 7) Never carry a power tool by the cord.
- 8) Make sure you have secure footing and balance when working with a tool.
- 9) Avoid work with tools in awkward positions as much as possible. Make sure you have the right tool for the situation. If an awkward position is required due to the nature of the work, take frequent breaks.
- 10) When working with sharp tools stay alert. Keep the sharp edges sharp. Let the tool surface do the cutting. Do not force the tools. Carry knives in a sheath. Dispose of razor blades properly in a sturdy container labeled “sharps”.
- 11) Never yank the cord to disconnect an electric power tool from an outlet.

- 12) Keep cords away from heat, oil and sharp edges.
- 13) Disconnect tools from the power source when not using them. Before cleaning and servicing them and when charging accessories such as blades, bits and cutters.
- 14) Keep all people not involved with the work at a safe distance from the work area.
- 15) Avoid accidental starting. Do not hold fingers on the power switch button when carrying a plugged in tool.
- 16) Make sure the tool is properly guarded. Never disable the guard for a portable power tool.
- 17) Wear proper clothing for the task. Loose clothing, ties, and jewelry can become caught in the tool.

### **TRACTORS AND RIDING MOWERS:**

- 1) Always start the machine from the operator's seat. Never start the machine while standing beside the tractor.
- 2) Riding mowers and tractors are one-person machines. Operate from the drivers seat only and never carry any passengers. Keep both feet on the machine at all times.
- 3) Take care not to throw a unit in gear accidentally and have it jerk ahead unexpectedly.
- 4) When operating the machine on unlevel ground use extreme care. Avoid sudden starts, stops or turns.
- 5) Decrease your speed when going down slopes or around sharp corners to avoid tipping. Maintain minimum ground speed and make turns wide and gradual.
- 6) Never jump off the machine or dismount from moving equipment. Observe proper shutdown procedures before dismounting.
- 7) Inspect the mower/tractor periodically for potential hazards:
  - a) loose belts
  - b) missing or damaged guards
  - c) accumulations of grass, leaves or excessive grease to reduce the potential of fire hazard.

### **TRACTOR OPERATION:**

Most tractors used in grounds care can be classified into three size groups:

- 1) Riding lawn mowers (3 – 8 horsepower), which are fitted with a mower and usually do not have other equipment or attachments that could be mounted separately.



- 2) Lawn and garden or compact tractors (7 – 40 horsepower) that can be mounted with a variety of tools and equipment.
- 3) Large tractors which range from 40 – 80 horsepower and have a low center of gravity for working slopes. These large tractors can be equipped with a variety of attachments.
- 4) Some compact tractors have an interlock safety system. Do not remove these devices they are for your protection.
- 5) Move the gearshift lever to the desired gear and engage the clutch slowly. On most tractors, start out in the gear you intend to use for driving or operating.
- 6) Smooth starts are essential both for equipment and operator safety. Apply power gradually to the drive wheels. Do not “pop” the clutch by letting it out too fast. Engaging the clutch too quickly can result in overturning the tractor backward. Bring the tractor to a full stop before changing gears.

**Personal Safety Check:**

- 1) Wear close-fitting, sturdy clothing. Avoid clothing with tears, bulging pockets, frayed edges and heavy cuffs that may tangle in revolving equipment parts.
- 2) Wear heavy, non-slip footwear, preferably with steel toes.
- 3) Wear earmuffs in excessively noisy conditions to prevent hearing damage and reduce operator tension and fatigue.
- 4) Keep alert. Fatigue, worry, preoccupation, illness and the like are enemies of safety. When you begin feeling tired, too hot or too cold, take a 10-minute break to stretch, walk about, lie down or snack. A break restores alertness.

### **Equipment Inspection:**

- 1) Check the fuel level and if necessary refuel while the machine is cool and in a well-ventilated area. Store additional fuel in a well-marked, safety storage container. Gasoline storage containers should be colored bright red.
- 2) Check coolant when the engine is cool on liquid-cooled engines. Do not remove a radiator cap when the engine is hot and never add cold water or coolant to a hot engine.
- 3) Hydrogen gas from a battery even in low concentrations may explode in the presence of a spark or open flame.
- 4) Adjust the tractor seat to fit the operator's needs and comfort. Improper seat adjustment may hinder operation of hand levers and foot pedals in an emergency.
- 5) Adjust the tread width, tire pressure and tractor weights.

### **Starting Procedures:**

- 1) On typical systems before the engine will start:
  - the ignition key must be "on"
  - the transmission must be in neutral, the clutch pedal depressed, or both
  - power take off must be disengaged
  - the operator must be properly seated.
- 2) Do not operate an electric starter for more than 30 seconds at a time because of heat build-up in the starter motor. If the engine will not start turn the key to "off" and wait for a minute or two before trying again.
- 3) Provide good ventilation if you must start an engine indoors. Such engines give off carbon monoxide, a poisonous, odorless and colorless gas.
- 4) Some compact tractors have an interlock safety system. Do not remove these devices they are for your protection.
- 5) Move the gear shift lever to the desired gear and engage the clutch slowly. On most tractors, start out in the gear you intend to use for driving or operating.
- 6) Smooth starts are essential both for equipment and operator safety. Apply power gradually to the drive wheels. Do not "pop" the clutch by letting it out too fast. Engaging the clutch too quickly can result in overturning the tractor backward. Bring the tractor to a full stop before changing gears.
- 7) Always start the machine from the operator's seat. Never start the machine while standing beside the tractor.
- 8) Riding mowers and tractors are one-person machines. Operate from the drivers seat only and never carry any passengers. Keep both feet on the machine at all times.
- 9) Take care not to throw a unit in gear accidentally and have it jerk ahead unexpectedly.
- 10) When operating the machine on unlevel ground use extreme care. Avoid sudden starts, stops or turns.
- 11) Decrease your speed when going down slopes or around sharp corners to avoid tipping. Maintain minimum ground speed and make turns wide and gradual.
- 12) Never jump off the machine or dismount from moving equipment. Observe proper shutdown procedures before dismounting.
- 13) Inspect the mower/tractor periodically for potential hazards:

- loose belts
- missing or damaged guards
- accumulations of grass, leaves or
- excessive grease to reduce the potential of fire hazard.

### **Operating Procedures:**

- 1) Avoid low-hanging branches, electric lines and guy wires that can cause tractor upsets and/or operator injuries.
- 2) While maneuvering the tractor, be alert and watch the area ahead for moving vehicles, people or animals that might cross the path of the tractor. Be prepared to change course or stop.
- 3) Reduce speed while operating on embankments, a hole, bump or quick turn could result in a rollover. Use the widest possible wheel spacing and keep the tractor properly ballasted. Loads at the rear increase the chance of backward upset if traveling up a slope.
- 4) When possible stay clear of ditches. Apply power carefully when driving out of a ditch. A tractor upset happens easily under these circumstances. Leave the tractor in gear when going downhill. The engine will act as a brake.
- 5) While backing look behind to be sure the way is clear. Some lawn and garden tractors have a forward/reverse lever that reverses the tractor with a short pause. Be sure to bring the tractor to a full stop, look and be alert as you reverse directions.
- 6) Do not drive lawn and garden tractors on streets or highways unless licensed under the Manitoba Highway Traffic Act.
- 7) Never dismount from the operator's seat while the engine and/or any attachments are running.

### **MOWER OPERATION:**

#### **1) Before mowing:**

- a) **Dress for the job.** Choose close-fitting clothes and long pants, hearing protection, eye protection, work boots with traction and heavy gloves when handling blades and other items which might be sharp, contain nicks or have metal burrs on the edges. **DO NOT** wear loose-fitting clothes or jewelry which can get caught or hung up on a machine and cause injury.
- b) **Know your machine.** Read your operator's manual to familiarize yourself with your machine. As any minor or major machine problems arise report them to your supervisor. Reporting problems immediately will help you to avoid potential hazards.
- c) **Read warning labels and check safety features.** There are dangers associated with operating any power equipment, so pay attention to all

warning labels and safety features on your mower. Check the safety guards and devices to ensure that they are in proper working condition. Never operate your mower if your safety guards and devices are not in place.

- d) **Conduct daily inspections.** Always conduct your daily mower inspections on a hard, flat surface away from the mowing area. Check:
- oil level
  - hydraulic system
  - cooling system
  - radiator
  - air cleaner
  - belts
  - pulleys
  - catchers
  - guards
  - tire pressure

Always refer to your operator's manual for step-by-step start-up procedures and daily machine inspections.

- e) **Adjust the cutting height of your deck.** Never adjust the mower height when the engine is running. All adjustments should be made while the engine is turned off.
- f) **Check your collection/discharge system.** Most commercial mowers will have some form of material collection system (MCS), side discharge or mulching system. Always check to make sure that your MCS, discharge chute and mulching attachments are properly secured and in good working order. Never start the mower if attachments are not securely fastened.
- g) **Check the fuel level.** Start your day with a full tank of fuel. If you refuel during the day move your mower to a flat, concrete surface, turn the engine off and allow the engine to cool. Carefully fill the fuel tank and avoid spilling.
- h) **Clear your work area.** Before you begin your job, walk the mowing area and clear all hidden hazards such as rocks, stumps, broken glass, bottles and miscellaneous materials. Injuries can occur from debris that is projected into the air by mower impact. Projected debris can cause injuries to operators, pedestrians and property.
- i) Inspect your work area for nature's hazards. While inspecting your work area for debris be on the lookout for bees, fire ants, poison ivy and poison oak. Avoid improper working conditions such as saturated grounds, which among other hazards can cause slippery conditions.

## 2) **While mowing:**

- a) Make a perimeter pass. Make a perimeter pass with the discharge chute or grass catcher to the inside away from the sidewalk, pavement, curb or

whatever structure borders the turf. This will keep the mower from hitting curbs, trees, bushes and any other obstacles.

- b) Start mowing. Always mow in straight lines, alternating directions and changing the pattern with every cut. Make sure your blade(s) are sharp and mow with the engine running at maximum speed. Never position the side-discharge chute toward people or property.
- c) Know your surroundings. To avoid injury to yourself or others pay attention to people around you. If a person or animal approaches you while working, stop your mower and turn off the engine. You may resume mowing once the work area is clear of all people and animals.
- d) Avoid rubbing objects. When mowing, keep a safe distance from trees and other landscape features. Avoid hitting or rubbing the mower or its tires on any buildings, cars, signs, trees and other property features.
- e) Pick up any missed debris. If you see any debris that you missed in your initial inspection, stop the machine, turn off the engine and pick up the debris. Do not attempt to clear debris while the machine is still running.
- f) Unclog the deflection chute. To unclog the deflection chute turn off the engine and make sure the blade(s) are stopped. To ensure safety disconnect the spark plug wire and use a tool or stick to clear the chute. Never clear the deck or chute with your hands and never place your hands or feet near the cutting blade(s).
- g) Be extra careful on slopes. Always mow up and down slopes, never across. Decrease your speed when mowing down slopes or around sharp corners to help prevent tipping. Maintain minimal ground speed and make wide, gradual turns, avoid sudden starts, stops and turns.


### 3) **After mowing:**

- a) **Shut down before performing maintenance.** Always shut down your machine from the operator's seat. Never dismount from a running mower. Make sure that the mower is completely stopped and the engine is off before you begin your clean-up and maintenance procedures.
- b) **Clean your mower.** The mower should be cleaned after each job by removing clippings and other landscape debris from the mower, mower deck, and deflection chute. Accumulation of grass, leaves or excessive grease can be a fire hazard.
- c) **Perform routine maintenance.** After each mowing job you should check:
  - tire pressure
  - fluid levels
  - belts
  - guards
  - blade(s)

- d) **Tend to repairs immediately.** If repairs are overlooked and the mower is reused, damage to additional mower parts or operator injury may result.
- e) **Maintain recommended maintenance schedule.** Refer to your operator's manual for routine daily, monthly, quarterly and yearly maintenance procedures. Keeping your machine in top condition will decrease any risk of injuries

#### **REFERENCES:**

University of Manitoba  
John Deere Corp.  
Simon Fraser University

 <b>BRANDON</b> <b>UNIVERSITY</b> <small>Founded 1899</small>	<b>Procedure:</b>  <b>Hearing Conservation and Noise Control</b>		<b>Approved By:</b>  <hr/> <b>Workplace Health &amp; Safety Committee</b>
<b>Procedure Manual</b>	<b>Reviewed:</b> June 2004	<b>Updated:</b> July 2005	

## INTRODUCTION:

Manitoba Regulation 227/94, the Hearing Conservation and Noise Control Regulation, has been developed to address the problem of occupational hearing loss. The regulation covers implementation of education, surveillance and noise control programs, and provides details on all of the requirements of this program. The purpose of these procedures is to explain the requirements of the legislation.

The regulation covers all workplaces in Manitoba where the Workplace Safety and Health Act applies and where any worker's exposure to sound exceeds or is likely to exceed an equivalent sound exposure level of 80 dBA. An equivalent sound exposure level is calculated by considering the energy level from all of a worker's daily sound exposure.

## DEFINITIONS:

**Audiometer:** An electro-acoustical device which provides pure tones of selected frequencies at calibrated outputs and is used to measure pure-tone air conduction hearing threshold levels.

**DBA:** The sound level in decibels as measured on a sound level meter using the "A" –weighting network and slow meter response.

**Decibel:** A unit of measurement of sound pressure levels. Three decibels is the smallest change in sound the human ear can perceive. If the sound level increases by 5 decibels the amount of time you can spend on the job is cut in half.

**Equivalent Sound Exposure Level (LEX):**

The steady sound level in dBA which, if present in a workplace for eight hours in one day would contain the same total acoustic energy as that generated by the actual and varying sound levels to which a worker is taken to be exposed in the work day.

**Hertz:** A unit of frequency and is equivalent to cycles per second

**Noise (sound):** A series of vibrations or pressure fluctuations that travels through the air and is detected by the ear.

## PROCEDURES:

## 1. Sound exposure levels:

A normal conversation is measured at approximately 65 dBA. The critical range where hearing can be damaged painlessly is between 85 and 125 dBAs. A 10 dBA increase in sound level doubles the apparent loudness. For example a 90 dBA reading sounds twice as loud as one with an 80 dBA.

### a) Exposure is less than 80 dBA:

- no specific action is required
- the situation should be reviewed periodically to ensure that exposures have not increased due to increased sound levels, changes in work-practices or longer exposure durations as result of changes within the workplace.

### b) Exposure over 80 but not over 85 dBA:

- a hearing conservation program must be implemented
- an education program must be established to ensure that all workers and supervisory personnel are informed of the hazards associated with excessive exposure to noise and advised of exposure controls and precautions to be taken
- a hearing surveillance program with appropriately qualified personnel must be established.

### c) Exposure over 85 but not over 90 dBA:

- the same requirements as (b) above
- the employer is required to provide personal hearing protection (and appropriate training in its use) to any worker exposed in excess of 85 dBA upon request by that worker.

### d) Exposure over 90 dBA:

- the same requirements as (b) above.
- The employer is required to implement mandatory exposure controls to reduce the workers exposures to 90 dBA or lower.

## 2. Hearing Surveillance:

### a) Periodic hearing tests must be provided to all workers who are regularly exposed in excess of 80 dBA in order to identify any worker whose hearing may have been adversely affected:

- by exposures between 80 dBA and 90 dBA where exposure controls may not otherwise be required, or;
- because of possible failure of exposure controls (particularly personal hearing protectors).

### b) Where a hearing surveillance program indicates that a worker's hearing has been adversely affected as a result of conditions within the workplace, the worker's exposure must be reassessed and additional exposure control measures must be implemented.

### c) Signs of hearing loss are:



- failing to catch words or phrases
  - ringing in the ears, known as tinnitus.
  - shouting or raising your voice without realizing it.
  - having trouble understanding high frequency sounds in speech
- d) A hearing surveillance program must be conducted under the general supervision of a physician.
- e) Copies each worker's test results and an explanation of their significance must be provided to the worker.
- f) An employer shall provide and post warning signs at conspicuous locations at the entrances to any work area where sound levels exceed or may exceed 90 dBA.
- g) Workplace law requires that every worker regularly exposed to noise level greater than 80 dBA have an annual audiometric test.
- h) Personal hearing protection is permitted only for interim protection until more effective controls can be implemented, or where the employer can demonstrate that changing engineering or work practices are not reasonably practicable. When personal hearing protectors are used, they must be selected and maintained to effectively reduce worker exposure (under the protector) to less than 90 dBA. Because of demonstrated deficiencies associated with these devices, they must be selected with great care.

#### **EXPOSURE DURATION:**

<b>Sound Level (dBA)</b>	<b>LEX = 90 Mandatory Exposure Control Time per day</b>
90	8 hours
91	6 hours 21 minutes
92	5 hours 3 minutes
93	4 hours
94	3hours 11 minutes
95	2 hours 31 minutes
96	2 hours
97	1 hour 36 minutes
98	1 hour 16 minutes
99	1 hour
100	48 minutes
101	38 minutes 24 seconds
102	30 minutes
103	24 minutes
104	19 minutes 12 seconds
105	15 minutes
106	12 minutes

<b>Sound Level (dBA)</b>	<b>LEX = 90 Mandatory Exposure Control Time per day</b>
107	9 minutes 36 seconds
108	7 minutes 30 seconds
109	6 minutes
110	4 minutes 48 seconds
111	3 minutes 48 seconds
112	3 minutes
113	2 minutes 24 seconds
114	1 minute 54 seconds
115	1 minute 30 seconds
116	1 minute 12 seconds
117	57 seconds
118	45 seconds
119	36 seconds
120	28 seconds
121	21 seconds
122	18 seconds
123	14 seconds
124	10 seconds
125	9 seconds


## **PERSONAL PROTECTION EQUIPMENT:**

There are two types of hearing protection:

- 1) **Earplugs:** Earplugs must fit tightly in the ear canal so that no air can get through. Earplugs must be checked and adjusted as the ear canal and outer ear expands throughout the day.
- 2) **Earmuffs:** Earmuffs must form a proper seal around the ear ensuring a proper fit. Hair and earrings should be pushed aside or removed so as to ensure a proper seal. Glasses can break the seal of earmuffs so caution must be used.

## **REFERENCES:**

Hearing Conservation and Noise Control Regulations  
Workplace Safety and Health Act.  
Manitoba Department of Labour  
Workers Compensation Board of Manitoba

 <b>BRANDON</b> <b>UNIVERSITY</b> <small>Founded 1899</small>	<b>Procedure:</b>  <b>Hot Work</b>		<b>Approved By:</b>   <b>Workplace Health &amp; Safety Committee</b>
	<b>Procedure Manual</b>	<b>Reviewed:</b> May 2004	<b>Updated:</b> July 2005

## INTRODUCTION:

Cutting and welding operations (commonly referred to as hot work) are associated with machine shops, maintenance, and construction activities, as well as certain laboratory-related activities. Potential health, safety and property hazards result from the fumes, gases, sparks, hot metal and radiant energy produced during hot work. Hot work equipment, which may produce high voltages or utilize compressed gases also requires special awareness and training on the part of the worker to be used safely. The hazards associated with hot work can be reduced through the implementation of effective control procedures.

## SCOPE:

The Workplace Safety and Health Act prohibits cutting and welding operations unless appropriate steps are taken to minimize fire hazards such as removal or guarding of combustible materials and when possible restricting hot work to specially designated areas. Departments where hot work is performed are responsible for ensuring that adequate controls and procedures are in place before work begins.

## DEFINITIONS:

**Hot Work:** Any work to be performed that requires heat. These tasks include welding, cutting of various metals, brazing, soldering, etc.

**Fire Watch:** A person assigned to constantly monitor the person doing the hot work. The “fire watch” will constantly monitor the area for the outbreak of fires. This person will also have the proper type of fire extinguisher available at all times.

## GENERAL PROCEDURES:

- 1) Whenever practicable, all hot work should be carried out in a workshop designated for that purpose.
- 2) Cutting and welding operations shall be restricted to authorized, properly trained personnel.
- 3) Proper eye and face protection and protective clothing will be used for welding, cutting, brazing and soldering.

- 4) It is the responsibility of the individual doing the work to protect himself and other individuals from “welding flash” and hot metal slag, by utilizing proper face shields, welding curtains, etc.
- 5) Areas where hot work is done shall be properly designated and prepared.
- 6) An appropriate fire extinguisher must be readily available in shop areas where hot work is performed.
- 7) A person other than the operator shall perform fire watch duties and remain at the work site for at least 60 minutes after hot work operations have ended.
- 8) Welders will not weld on galvanized metal unless the work is done safely outdoors, is well ventilated and has been approved by the Physical Supervisor or his designate.
- 9) Combustible and flammable materials within the work area shall be protected against fire hazards and the operation should not pose a hazard to others in nearby areas.
- 10) Ventilation of the work site, either through local or general exhaust ventilation shall be adequate for the work performed.
- 11) Combustible materials must be at least 10 m from the work site. If this is not possible, protect combustible materials with metal guards or flameproof covers.
- 12) The person doing the hot work must:
  - a) ensure that the area is adequately ventilated,
  - b) ensure the use of welding curtains to protect other persons in the area.
- 13) Floor and wall openings within 15 m of the work site shall be covered to prevent hot sparks from entering walls or falling beneath floors or to a lower level.
- 14) Hot work shall not be conducted in the presence of explosive mixtures of flammable gases, vapors, liquids dusts or where explosive mixtures could develop inside improperly prepared tanks or equipment.
- 15) The Physical Plant Supervisor or his designate shall approve any “hot Work” that is to be performed outside of the maintenance shop area, prior to commencement of the work.
- 16) Prior to performing the hot work outside of the maintenance shop area, the person doing the work will arrange for the appropriate shut down to the minimum amount of the fire protection system to enable the person to perform his work without setting off “false alarms.

#### **COMPRESSED GAS CYLINDER STORAGE and HANDLING:**

Storage and handling of compressed gas cylinders play an important part in cutting and welding operations. The following procedures shall be observed:


- 1) Oxygen and fuel gas cylinders should be stored separately with the protective valve caps in place.
- 2) Except when in use, oxygen and fuel gas cylinders shall be stored at least 20 feet apart or separated by a non-combustible wall at least 5 feet high.
- 3) Cylinder carts shall be equipped with a cylinder restraint such as a chain or strap, which shall be used for all transporting of compressed gas cylinders.
- 4) Cylinders should be secured from tipping, and in an upright position.
- 5) Regulators must be compatible with the cylinder and its contents.

#### **HOT WORK PERFORMED BY AN OUTSIDE CONTRACTOR:**

- 1) The Contractor will ensure that the Physical Plant Supervisor or his designate is aware of the work to be done,
- 2) The Physical Plant Supervisor or his designate will then ensure that the Contractor has all safety measures in place, a proper fire watch has been designated, and proper welding protection is being used.
- 3) The Physical Plant Supervisor will notify the appropriate department heads that welding/cutting, brazing or soldering is required in their areas.
- 4) When the work has been completed, the Physical Plant Supervisor or his designate will ensure all notifications to the appropriate departments are completed and the proper fire watch schedule is in place.

#### **HOT WORK PERMITS:**

- 1) When hot work is to be carried out at locations other than designated workshops or areas, Hot Work Permit procedures must be followed.
- 2) The person responsible for issuing permits should be qualified to examine the work site and ensure that appropriate protective steps have been taken.
- 3) When it is necessary for any hot work such as welding, soldering, cutting, brazing, heating metal, etc., a "Hot Work Permit" must first be generated. The permit will only be valid until completion of the work. Each new job will require a permit.
- 4) The Physical Plant Supervisor or his designate shall issue Hot Work Permits. After the permit precautions have been initiated and completed, the permit will be posted in the work area. At the completion of the work the permit will be attached to the work order and become a part of the permanent record.

 <b>BRANDON</b> <b>UNIVERSITY</b> <small>Founded 1899</small>	<b><i>Procedure:</i></b>  <b>Ladder Safety</b>		<b><i>Approved By:</i></b>  <hr/> <b><i>Workplace Health &amp; Safety Committee</i></b>
<b><i>Procedure Manual</i></b>	<b><i>Reviewed:</i></b> April 2004	<b><i>Updated:</i></b> July 2005	

## INTRODUCTION:

Ladders are one of the handiest, simplest tools in use on the Brandon University Campus. Because of their effectiveness, many different people to perform many different tasks use ladders. Although ladders are very uncomplicated accidents involving ladders are common in the workplace because this tool is often abused and/or used improperly. Some of the more common hazards involving ladders, such as instability, electrical shock and falls can be predicted and prevented. Prevention requires proper planning, correct ladder selection, good work procedures and adequate ladder maintenance.

## SCOPE:

For the purposes of these procedures "portable ladder" means any ladder that is not fixed in place and includes a stepladder. Portable ladders found on the Brandon University Campus are:

- Stepladders
- Extension ladders
- Platform ladders

Every worker who handles or uses a portable ladder shall receive appropriate instruction in the requirements of portable ladder use.

## MOST COMMON CAUSES OF LADDER ACCIDENTS:

The main hazard associated with the use of ladders is falls. Falls occur for a number of reasons, including the following:

- The ladder is in poor condition.
- The ladder is poorly located and incorrectly positioned.
- The surface on which the ladder is located is dirty, greasy, or uneven.
- The worker has not received appropriate instruction ladder use.
- The employee does not use proper techniques for working on the ladder.

## **PROCEDURES:**

### **Ladder Inspection:**

- 1) Always check a ladder before using it. Inspect wood ladders for cracks and splits in the wood.
- 2) Check to see that steps or rungs are tight and secure.
- 3) Be sure that all hardware and fittings are properly and securely attached.
- 4) Test movable parts to see that they operate without binding or without too much free play.
- 5) Inspect metal and fiberglass ladders for bends and breaks.
- 6) Never use a damaged ladder. Tag it “Defective” and report it to your supervisor so that it may be removed.
- 7) Be sure that metal steps and rungs are grooved or roughened to prevent slipping.

### **Stepladder Setup:**

- 1) A stepladder shall not be more than SIX METERS high when set up for use.
- 2) Stepladders shall be placed on a firm and level base.
- 3) Stepladders shall be equipped with a non-slip type base.
- 4) Always open a stepladder completely and make sure the spreader is locked open.
- 5) Never substitute makeshift devices of wire or rope for stepladder spreaders.
- 6) Keep all four feet of the ladder on a firm level surface.

### **Extension Ladder Setup:**

- 1) Place ladder feet firmly and evenly on the ground or floor. Make sure the ladder is sitting straight and secure before climbing it.
- 2) Do not try to make a ladder reach farther by setting it on boxes, barrels, bricks, blocks or other unstable bases.
- 3) Do not allow ladders to lean sideways. Level them before using.
- 4) Never set up or use a ladder in a high wind, especially a lightweight metal or fiberglass type. Wait until the air is calm enough to insure safety.
- 5) Never set up a ladder in front of a door unless the door is locked or a guard is posted.

- 6) Do not use ladders on ice or snow unless absolutely necessary. If they must be used on ice or snow use spike or spur-type safety shoes on the ladder feet and be sure they are gripping properly before climbing.
- 7) Lay the ladder on the ground with the base resting against the bottom of the wall and the top pointing away from the wall. Starting at the top of the ladder, lift the end over your head and walk under the ladder to the wall, moving your hands from rung to rung as you go. When the ladder is vertical and the top touches the wall pull out the base so that the distance away from the wall is about **one-fourth** of the height to the point of support. Reverse the process to take down the ladder. Remember that you will be walking backwards so check for obstacles in your path before starting. Also be careful to lower the ladder slowly so that you can keep it under control and prevent its falling on you.

**NOTE:** It is very important to learn the proper methods for setting up ladders. Unless setting up is done correctly, it can cause damage to the ladder and excessive physical strain on the user.

### **LADDER CLIMBING and STANDING:**

- 1) Keep the steps and rungs of ladders free of grease, oil, wet paint, mud, snow, ice, paper and other slippery materials. Always face a ladder when climbing up or down. Use both hands and maintain a secure grip on the rails or rungs.
- 2) Never carry heavy or bulky loads up a ladder. Climb up yourself first and then pull up the material with a rope.
- 3) Climb and stand on a ladder with your feet in the center of the steps or rungs.
- 4) Do not overreach from a ladder or lean too far to one side. Keep your body centered and do not reach in excessive of an arm's length.
- 5) Never climb onto a ladder from the side, from above the top or from one ladder to another.
- 6) Never slide down a ladder.

### **PROPER USE OF A LADDER:**

- 1) Use the proper size ladder for the task at hand.
- 2) Non-conductive fiberglass or wood ladders should be used instead of metal ladders while performing electrical work. **NOTE:** If a ladder is being used around overhead power lines of 50 kV or less, then stay at least 10 feet away. For everything else, keep at least 35 feet away.
- 3) When using a ladder where there is traffic, erect warning signs or barricades to guide traffic away from the foot of the ladder. If this is not possible, have someone hold and guard the bottom of the ladder.



- 4) Do not try to move a ladder while you are on it by rocking, jogging or pushing it away from a supporting wall.
- 5) Do not leave tools or materials on top of ladders.
- 6) Never push or pull anything sideways while on a ladder.
- 7) Allow only one person at a time on a ladder unless the ladder is specifically designed for two people.
- 8) Never use a ladder as a horizontal platform, plank, scaffold or material hoist.
- 9) Never use a ladder on a scaffold platform. If you need to reach higher, the scaffold should be higher.
- 10) A worker shall maintain a 3-point stance on a ladder at all times.
- 11) Do not stand higher than the **SECOND STEP FROM THE TOP OF A STEPLADDER**, unless the ladder is a stepladder with a platform equipped with suitable handrails.
- 12) Do not stand or sit on the top of a stepladder cap or stand on the pail shelf or on the back of a stepladder.
- 13) Do not straddle the front and back of a stepladder.
- 14) The sections of an extension ladder should overlap enough to retain the strength of the ladder. The following table is recommended:

Length of Ladder	Required Overlap
Up to 11 meters	1 meter
Over 11 meters to 15 meters	1.25 meters
Over 15 meters	1.50 meters


- 15) Never splice or tie two short ladders together to make a long section.
- 16) Top support for a ladder is as important as good footing. The top should rest evenly against a flat, firm surface. If a ladder is to be leaned against roof gutters, the strength and stability of the gutters should be first tested.
- 17) When a ladder is used for access to an upper landing surface, it must extend **THREE** rungs or at least three feet above the landing surface.
- 18) A ladder used for access to an upper landing surface should be secured against sideways movement at the top or held by another worker whenever it is being used.
- 19) Use Safety shoes on ladder feet whenever there is any possibility of slipping.

- 20) Extend an extension ladder only from the ground. Determine the needed height, extend and lock the fly section securely in place then set it up against the wall. Check for stability and support before climbing.
- 21) If possible the base of a long ladder should be secured to the ground and the top should be tied to the upper landing surface.
- 22) The technically proper angle for a non-self-supporting ladder is approximately 75 degrees above horizontal. This means that the base should be set out one-fourth of the ladder's height to its top support point, e.g. if a ladder is to be supported at a point 20 feet off the ground, its base should be set 5 feet out from the wall.
- 23) Ladders set up at a steeper angle than 75 degrees above horizontal are more likely to tip backward in use subsequently must be tied off at the top.
- 24) Ladders set up at an angle less than 75 degrees above horizontal are more likely to slide out from the bottom. Safety ladder shoes or base tying is a must in this case.
- 25) A ladder that is not secured at the top and exceeding six meters in length or under circumstances where the ladder could move shall be held in place by another worker while the ladder is being used.
- 26) Do not stand on the paint shelf of a stepladder. The paint shelf on the strongest stepladder is designed to carry only fifty pounds.
- 27) Ladders shall not be used in an elevator or hoist way when the elevator or hoisting is under way.

#### **PROPER LADDER CARE and STORAGE:**

- 1) Maintain ladders in good condition.
- 2) Keep all ladder accessories, especially safety shoes, in good condition.
- 3) Wood ladders, which are to be used outside, should be treated to prevent weather damage. A clear finish or transparent penetrating preservative should be used. Linseed oil is a good treatment for a wood ladder, although it does add some weight to the ladder. An oil treatment also helps to rustproof the metal parts of a wood ladder.
- 4) Never paint a wood ladder. This will cover dangerous cracks or fill and hide them.
- 5) Never sit on ladder side rails.
- 6) Never use a metal or fiberglass ladder that has been exposed to fire or strong chemicals - it should be discarded.
- 7) Never store materials on a ladder.

- 8) Store wooden ladders where they will not be exposed to excessive heat or dampness.  
Store fiberglass ladders where they will not be exposed to sunlight or other ultraviolet light sources.
- 9) Be sure that ladders are properly supported and secured when in transit.
- 10) Vibration and bumping against other objects can damage them.
- 11) Store ladders on racks, which give them proper support when not in use.
- 12) Metal bearings of extension ladder rung locks and pulleys should be lubricated periodically and between regular maintenance periods whenever necessary.
- 13) Ropes on extension ladders should always be maintained in good condition. If they become frayed or badly worn, replace them.

 <b>BRANDON</b> <b>UNIVERSITY</b> <small>Founded 1899</small>	<b>Procedure:</b>  <b>Personal Protection Equipment</b>		<b>Approved By:</b>  <hr/> <b>Workplace Health &amp; Safety Committee</b>
<b>Procedure Manual</b>	<b>Reviewed:</b> May 2004	<b>Updated:</b> July 2005	

## INTRODUCTION:

Brandon University is committed to ensuring that employees are not placed at risk of injury or harm to health while undertaking work tasks for the University. To assist in achieving this aim, where there is a risk of injury or harm to health, the University will provide employees with the necessary protective equipment as identified by department safety plans, job hazard analyses, posted signs, written procedures, or regulatory requirements.

## DEFINITIONS:

**PPE:** Personal Protection Equipment

## RESPONSIBILITIES:

### 1) Managers and Supervisors:

Employees who have been delegated responsibility over the actions of other University employees are required to:

- a) Ensure that all employees where necessary are provided with, use and wear protective clothing and equipment, whether standard issue or specialized.
- b) Ensure that all new or transferred employees are made aware of Brandon University's commitment to safety and that they are provided with standard protective clothing and equipment prior to commencing work.
- c) Ensure that all employees provided with protective clothing and equipment are adequately trained and instructed in its fitting, use, limitations and maintenance.
- d) Investigate alternative work practices/procedures to eliminate the use of personal protection equipment.

### 2) Employees:

All University employees must recognize their personal responsibility for their own safety by:

- a) Wearing protection equipment as supplied

- b) Taking proper care and maintenance of the equipment provided for their use.
- c) Advising their supervisor promptly of any concerns they have regarding the use and wearing of protective clothing and equipment.
- d) Immediately report any damage or failure of protection equipment to their supervisor and request repair or replacement.

## **PERSONAL PROTECTION EQUIPMENT:**

Personal Protection Equipment includes but is not limited to:

### **1) Head Protection:**

- a) Each affected person shall be provided with, and shall wear, head protection equipment and accessories in areas where a hazard exists from falling or flying objects, other harmful contacts or exposures, or where there is a risk of injury from electrical shock, hair entanglement, chemicals or temperature extremes.
- b) The selection, care and use of safety helmets must be in accordance with government regulations and standards.
- c) A person shall use a net where there is a danger of hair entanglement in moving machinery or equipment or where there is exposure to means of ignition. It shall be designed to be reasonably comfortable to the wearer, completely enclose all loose hair. Material used for hair enclosure shall be fast dyed, nonirritating to the skin when subjected to perspiration and capable of withstanding frequent cleaning. It shall not be reissued from one person to another unless it has been thoroughly sanitized.

### **2) Foot Protection:**

- a) Each affected person shall wear protective footwear when working in areas where their feet are exposed to electrical hazards or where there is a danger of foot injuries due to falling or rolling objects or a danger of objects piercing the sole of the shoe.
- b) Safety shoes and boots which are not worn over shoes and which are worn by more than one person shall be maintained, cleaned and sanitized inside and out before being reissued.
- c) Where a hazard is created from a process, environment, chemical, or mechanical irritant which would cause an injury or impairment to the feet by absorption or physical contact, other than from impact, footwear such as boots, overshoes, rubber boots, or their equivalent shall be used.

### **3) Hand Protection:**

- a) Each affected person shall use appropriate hand protection when their hands are exposed to hazards that may cause any of the following:
  - Skin absorption of harmful substances
  - Cuts or lacerations
  - Abrasions
  - Punctures
  - Chemical burns
  - Thermal burns
  - Harmful temperature extremes
- b) Selection of the appropriate hand protection shall be based on an evaluation of the performance characteristics of the hand protection relative to all of the following:
  - The task to be performed
  - Conditions present
  - Duration of use
  - The hazards and potential hazards identified
- c) Selection of chemical resistant gloves should be based on manufacturer-specific permeation and degradation data when prolonged contact is expected.

#### **4) Hearing Protection:**

When noise exposure reaches a level where normal speech levels cannot be understood is exceeded for any 8 hour time period, a hearing conservation program shall be established where the employee(s) subjected to a base line audio metric test on a regular basis.

All reasonable measures shall be taken to reduce noise levels or the duration of exposure. Where this is not feasible, hearing protection devices shall be provided by the University and worn by the employee.

It is recommended that hearing protection be worn when exposed to prolonged noise from carpentry equipment, emergency generators and other noise generating equipment. Earplugs, muffs and/or both are acceptable.

#### **5) Eye Protection:**

- a) Each affected person shall use appropriate eye or face protection if a hazard exists due to any of the following:
  - Flying objects or particles
  - Moving or dangling objects like slings and chains
  - Dusts and mists
  - Molten metal
  - Liquid chemicals
  - Acids or caustic liquids
  - Chemical gases or vapors
  - Glare

- Injurious radiation
  - Electrical flash
  - Any combination of the above hazards
- b) A face or eye protector shall be in compliance with all the following minimum requirements:
- It shall protect against the particular hazards for which it is designed.
  - It shall fit snugly and shall not unduly interfere with movements of the wearer
  - It shall be capable of withstanding sanitizing.
- c) Safety glasses or goggles must be worn under face-shields.
- d) Persons whose vision requires the use of prescription lenses shall wear either protective devices fitted with prescription lenses or protective devices designed to be worn over regular prescription eyewear.
- e) Wearers of contact lenses shall also be required to wear appropriate eye and face protection devices in a hazardous environment
- f) Caution should be exercised in the use of metal frame protection devices in electrical hazard areas.

**6) Safe Breathing Apparatus (Respirator):**

- 1) Manufacturer's instructions for use, maintenance, cleaning/care and warnings regarding the assigned respirator's limitations must be read and observed at all times.
- 2) Respirators must be used in accordance with their certification. A label or statement of certification will appear on the respirator or respirator packaging. The label will state what contaminants the respirator is designed for and the level of protection that it will provide. Workers must not wear respirators into atmospheres containing contaminants or levels that it is not designed to protect against, e.g. a respirator designed to filter dust particles will not protect against gases, vapors, very small solid particles of fumes or smoke.
- 3) Use only cartridges and/or filters that are specified by the manufacturer of the respirator. Effectiveness of a respirator depends on use of the correct type and combination of cartridges and filters.
- 4) Cartridges and filters must be specifically designed for use with the brand of mask being worn.
- 5) Efficacy of the respirator is dependent on proper fit and face-to-face piece seal. Facial hair, scars and weight gain/loss are some factors that will affect the proper fit of a respirator.

- 6) Standard eyeglasses will interfere with the mask-to-face seal therefore the wearer should obtain an additional pair of prescription lenses attached to a spectacle mount kit for installation into the mask.
- 7) Respirators must be inspected prior to each use to ensure that:
  - a) The respirator is clean and ready for use.
  - b) The proper cartridges are in place, securely mounted and are not at the end of their service life.
  - c) There are no holes, punctures or tears in the equipment and that the mask remains flexible.
  - d) The valves are in place and properly seated.
  - e) The straps are in good condition and elasticity has not been lost.

### **TRAINING:**


An employee must be trained in the use of PPE for routine tasks before its use. Training should include:

- 1) When PPE is necessary
- 2) What PPE is necessary
- 3) How to properly don, doff, adjust and wear PPE

### **REFERENCES:**

Workplace Safety and Health Act  
Occupational Safety and Health Services  
Workers Compensation Board of Manitoba



 <b>BRANDON</b> <b>UNIVERSITY</b> <i>Founded 1899</i>	<b><i>Procedure:</i></b>  <b>Training Plan</b>	<b><i>Approved By:</i></b>  <hr/> <b><i>Workplace Health &amp; Safety Committee</i></b>
<b><i>Procedure Manual</i></b>	<b><i>Reviewed:</i></b> November 2003	<b><i>Updated:</i></b> November 2003; July 2005

## **PURPOSE:**

To create a training and educational program that will:

- 1) Provide employees with relevant knowledge and skills to enable them to perform their assigned tasks in a safe and healthy manner, and
- 2) Match training needs that could be applied to small specific groups or across a wide range of employees.

## **OBJECTIVES:**

The training plan will be:

- 1) Developed and implemented in a systematic, yet flexible manner. The structure and content will be tailored to meet specific needs and the learning requirements of a targeted group.
- 2) Designed to include both instruction and “hands on” exposure, formulated in such a fashion as to be consistent with employee needs and one in which the employee can relate.
- 3) Training will ensure that the employee receives appropriate instruction in the proper and safe handling of all equipment and product that the employee may come into contact with during the course of his or her duties.
- 4) Emphasis would be placed on the employee being fully cognizant of personal limitations and the perils of over extending these perimeters.

## **PROCEDURES:**


- 1) Identify a specific need for training/instruction.
- 2) Formulate an agenda to address either existent or anticipated training needs.
- 3) Obtain the support and input of both management and the applicable union representation in the creation of the plan. It is vital that both management and

union support and input be incorporated into the overall mechanism of the program.

- 4) Promote employee acceptance and input into plan by involving employees in the design of the training program and using employees as instructors to assist in illustrating the principles to be learned.
- 5) Design the program to be on going and addressing specific needs within acceptable time frames.
- 6) Use on-the-job-training as opposed to a classroom setting where prudent, although both can be effective in combination.
- 7) Utilize external-training resources where appropriate and possible. The knowledge and expertise of specific suppliers with respect to the handling of equipment and/or product purchased from them would be the best available and would lend creditability to the exercise.
- 8) Present all training in such a fashion that the employee does not conclude that he or she has been singled out due to some identified deficiency.
- 9) Supplement all training by appropriate supervision and monitoring.

#### **GUIDING PRINCIPLES:**

- 1) It is vital that both management and union support and input be incorporated into the overall mechanism of the program.
- 2) Training must be accepted as having merit and value by all levels of the organization.
- 3) On going training on going training, be it new or refresher in nature should be comprehensive but within a time frame that will not over extend the employees absorption level or attention span.
- 4) The plan could have, as an optional feature, provisions for special employee recognition.

 <b>BRANDON</b> <b>UNIVERSITY</b> <small>Founded 1899</small>	<b>Procedure:</b>  <b>Work Refusal</b>		<b>Approved By:</b>  <hr/> <b>Workplace Health &amp; Safety Committee</b>
	<b>Procedure Manual</b>	<b>Reviewed:</b> March 2004	<b>Updated:</b> July 2005

## SUMMARY:

Brandon University supports an employee's right to work in a safe environment and will take every precaution to minimize and eliminate hazards from the workplace.

The purpose of this procedure is to ensure the prompt, effective, and correct handling of "work refusal" situations as covered under Section 43 of the Workplace Safety and Health Act, which stipulates in part that all employees have the right to refuse to work if the work in their opinion poses an "imminent danger" and to encourage the quick resolution of these situations. Imminent danger is any danger that is not normal for that occupation, or a danger that a person engaged in that occupation would not normally be exposed to.

## RIGHT TO REFUSE PROCEDURES:

When an employee refuses a work assignment, the following steps must be taken:

- 1) The employee will notify the appropriate supervisor immediately and clearly state that the reason is **safety**.
- 2) The supervisor will notify the University Safety and Health Office immediately. In the absence of the University Safety Officer, the Director, Physical Plant will be appropriately notified.
- 3) The appropriate supervisor, and the employee refusing the assignment shall make an immediate inspection of the worksite and take or cause to be taken such action as is necessary to remedy the imminent danger.
- 4) No employee will be assigned to use or operate a tool or tools, appliance, or equipment, or to perform the work for which an employee has made a notification of refusal unless the employee to be assigned is not exposed to imminent danger, or the imminent danger has been eliminated.
- 5) The appropriate supervisor may invite a representative of the Workplace Safety and Health Committee and the University Safety and Health Office to assist in the investigation of the safety concern.
- 6) The supervisor shall not assign or require any other employee to perform the particular assignment unless that employee has been informed that another employee and the reason(s) had previously refused the assignment.

- 7) Until the dangerous condition reported by the employee is remedied the employee may continue to refuse to perform the particular assignment that the employee believed to be dangerous.
- 8) An employee who has refused an assignment may be asked to remain at the worksite and may be temporarily assigned to other work that he is capable of performing. A temporary assignment shall not be considered a disciplinary action: there will be no loss in pay.
- 9) The Right to Refuse process will not become part of the employee's work record.
- 10) Where an employee continues to refuse to work despite a decision by the supervisor that there is no ground for refusal, the University Safety and Health Office will be notified.
- 11) The University Safety Officer and a representative from the University Safety and Health Committee will act as a resource and mediator in situations where there are no apparent grounds for refusal.
- 12) A Work Refusal Record Form will be completed by the appropriate supervisor. Copies of said report will be made available to:
  - a) the employee initiating the refusal
  - b) University Safety and Health Office
  - c) the University Safety and Health Committee
- 13) The original copy of the Work Refusal Form will be forwarded to the University Safety and Health Office for incorporation into a central file.
- 15) Actions agreed to but not yet completed as a result of the work refusal will be monitored by the University Safety and Health Office to ensure that such actions are completed.



**BRANDON UNIVERSITY**

**RECORD OF WORK REFUSAL**

**Employee's**

**Name:** \_\_\_\_\_

**Reasons for**

**Refusal:** \_\_\_\_\_

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**Investigation**

**Results** \_\_\_\_\_

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**Action**

**Taken:** \_\_\_\_\_

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**Supervisor:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**Employee:** \_\_\_\_\_ **Date:** \_\_\_\_\_

Original copy USHO - 1 copy Supervisor – 1 copy employee – 1 copy USHC

 <b>BRANDON</b> <b>UNIVERSITY</b> <small>Founded 1899</small>	<b>Procedure:</b>  <b>Working Alone</b>		<b>Approved By:</b>   <b>Workplace Health &amp; Safety Committee</b>
	<b>Procedure Manual</b>	<b>Reviewed:</b> April 2004	<b>Updated:</b> July 2005

## INTRODUCTION:

Working alone in certain circumstances, situations, or environments can be unsafe and requires special arrangements to minimize potential situations and hazards. Types of duties, which may or may not be conducted while working alone must be defined and under which conditions working alone is permitted. For example the handling of hazardous substances or performing hazardous activities should not be permitted when a worker is working alone. Special arrangements must be made especially after regular hours, because these situations pose an additional risk to life and property.

## SCOPE:

Working alone under the provisions of the Workplace Safety and Health Act applies to all workers who are performing a job function and are not in the presence of their employer, supervisor or another worker directly associated with the same employer, at the particular workplace location and during the same time period the working alone job function is being performed. Both employers and workers have the responsibility and duty to minimize the possibility of working alone hazards.

## EMPLOYER'S RESPONSIBILITIES:

- 1) Review all worksites and identify workers who are required to work alone.
- 2) Identify risks to the worker in terms of the nature of their work, isolation and conditions at the worksite.
- 3) Identify and take any necessary steps to eliminate or reduce identified risks. The steps taken must include the establishment of an effective communication system that consists of:
  - a) radio communications
  - b) a telephone or cellular phone
  - c) any other means that provides effective communication commensurate with the risk involved. If applicable would also include:
    - providing written instructions stating limitations on and/or prohibitions of specific activities while working alone
    - providing sufficient training and instruction for safe work practices and ensuring minimum standards of competence
    - providing applicable personal protective equipment
    - maintaining regular contact with the person working alone

- providing emergency and survival supplies for working under extreme conditions.

## **WORKING ALONE RISK FACTORS:**

- 1) Work that presents **high** risk hazards for workers working alone include:
  - a) entering any confined space
  - b) working with:
    - high energy materials
    - toxic gases, liquids or solids
    - cryogenic materials/processes
    - high pressure systems
    - high voltage electrical systems
    - moving equipment or machinery
  - c) working in:
    - extreme cold weather conditions
    - laboratory functions
    - services involving the handling of cash and goods which could cause the attraction of criminal victimization
  - d) handling or transferring flammable liquids
- 2) Work that presents **low** risk hazards for workers working alone include:
  - a) maintenance work other than on active processing equipment
  - b) security watchman's work (except in hazardous locations)
  - c) janitorial or custodial work (except in hazardous) locations)
  - d) routine job functions that are part of a long standing operating procedure and experience has shown to be safe

## **PROCEDURES TO MINIMIZE THE RISKS FOR WORKERS WORKING ALONE:**

When workers are involved in working alone situations consideration should be given to the fact that should some misfortune occur, that worker may not be able to secure assistance as readily as when working with a group of co-workers.

### **1) Second Person or "Buddy System":**

The second person's presence is required at all times. This person must be knowledgeable of the activities of the worker they are observing

### **2) Personal Check By Another Person:**

This involves the checking the workers well being by periodic visits by another worker or supervisor. Visits should be made at regulated intervals. The length of time between checks would depend on the estimated hazard of the worker's function. The person checking the worker who is working alone must be knowledgeable of the worker's activities.

**3) Periodic Telephone Contact:**

The use of a telephone for communication at regulated intervals may be adequate in low risk working alone situations as part of the agreed to plan. The intervals between these contacts would have to be determined by the estimated hazard at the workplace. Protection of persons involved in routine job functions will change when that person and job function is performed in non-routine conditions. These conditions include the absence of other workers in the workplace or when the function is being conducted during other than normal working hours for that person. Telephone numbers for routine calling and emergency situations would have to be posted prominently.

**4) Constant or Intermittent Mechanical or Electronic Surveillance:**


When considering the use of mechanical or electrical surveillance care should be taken to ensure that they monitor a particular worker who is working alone as well as the status of the workplace itself. Personal pagers, 2-way radios, emergency-sounding devices, visual-monitoring systems are most commonly utilized. The most important point to consider is that safety measures and systems are suitable to the worker's needs. For example, if an employee is deaf, visible alarms should be provided in the workplace.

**5) Central Monitoring:**

This is an arrangement whereby the activities of the worker required to work alone are monitored by a person or facility designated for that purpose. When using a central monitoring system to relay an alarm the following requirements should be addressed:

- a) the system meets all Federal, Provincial and local Municipal regulations
- b) is the system self monitoring so as to ensure that the system is in operating condition at all times
- c) has an emergency power supply that will keep the system in operating condition at all times.



 <b>BRANDON</b> <b>UNIVERSITY</b> <small>Founded 1899</small>	<b>Procedure:</b>  <b>Working in Confined Spaces</b>	<b>Approved By:</b>  <hr/> <b>Workplace Health &amp; Safety Committee</b>
<b>Procedure Manual</b>	<b>Reviewed:</b> April 2003	<b>Updated:</b> May 2004; July 2005

## INTRODUCTION:

Due to the potential hazards which confined spaces may present to some Brandon University employees, it is the University's responsibility as an employer to develop, implement and maintain a written program for confined spaces which will pertain to all confined spaces on University property. The intent of this program is to:

- 1) Ensure that the University is in compliance with confined space requirements under Manitoba Workplace Safety and Health Regulations.
- 2) To prevent unauthorized entry into confined spaces.
- 3) To protect the health and safety of those who must enter confined spaces on Brandon University property.

As it is the policy of Brandon University to provide its employees with the safest work environment possible, Brandon University requires compliance with these procedures.

## SCOPE:

These procedures cover Brandon University employees whose duties require entry and work within confined spaces at the University. This group will be composed primarily of employees of the Physical Plant. Contractors and subcontractors entering confined spaces at the University must also abide by the procedures established by this program.

Examples of confined spaces on campus are:

- sewers
- manholes
- trenches
- sump pits/ditches
- shafts, ducts, or similar structures
- crawl spaces and attics
- storage tanks

## DEFINITIONS:

**Confined Space:** An enclosed or partially enclosed space that is not primarily designed or intended for occupancy, except for the purpose of performing work and has restricted means of entrance and exit.

**Hazardous****Confined Space:**

A confined space that is or may become hazardous due to:

- design, construction or atmosphere of the confined space
- the materials or substances in the confined space
- the work activities or processes used in the confined space
- moving parts or materials in the confined space.

**PROCEDURES:****Supervisory Responsibilities:**

- 1) A supervisor shall not allow a worker to enter a confined space unless prior to the worker entering therein, the supervisor has undertaken a risk assessment to determine and identify all hazards which exist, or could reasonable be expected to exist within a confined space and potential methods to control risks
- 2) A supervisor shall further ensure that any employee likely to enter a confined space has received instruction and training on the procedures and equipment to be used during the confined space entry or emergency.
- 3) The supervisor shall document the instruction and training provided.
- 4) The supervisor shall identify:
  - a) types of confined spaces at the place of employment that a worker may be required or permitted to enter
  - b) types of hazards that are or may be present in each confined space
  - c) alternative means to perform the work to be performed in a confined space that will not require the worker to enter the confined space
  - d) alterations to the physical characteristics of the confined spaces that may be necessary to ensure safe entrance to and exit from all accessible parts of each confined space.
- 5) The supervisor shall take all reasonably practicable steps to prevent any unauthorized entry into a confined space.
- 6) Before requiring or permitting a worker to enter a confined space, a supervisor shall:
  - a) have the air in the confined space tested by a competent person trained in the use of an oxygen and gas tester. If there is any reason to suspect the presence of a toxic gas due to odor or other symptoms or conditions, ventilate the space with a blower for a minimum of ten minutes. Retest the air. If conditions are favorable entry can be carried out.
  - b) ensure that there is a safe entrance to and exit from all accessible parts of a confined space.
  - c) where a hazardous atmosphere may be present, the atmosphere of the confined space will be tested for:

- oxygen enrichment or deficiency. Oxygen enriched means to have oxygen content in the atmosphere of more than 23%. Oxygen deficiency means to have oxygen content in the atmosphere of less than 19.5 %.
  - the presence of flammable or explosive substances
  - the presence and hazardous concentration of airborne chemical or biological substances
- 7) The supervisor will determine whether measures have been taken to ensure that a worker will not drown or become entrapped in any liquid or free-flowing solid present in a confined space.
  - 8) Ensure all energy sources that present a hazard to a worker entering into, exiting from or occupying the confined space have been locked out, with the energy sources being put in a zero energy state.
  - 9) The opening for entry into and exit from the confined space is sufficient to allow safe passage of a worker who is using personal protective equipment required by regulation.
  - 10) The supervisor shall ensure that the confined space has an internal configuration such that an entrant cannot be trapped or asphyxiated by inward converging walls or by a floor that slopes downward and tapers to a smaller cross section.
  - 11) If any flammable or explosive dusts, gases, vapors or liquids are or may be present in a hazardous confined space an employer shall ensure that all sources of ignition are eliminated or controlled.
  - 12) Barricades and warning signs shall be provided to keep vehicles and pedestrian traffic clear of a confined space work area.
  - 13) Every supervisor shall ensure that a worker continuous ventilation at all times during which a worker occupies a hazardous confined space to maintain a safe atmosphere. Use a portable blower and flex duct. Blow air into the space. Do not use the blower to extract air from the space.
  - 14) Supervisors shall ensure that a worker in a confined space is attended by and in communication with a “standby” worker who:
    - a) is experienced and trained in all aspects of confined entry work
    - b) has available, a communication system between the worker in the confined space and the standby worker. This may be visual, two-way radios or hard line communications.
    - c) shall be positioned outside of the confined space whereby the “standby” worker can directly communicate with workers in the confined space

### **Employee’s Responsibilities:**

The employee (or entrant) has the following responsibilities:

- 1) Participate in training and ensure a full understanding of the job's requirements, including the scope of the work and applicable safety procedures.
- 2) Ensure personal safety and that actions do not endanger or harm co-workers.
- 3) Report unsafe conditions to the applicable supervisor.
- 4) Wear approved protective clothing and devices.
- 5) Ensure all accidents/incidents are reported.
- 6) Comply with confined space entry, directions and procedures in carrying out work and immediately comply with all instructions from the "standby" worker.

### **RESCUE:**

The employer shall ensure that:

- 1) Equipment necessary to rescue personnel is readily available and set up for use on site of the confined space and used in the event of an emergency.
- 2) Personnel are readily available, experienced and trained to provide immediate first aid including C.P.R.
- 3) Rescue personnel are fully informed of the hazards in the confined space.
- 4) Personnel are equipped with and ready to use supplied air respirator or self-contained breathing apparatus if required to enter the confined space.
- 5) Rescue personnel use a full-body harness and are attached to a lifeline, unless another safe system is provided.
- 6) If a lifeline is used, the lifeline is attended by another worker who is adequately trained in rescue procedures and where reasonably practicable a mechanical lifting device must be available to assist with a rescue and is located at the entry. An employer shall ensure that an alternate method of rescue, to immediately remove an injured worker from the confined space within two and one half minutes or less, is developed and implemented where the use of a full-body harness or lifeline would create an additional hazard or is not reasonably practicable.

### **EQUIPMENT:**

Basic equipment needs when working in confined spaces:

- Portable blowers and flex ducts
- Oxygen and Combustible Gas Tester
- Barricades
- Respiratory equipment

- Personnel protective equipment
- Safety harness
- Lifelines
- Hoisting devices and tripods
- Portable radios
- Hardhat
- Safety glasses or goggles
- Gloves
- Coveralls
- Ground Fault Circuit Interrupter (G.F.C.I.) and shatter proof trouble lights.
- Equipment needs will vary subject to circumstances.

#### **ENTRY PERMIT:**

- 1) An entry permit for each confined space must be completed and signed by the responsible supervisor and the worker before a worker enters a confined space:
  - a) with a hazardous or potentially hazardous atmosphere
  - b) that requires lockout or isolation
  - c) in which there is a hazard of entrapment or engulfment.
- 2) An entry permit must include:
  - a) date, location, identification of confined space and description of applicable work activities
  - b) all workers who are inside the space and standby personnel
  - c) hazards that may be encountered and required precautions for the confined space
  - d) isolation procedures
  - e) electrical lock-out procedures
  - f) mechanical lock-out procedures
  - g) other possible isolation procedures
  - h) personal protective equipment and clothing
  - i) safety harness and retrieval system
  - j) special tools for hazardous location work
  - k) oxygen concentration
  - l) toxic substances concentration
  - m) emergency and rescue procedures in place and first aid location
  - n) time of expiration of permit
  - o) authorization by the supervisor for work to be done.
- 3) An entry permit must be reviewed and updated as necessary to ensure the ongoing safety of workers inside the confined space.
- 4) An entry permit must be readily available at all times to all workers.
- 5) Every worker affected must be informed by the responsible supervisor of an alteration of an entry permit regarding a change in the required precautions or work activity.

6) A permit may not be required before entry if monitoring and inspection data show that hazards are limited to the physical difficulty of entering the confined space, or that potential hazards may be controlled by mechanical ventilation alone. Examples of such spaces may include crawl spaces, attic spaces. Pipe chases or mechanical rooms.