THE UNITED TOWNSHIPS OF HEAD, CLARA & MARIA

Municipal Health and Safety Policy and Procedures

All Municipal Departments

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This Health and Safety Policy and Procedure Document outlines hazards specific to performing general maintenance for the Municipality and provides safe work practices to protect the worker and to eliminate accident and injury.

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Health and Safety Policy and Procedures All Municipal Departments

INTRODUCTION

Completing the varied requirements of the employment positions within the municipality and completing general Municipal maintenance can be potentially hazardous, depending on the activity being undertaken. The following practices and procedures followed carefully will allow for the safe operation of all municipal departments and the safe maintenance of municipal facilities, landfill sites and roads.

All Positions

In many instances the municipal employee works alone. Applying the following principles and following these procedures will ensure employee safety and provide a safe and healthy workplace. It is the employee's responsibility to know these procedures and to follow them.

Injuries from cuts, back strain and toxic substances are just a few of the dangers the employee faces every day on the job. Avoiding injury means getting the proper training, familiarizing the employee with the hazards, learning about the ways in which the individual can protect themself and putting it all into practice.

Each employee has a positive obligation to help create and maintain a healthy and safe workplace. To do so, the employee must:

- take responsibility for accident prevention on the job;
- monitor the health and safety practices of fellow employees and contractors;
- report work-related accidents as soon as becoming aware of them;
- investigate accidents immediately and completely, and take steps to ensure that they do not happen again;
- ensure that fellow employees and contractors wear properly maintained safety-related equipment and clothing, if applicable;
- advise fellow employees of any health and safety dangers and the necessary precautions.

Specific to Municipal Vehicles

Operating and maintaining municipal vehicles can be somewhat hazardous. The listed practices and procedures followed carefully will allow for the safe operation and maintenance of municipal vehicles or personal vehicles while on municipal business.

It is the responsibility of any operator of a municipal vehicle to follow the pertinent sections of this policy.

For a complete list of worker responsibilities, refer to the Municipal Health and Safety Policy – P&P1001.

POLICY PURPOSE

This Health and Safety Policy and Procedure Document is intended to make supervisors and workers aware of the potential risk of personal injury and to describe personal equipment and procedures to eliminate or minimize that risk.

OCCUPATIONAL HAZARDS – specific to disposal site attendance and waste collection

1. The collection vehicle including: cab entry steps, rear entry steps and confinement of the cargo container.

2. Solid waste including kitchen/food waste, bottles and cans, liquids, furniture and hazardous materials that may be placed within containers.

3. Refuse containers which hide contents. Waste comes packaged in all types of containers – bags, boxes, wooden crates, pails, cans, baskets. In most cases, the employee does not know what is inside these containers.

4. Sharp objects – before the employee picks up any bag, attempt to determine if it contains sharp objects like broken glass or jagged materials. Uncapped hypodermic needles improperly disposed of are becoming more common.

5. Fluorescent Tubes – fluorescent lights are fragile and potentially explosive. When broken suddenly, they explode, sending glass fragments and powder in all directions. Other objects with similar explosive qualities are television picture tubes, pressurized containers or canisters.

6. Toxic and Hazardous Materials – acids, chemicals, pesticides or soiled cloths used for cleaning. Mixtures of these substances in the load may form a chemical reaction that could be very dangerous. Discarded car batteries, paint thinners and cleaning solvents are other examples of dangerous chemical hazards. Use caution when applying bleach to the vehicle bed during cleaning. Bleach mixed with other chemicals could be lethal.

7. Bending/lifting – On the job the employee lifts a variety of objects of differing shapes and sizes. Some can put undue strain on the employee's back if not prepared. The majority of back injuries are caused by improper lifting techniques or by attempting to lift something that is too heavy. Make sure to lift with your legs, not your back. If it is too heavy, ask for assistance or leave it there.

8. Pinch points – include vehicle doors, garbage can handles or access doors.

9. Weather Conditions – in some areas, icicles can form on power lines and poles. Be aware of these when collecting near lines and poles.

10. Dogs or other animals – Occasionally the employee might come across dangerous dogs. Keep clear of the animal, if it is threatening, leave the garbage, note the house number and advise office staff. Office staff will let the homeowner know why their waste was not collected.

    a. Bites, no matter how small, from any animal must be taken seriously. Seek medical attention immediately and notify office staff.
    b. Although electric fences have been installed to minimize the occurrence of bears at the disposal sites, there is a possibility that the employee may encounter bears at the sites or along the route. Use all safety precautions and avoid the bear at all costs.
    c. If it is unsafe to unload the back of the truck due to animals on the scene – don't do it. Arrange for another individual to attend at the site with you to monitor the situation and ensure safety.

11. Driving conditions – any hazard can be more dangerous during snow or fog. Extreme caution must be used when visibility is reduced.

12. Working Alone – any injury might not be noticed for some time due to the fact that the employee works independently and at times when no other employee is available. It is the employee's duty to ensure that they follow safety procedures to ensure personal safety.

OCCUPATIONAL HAZARDS – specific to municipal roads and general maintenance

1. Working Alone – any injury might not be noticed for some time due to the fact that the employee works independently and at times when no other employee is available. It is the employee's duty to follow safety procedures and appropriately utilize personal protective equipment to ensure personal safety.

2. Irate Customers – people who do not like the answer they are given may sometimes become irate, bossy, abusive and threatening. Know how to manage difficult situations and diffuse a threatening individual. Know that if common strategies do not work, remove yourself from the situation or call for help. Your health and welfare is what is important, protect it.

3. Tools and Equipment – maintenance must be completed regularly and accurately according to equipment specifications.

4. Housekeeping - Cluttered Work spaces - Slips, Trips and Falls – keep work spaces clear and perform routine housekeeping to avoid additional hazards

5. Electrical hazards – power cords, outlets, bars, extension cords and power supply may all wear and cause hazards. They may also be tripping hazards

due to unsafe placement and use. Make sure that cords and bars are used correctly.

6. Material Handling – follow personal protection practices appropriate in the workplace to eliminate potential hazards associated with the handling of materials.

7. Radiant Heat, Sun Exposure – avoid working directly in the sun during the hottest part of the day; use PPE (personal protective equipment) and products to prevent exposure.

8. Lifting - "the act or process of elevating or raising, to carry something." When the muscles of the human body are used for manual lifting and carrying they are subjected to varying degrees of stress. Try to choose an alternate method when lifting awkward objects (i.e., rolling, tipping, and pushing) and ask for help if necessary. Do not lift more than you can safely handle.

9. Ladders - A ladder is a piece of equipment which should be used only where a permanent access is not available or practical. When a ladder must be used, it is important that every worker know the dangers and be aware of appropriate safety measures.

10. Scaffolds & Platforms – each employee shall ensure that all scaffolds and platforms are designed, constructed and maintained to support, without exceeding the allowable unit stress for the material used, and that they are securely fastened in place to prevent movement.

11. Airborne Toxic Substances - The main objective is to ensure that airborne toxic substances from work do not create an unreasonable health risk to workers. To meet this objective, the use of respirators is sometimes necessary.

12. Utility Crossings - applies to all underground and overhead lines, facilities and potential obstructions to ensure they are all identified, located, and marked prior to the start of any work activity where these potential hazards exist. The term excavation means "any dug out area of ground." Some examples would include: fencing, tree planting, dozing/grading, boring/drilling, blasting and trenching.

13. Trenching – applies to understanding the dangers associated with and information to be used while working in and around trenches.

OCCUPATIONAL HAZARDS – specific to vehicle operation

Most municipal employees are required to drive "company" vehicles as part of their job. This section provides specific "safe procedure" to give guidance to workers while operating municipal vehicles or personal vehicles while on municipal business.

1. Traffic accidents
2. Vehicle failure
3. Accidents during maintenance or repair
4. Driving conditions – any hazard can be more dangerous during inclement weather including rain, snow, ice or fog. Extreme caution must be used when visibility is reduced.

PROCEDURES

GENERAL SAFETY RULES

1. All accidents, incidents, and injuries as well as unsafe acts and conditions observed by an employee are to be reported promptly to their immediate supervisor, and not later than the end of the working day. Employees are also required to report any concerns about poor workstation / task design and any early signs or symptoms of soft tissue injuries they may experience.

2. First aid treatment is to be obtained promptly for any injury, and must be recorded and reported by completing and submitting incident reports.

3. Employees shall comply with the *Occupational Health and Safety Act* and regulations at all times.

4. All work must be carried out according to appropriate safe work practices and safe work procedures where applicable.

5. Employees must wear proper Personal Protective Equipment (PPE) in accordance with safe work practices, and shall maintain and clean personal protective equipment which is issued to them.

6. Tools are to be used only for the purpose for which they were intended.

7. Only tools which are in good repair shall be used.

8. Tools which are designed for use with guards and safety devices shall not be used if those guards or safety devices have been removed or tampered with.

9. All tools or equipment which have been damaged or become worn are to be promptly tagged and taken out of service for repair or replacement.

10. Good housekeeping practices must be maintained daily in all work areas. This includes personal work areas/offices and vehicles.

11. Employees are prohibited from arriving at work or remaining at work when their ability to perform the job safely is impaired for any reason.

12. Employees shall actively participate in the department's safety program, including attendance at training sessions.

13. Horseplay, fighting, harassment of any kind, and otherwise interfering with another worker is strictly prohibited.

14. Where there is a danger of entanglement, employees may not wear rings, watches, or other jewelry or loose fitting clothing, and shall confine long hair.

The above list is illustrative and not intended to be exhaustive. Individual workplaces or work groups may develop additional rules appropriate to their specific operations in conjunction with the Clerk or the workplace Health and Safety representative. Please provide specifics to the Clerk to be added to subsequent documents.

GENERAL SAFETY RULES FOR VISITORS

The Municipality of the United Townships of Head, Clara & Maria is committed to conducting its business in a socially responsible manner by ensuring, as far as reasonably practicable, a healthy environment for all individuals, including visitors to our workplaces.

The purpose of these rules is to prevent or minimize personal injury or illness through adherence to the department's Occupational Health and Safety Program and safe work practices. Where necessary, the use of Personal Protective Equipment (PPE) will be required.

Adherence to the following general rules by all visitors, including business associates and guests, will help to ensure a safe work environment for visitors and our employees. Admission to a department workplace is conditional upon each visitor abiding by the following health and safety rules:

1. Workplace supervisors must inform visitors that all accidents, incidents, injuries and near misses, and any unsafe acts and conditions observed by the visitor are to be reported promptly to the person in charge of the workplace. In the event the supervisor is temporarily away from the workplace, he/she must assign the responsibility to inform visitors of this requirement to one of the workers at the workplace. Emergency First Aid is to be made available to anyone injured or suddenly ill.

2. Personal Protective Equipment required by the *Occupational Health and Safety Act* and regulations must be worn at all times while at the workplace. Restricted work areas may require the wearing of protective headgear, footwear, hearing protection, and eyewear. Eyewear, safety hats, and hearing protection

appropriate to the hazard will be provided and loaned by the municipality to the visitor. It is the responsibility of the individual visitor to provide all other personal protective equipment.

3. Where instructed to do so by a municipal employee, the visitor shall follow specified safe work practices related to the work being undertaken and the hazards present.

4. A **NO SMOKING POLICY** is in effect and compliance is mandatory in all municipal buildings and vehicles except in dedicated areas where logos indicate smoking is permitted.

5. Individuals who are under the influence of alcohol or illegal drugs, or, who are otherwise impaired so as to pose a safety risk, are prohibited from municipal premises or vehicles.

6. Horseplay, fighting, harassment of any kind, and otherwise interfering with another person by any visitor is strictly prohibited and will result in their being removed from the worksite.

HOUSEKEEPING

The importance of good housekeeping at a workplace in the prevention of accidents and injuries is indicated by the large number of times it is referred to, both expressly and implicitly, in the Occupational Health and Safety regulations. Although it is often taken for granted, good housekeeping is a vital element of any safety program.

1. Workplace housekeeping is traditionally defined as keeping the job site clean and orderly. This involves a wide range of routine activities including:
   a. maintaining floors and surfaces;
   b. keeping aisles, exits and stairs free of clutter, clearly marked and well-lit;
   c. controlling minor spills and responding to them quickly when they occur;
   d. properly installing and maintaining equipment and tools;
   e. ensuring adequate and safe storage areas; and
   f. handling and disposing of waste in a timely manner.

2. The benefits that flow from these activities are great. Slips and trip accidents are reduced because the floors are kept clean, in good condition and free of spills.

3. Fire hazards are reduced because materials are properly stored, combustible materials are not piling up, and safety equipment and exits are not blocked.

4. Back injuries are curbed because material handling is minimized, and Workplace Hazardous Materials Information System compliance is made easier regarding labeling and inventory requirements because of the orderly storage and flow of materials.

To realize these benefits, routine housekeeping activities must be incorporated into the work procedures. This requires management planning - planning of the movement of materials from the point of entry to the point of exit, and planning of the workplace environment to ensure the safe movement of people and materials on a daily basis.

ELECTRICAL HAZARDS

1. Ensure that computer cables, extension cords, telephone lines and printer cables are bundled and secured to work surfaces, desks or walls.

2. Wall outlet covers are to be in place to prevent accidental exposure to electrical wiring.

3. All extension cords are to be the 3-wire type and in good condition.

4. Only one extension cord is to be used per application. Extension cords are not to be plugged into one another.

5. Use a cord of appropriate length and load capability.

6. Power cords that are damaged in any way are to be discarded and replaced.

7. Wires or extension cords are not to be run under rugs, through doorways or placed in other traffic areas. If such cords are necessary, for short term use only, ensure that all cords are properly taped to avoid a tripping hazard.

8. Multiple outlet strips are to be equipped with overload protection, circuit breakers and/or surge protectors.

IRATE CUSTOMERS

1. Do not place yourself in harm's way by engaging a confrontational individual.

2. Record as many details after the fact and complete an incident report.

3. Should the situation warrant, call the OPP to report the incident and obtain assistance.

4. Report all incidents to your supervisor immediately.

5. A cell phone is available for employee use for emergency situations. Should you find that this device is ineffective and inefficient advise your supervisor so that we may determine an acceptable solution.

PERSONAL PROTECTIVE EQUIPMENT

In terms of hazard control, personal protective equipment (PPE) is considered a method of last resort and should not be used as a substitute for other reasonable measures which would result in the control of a hazard. Personal protective equipment is the last line of defense a person has against a hazard that may be encountered on the job. The proper use of this equipment may reduce or eliminate the extent of harm or injury and therefore its importance must not be under-estimated.

It is critical that the appropriate personal protective equipment for the situation is used, and that:

1. its limitations are fully understood;
2. it is properly fitted for the individual;
3. the person using the personal protective equipment is trained in its use, care and maintenance;
4. and is regarded by the person using it as normal attire for working in that environment or with the particular hazard.

The Municipality holds each individual to whom personal protective equipment has been issued fully accountable for maintaining it in good operating condition and replacing it once it has reached the end of its useful life.

SKIN, HANDS AND BODY PROTECTION

Clothes are a major line of defense against hazards on the job. Employees must always dress suitably for work. Items such as denim coveralls and long sleeve cotton shirts protect against minor scrapes and bruises as well as ultraviolet exposure outdoors.

Clothing made of synthetic fibers can be readily ignited by or melted by heat or electric flash. Cotton and wool are more flame retardant and therefore recommended.

Special body apparels may be required to prevent contact with:

1. noxious gas, liquid, fumes or dust;
2. an object that may puncture, cut or abrade the skin,
3. a hot object, liquid, or molten metal; or
4. radiant heat.

Generally, personal wearing apparel of an employee must be of a type and condition that will not expose him or her to unnecessary and avoidable hazards. Where there is danger of contact with moving parts of machinery;

1. the clothing must fit closely around the body;
2. dangling neckwear, bracelets, wristwatches, rings, or like articles must not be worn; and
3. cranial and facial hair must be completely confined or cut short.

Hands must be protected from rough surfaces, sharp edges, toxic or irritating materials, heat, cold and electrical equipment. Gloves should be considered as a protective device and must be used. The appropriate glove, whether it is leather, fabric, rubber or

plastic should be used for each task where gloves are required. It may also be necessary to use wrist and forearm protection. Caution: It may be dangerous to wear gloves around revolving machinery. "Perfect fit" gloves may reduce the hazard.

Gloves are effective against most minor cuts, scrapes and abrasions and are recommended when handling sharp or abrasive materials. Specialized personal protective equipment for hazards include: finger guards, thimbles and cots, hand pads, mitts and barrier creams.

Personal protective equipment for hands comes in many forms, each designed to protect against certain hazards. The Material Safety Data Sheets for hazardous chemicals indicate which gloves and other personal protective equipment are required for safe handling. This information should always be checked before working with controlled products.

SAFETY VESTS

Employees whose duties are regularly performed in areas and under circumstances where they are exposed to the danger of moving vehicles must wear distinguishing apparel or devices of highly visible material at all times.

EYE AND FACE PROTECTION

Eye and face protection is designed to protect the worker from such hazards as:

1. flying objects and particles;
2. molten metals
3. splashing liquids; and
4. ultraviolet, infrared and visible radiation (welding).

This type of equipment may be divided into two types. The first type, “basic eye protection” includes safety spectacles with or without side shields, monoframe goggles and eyecup goggles (as with some styles of flame cutting and gas welding goggles). Clip-on side shields must be used if they are not a built in feature of the spectacles.

Prescription lens may be acceptable safety eye wear only if the lens provider has certified them as “safety eye wear”. In these cases, side shields must be clipped in place.

The second type “face protection”, includes chemical and impact resistant (plastic) face shields; metal mesh face shields for hot, humid conditions and chainsaw use; and welders shields or helmets with specified cover and filter plates and lenses. Basic eye protection should be worn with (underneath) face shields.

Comfort and fit are important in the selection of safety eye wear. Lens coatings, venting or fittings may be needed to prevent fogging or to fit over regular prescription eyeglasses. Safety glasses should be cleaned at least daily or more often if required. Eye and face protection must have a Canadian Safety Association (CSA) certification and be in accordance with the current *Occupational Health and Safety Act* regulations.

Suitable eye and face shields must be worn to protect the eyes and face where machine or plant operations may cause eye or face injury from flying objects, dust, grit, chips, sparks, chemicals, wastewater or other possible hazards.

Management should ensure that appropriate eye protection is available and convenient and employees should always make use of the equipment. Persons requiring corrective lenses should be provided suitable protection to be used with the lenses, or prescription safety eyewear with appropriate side shields. Welding may pose a danger from infrared and/or ultraviolet radiation.

Care should be taken to ensure that proper eye protection is kept near welding areas and used during welding. Shields should be available to protect other workers.

HEAD PROTECTION

Safety headgear is designed to protect the head from the impact of flying and falling objects, bumps, splashes from chemicals or harmful substances, and contact with energized objects and equipment. Safety hats must be CSA approved and be in accordance with the current Occupational Health and Safety regulations. This requirement implies the safety hat will provide protection from impact to the side and back of the head.

1. Where a hazard of electrical contact is present, the worker must use a safety hat which is specifically designed to provide protection from this type of hazard.
2. Hard hats should be worn when there is a danger from falling tools or materials.
3. Hard hats should be worn at all times by crews working outdoors or at construction sites, and by anyone visiting a job site.
4. The operation and management of municipal landfill sites does not require the use of a hardhat or other protective headgear until and unless the contractor is on site with heavy equipment.
5. Hard hats are date stamped. Care must be taken to see that the useful life of the hard hat has not expired.
6. Hats involved in an accident should be inspected or replaced.
7. Hard hats are to be worn at all construction sites and road maintenance operations by all staff on location, including contractors.
8. Hats do not have to be worn while a worker is inside a vehicle.
9. Safety hats must be worn by traffic control persons at all times while on duty.
10. Safety hats must be adjusted to fit securely on the head.
11. Where there is a likelihood of the hat falling off, or being blown off, chin straps must be used.
12. All parts of the headgear must be compatible and maintained in accordance with the manufacturer's instructions. If attachments are used with the headgear, they must be specifically designed for use with the specific headgear issued.

Safety hats should be inspected before and after each shift. Any signs of wear or damage to the suspension harness indicate it must be repaired or replaced. Similarly, any damage to the shell indicates it must be replaced. A visual inspection of the shell should look for breakage, cracks, discoloration, chalky appearance and brittleness. The entire safety hat must be discarded if it was subjected to any penetration or significant impact.

Safety hats should be cleaned using warm water and mild soap. Solvents, such as paint thinner, should be avoided because it can damage the material. They should not be painted. They should be stored in a clean, dry location.

SAFETY FOOTWEAR

Proper safety shoes or boots are required for municipal roads, maintenance, waste collection and disposal site employees. Sturdy leather shoes that provide a deep lugged non-slip sole, ankle protection, and toe safety are to be standard wear on the job. Specialized footwear such as rubber boots or chemical resistant shoes should also meet standards for toe, sole and ankle protection.

Safety footwear must be worn where there is danger of injury to feet through falling or moving objects, or from burning, scalding, cutting, puncturing, slipping or similar causes. Personal foot protection must meet the design and manufacturing specification of CSA.

The minimum level of foot protection allowed at a worksite is CSA Grade1. This footwear bears a green triangle patch stamped with the CSA registered trademark on the outside and a rectangular green label on the inside. A Municipal policy allows for compensation for appropriate footwear. Make sure you utilize this subsidy and purchase and wear proper footwear on the job at all times.

The following types of hazards require particular protective features which are incorporated into the footwear design:

1. Electrical shock - Safety footwear which is resistant to electrical shock has a white rectangular label bearing the CSA trademark and the Greek letter Omega in orange lettering. This footwear does not completely eliminate the risk of electrocution but it does provide some level of shock resistance in dry locations. This type of footwear is not normally required for municipal roads department work but may be required in limited circumstances.

2. Chainsaw cuts - Boots which provide some degree of protection against chainsaw cuts have embedded “ballistic nylon”, Kevlar, or other material designated for the purpose. They are typically high top, orange colored, rubber boots which provide reasonably good anti-slip protection and must be worn when operating a chain saw on municipal business.

3. Ankle injury - Where there is a danger to the ankle from materials or equipment which could provide injury, or of twisting the ankle from walking on uneven

ground or slippery surfaces, the safety boots must have at least a 15cm high ankle support.

4. Safety footwear should always be laced up and securely tied to prevent a tripping hazard or the footwear from falling off. It must be maintained in good condition. Routine inspections should be completed to:

    a. check for tears or holes in the leather
    b. make sure the steel toe caps are not exposed; and
    c. check the wear of the sole.

HEARING PROTECTION

Hearing protection should be provided for employees and visitors in those areas that present danger to hearing from machinery, blowers, engines, or other equipment.

Exposure to excessively loud noise for extended periods can cause permanent hearing loss. To prevent excessive exposure, engineering controls and practices should be applied to limit noise levels.

Where the level of noise is sufficiently intense, it will pose a potential hazard to the hearing of employees who are exposed to it for long periods of time. Too much noise exposure can cause a temporary loss of hearing, and, if the noise exposure is repeated too many times, the loss gradually becomes permanent.

The Occupational Health and Safety legislation has adopted a standard which requires the use of hearing protection where the level of noise in a workplace exceeds an average of 85 decibels over an eight hour shift.

This standard may be proportionately pro-rated. For example, the maximum duration of unprotected exposure for sound levels averaging 88 dB (A) is 4 hours; for 91 dB (A), 2 hours; and for 94dB (A), 1 hour.

Similarly an unprotected person may be safely exposed to noise levels of an average of 82 dB (A) over 16 hours and 80 dB (A) over 24 hours.

Where practical, it is preferable to reduce the level of noise at, or close to its source through the application of engineering controls. Administrative controls, such as limiting the amount of time an individual worker is exposed to excessive noise through job rotation, should also be considered.

The use of hearing protection is the method of last resort, but must be used where engineering and administrative controls are not feasible.
Hearing protection is available in three general types:

1. Disposable ear plugs (made of pliable material, one size fits all but can only be used once);

2. Permanent plugs (must be fitted to provide a good seal but can be washed and reused); and
3. Ear muffs (when properly fitted and worn, generally provide more protection than plugs).

RESPIRATORY PROTECTION

Personnel are sometimes exposed to respiratory hazards generated by equipment, materials, or procedures such as spray-painting and welding. Although proper work practices and engineering controls may be used to reduce these hazards, often the only practical control is respiratory protective equipment. Protection is ensured not only by the respirator but also by its proper selection and use.

To select the proper respirator for a particular job, the worker must know the characteristics of the hazard, the anticipated exposure, and the limitations of the equipment. Respiratory equipment should only be selected by someone who understands all three factors. Most manufacturers can assist with selection and should be consulted for municipal use.

Work areas must be ventilated to reduce hazards from dust, fumes, mists, gases or vapors. Where ventilation is not practical, workers must be provided with respirators appropriate to the hazard and be trained to use and maintain the respirators properly.

Respiratory hazards may be present as:

1. Gas: Common toxic gases in construction are carbon monoxide and hydrogen sulphide.
2. Vapors: Vapors are produced by solvents such as xylene, toluene, and mineral spirits used in paints, coatings and degreasers.
3. Fumes: Welding fume is the most common type of fume in construction. Other examples include pitch fume from coal tar in built-up roofing and from diesel engines.
4. Mists: The spraying of paints, form oils and other materials generates mists of varying composition.
5. Dust: Dust is generated by crushing, grinding, sanding or cutting. Two common dusts in construction are fibrous dust from insulation materials and non-fibrous silica dust from sandblasting.

Respiratory-protective equipment is required when:

- welding in confined spaces or shops with poor ventilation
- entering confined space, when gases are present
- welding, cutting, burning
- welding, cutting, or grinding surfaces with lead paint
- spray painting
- sandblasting

Respiratory protection falls into two major categories:

- The first is Air Purifying Respirators (APRs) which have particle (dust) chemical cartridges but no visor plate. The air is inhaled from the surrounding air but cannot replenish or increase its oxygen content.

- The second category is Atmosphere Supply Respirator, which includes self-contained breathing apparatus (SCBA), airline systems and protective suits that completely enclose the worker and incorporate a life support system. Only APRs will be dealt with in this section. The second category of respirators requires much more specific information and training. If workers need to use Atmosphere Supplying Respirators, they should get expert advice, training and instruction.

Know which type of respirator is required for each specific use.

AIR PURIFYING RESPIRATORS

With the air-purifying respirator, the ambient air is passed through a filter or cartridge that removes the particulate, vapours, gases or other contaminants before they are inhaled.

The limitations of air-purifying respirators are that they:

- protect only against the single contaminant listed on the cartridge
- only protect against low concentrations of the contaminant
- do not protect wearers against oxygen-deficient atmospheres
- can't be used in atmospheres immediately dangerous to life and health
- can only be used for substances that have adequate warning properties

VAPOUR AND GAS REMOVING RESPIRATORS

Vapour and gas removing respirators are equipped with cartridges or canisters to remove vapours and gas from the air. Use vapour and gas removing respirators only:

- as protection against low concentrations of organic vapours and gases, pesticides and paint vapours or mists
- according to the application specified on the canister or cartridge

PARTICULATE REMOVING RESPIRATORS

Particulate removing respirators are equipped with mechanical filters to remove particulate matter. They do not remove vapors or gases.

Vapour, gas and particulate removing respirators do not protect against oxygen deficiency, acutely toxic gases or particulate contaminants. Therefore, they must **never** be used in atmospheres that are Immediately Dangerous to Life and Health (IDLH).

When selecting specific respiratory protective equipment consider the following:

- whether the equipment is to be used under emergency or normal conditions
- the types of airborne contaminant(s) possible and their form (e.g., particulate, mist, vapour or gas).
- the duration, or likely duration, of worker exposure

- the toxicity of the contaminant and the occupational exposure limit (OEL) of the identified contaminant
- the warning properties (e.g., odour, taste and eye irritation) of the contaminants
- the oxygen concentration. People working in an oxygen deficient atmosphere (less than 18.0 percent) require air supplied and respiratory protective equipment.
- the need for backup equipment (i.e., for situations where a worker loses his or her air supply or where there is an accidental contaminant release)

Note: For more information on selecting and using respiratory protective equipment, refer to the MSDS (Material Safety Data Sheets), and seek advice from a competent authority.

INSPECTION

Respiratory protective equipment requires proper care and inspection in order for it to provide the protection for which it was designed.

- respirators used daily should be inspected daily
- respirators used occasionally should be inspected before each use
- respirators not used routinely but kept ready for emergency use should be inspected at least once per month

Respiratory protective equipment should be inspected according to manufacturer's instructions which should contain the following:

- face piece, including:
  - lenses (for visibility, deterioration and placement).
  - head bands (for deterioration and full extension).
  - anti-fogging devices (for proper positioning).
  - valves (for operability and placement).
  - connecting hoses (for condition and tightness).
- rubber parts (for pliability and for signs of deterioration).
- harnesses and buckles (for cleanliness, rips or other defects).
- mask carrying cases.

Note: Records should be kept of monthly inspections and all repairs.

LEAD PAINT WORK

Many paints used in public works contain lead. Torch cutting, burning, welding, gouging, grinding, or sanding (with power tools) on these surfaces can result in airborne lead concentrations.

Whenever torch cutting, power sanding, grinding or welding surfaces that contain lead, protective equipment and work procedures include:

- workers must wear (in addition to the usual safety gear) air purifying mask or high efficiency respirators and disposable coveralls.
- eating, drinking, smoking and chewing should not be allowed in areas contaminated by welding, cutting or sanding operations.

- workers will be required to remove and dispose of their coveralls upon leaving the work area.

SPRAY PAINTING/PRIMING

Whenever possible less hazardous materials should be used. Paints and primers may contain toxic materials that cause skin irritation, systemic poisoning, lung irritation when inhaled, and may pose an explosion or fire hazard.

Paint removers may also contain toxic materials. Exposure of workers to these toxic materials can occur during removal of old paint or during the spray application of new paint.

Protective Equipment Required When Using General Organic Solvent Based Paints

- Respirators must be worn during spray painting. When spray painting in well-ventilated areas, a half mask respirator with organic vapour cartridges and mist pre-filter is acceptable.
- Where conditions create painting overspray enough to cause contamination of clothing, protective coveralls or rain suit, goggles, face shield, and gloves must be worn.

EPOXY OR URETHANE BASED PAINTS/COATINGS

Protective Equipment is Required When Using Epoxy or Urethane Based Paints/Coatings. Epoxy resins and the curing agents contain severe skin and eye irritants. The irritation affect may be immediate or delayed.

Precautions must be taken to avoid breathing vapours or mist and skin contact.

1. Face shield or goggles must be worn when mixing solution or when splashing may occur.
2. Butyl rubber gloves must be worn when mixing or applying the resin.
3. Respirators must be worn during spray application of resins or epoxy paints. A half-mask air purifying respirator with an organic vapour cartridge and mist pre-filter must be used when spray painting in open, well-ventilated areas.
4. Epoxy materials should be handled/mixed in well-ventilated areas. Forced ventilation is required when materials are applied in enclosed vessels, rooms, etc.
5. Thoroughly wash hands with soap and water before eating and at the end of the job.
6. Epoxy resins and their amine additives should be washed from the skin immediately using soap and water.
7. Do not use organic solvents as they may increase penetration of the resin into the skin.

EPOXY HANDLING (INCLUDING GROUTING)

Epoxy resins and the curing agents contain severe skin and eye irritants. The irritation affect may be immediate or delayed. Precautions must be taken to avoid breathing vapours or mist and skin contact.

Workers using epoxy materials must review the MSDS for the material before handling it, and take appropriate precautions.

Protective Equipment Required

1. Face shield or goggles must be worn when mixing solution or when splashing may occur.
2. Butyl rubber gloves must be worn when mixing, or applying the resin.
3. Respirators must be worn during spray application of resins or epoxies.
4. Epoxy materials should be handled/mixed in well-ventilated areas. When applying materials in enclosed vessels, rooms, etc., forced ventilation is required.
5. Access to the work area should be limited to only those workers required to do the work. Anyone in an area where epoxy is being spray-applied will wear a half-mask air purifying organic vapour respirator with a mist pre-filter.
6. Thoroughly wash hands with soap and water before eating and at the end of the job.
7. Epoxy resins and their amine or amide additives should be washed from the skin immediately using soap and water.
8. Do not use organic solvents as they may increase penetration of the resin into the skin.

INSULATION WORK

ASBESTOS

1. Trained and certified persons are required to conduct any work with asbestos. Refer to the Occupational Health and Safety Act Chemical Hazards Regulation for details. Asbestos is present in some insulations and insulation jackets. Asbestos containing materials can only be identified by laboratory analysis.

2. **** All insulation must be assumed to contain asbestos until shown by analysis to be asbestos free or labelled asbestos free. ****

3. Damaged asbestos that could be disturbed because of work activities (e.g., walking, rubbing against it) must be repaired or removed before the work activity begins in that area. Persons conducting the work activity share the responsibility to ensure asbestos is not disturbed.

CERAMIC FIBRES, FIBREGLASS & MINERAL WOOL

1. Exposure to airborne ceramic fibres, fibreglass and mineral wool must be minimized.
2. Personnel installing or removing these materials, or working with these materials should wear dust respirators, gloves, and disposable coveralls.

USE OF CLEANING SOLVENTS

1. Chemical cleaning of equipment can expose workers to toxic materials in the cleaning agent and to toxic materials produced by reaction of the cleaning agent with scale or corrosion inside the equipment being cleaned**.**
2. Solvents may contain a variety of hazardous materials.
3. Solvents should be used in well-ventilated areas. The employer must make an MSDS available for each solvent.
4. Workers using solvents should be familiar with the hazards of the solvent and take appropriate precautions. The MSDS is the best initial source of information on the hazards and precautions needed.
5. Appropriate chemical resistant gloves must be worn to prevent skin contact with solvents.
6. Workers who use a solvent must have reviewed and be familiar with the hazard information contained in the MSDS for the solvent.

ACID/CAUSTIC HANDLING

1. Concentrated acids and caustics such as sulfuric acid and sodium hydroxide may produce severe burns on contact with the skin or eyes.
2. Inhalation of acid or caustic mist can cause serious lung injury.
3. Refer to the appropriate MSDS for a complete description of the hazards and required precautions.
4. Respiratory protection must be used where mist or spray from acid or caustic materials may be present. An acid gas air purifying respirator with a mist pre-filter should be used for acid mists. A dust/mist air purifying respirator may be used for caustic mist.
5. A safety shower and eyewash fountain should be immediately available where acid or caustic is being handled.

PERSONAL HYGIENE CONSIDERATIONS

Toxic materials may be inadvertently ingested or absorbed through the skin due to improper personal hygiene practices. To minimize the possibility of this occurring:

1. Do not eat, drink or smoke in the work area.
2. Always wash hands (minimum) and face before eating, drinking or smoking.
3. Wear protective coveralls over street clothes or specially laundered industrial garments in work areas and remove these before leaving.
4. Garments heavily soiled or soaked with hydrocarbon should not be worn but should be exchanged or discarded for clean garments.
5. Avoid handling foam ear hearing protectors with unwashed hands.

FALL ARREST/RESTRAINT SYSTEMS

SAFETY BELTS AND HARNESSES

Body belts and harnesses are used to provide workers working at heights above ground a level of freedom to move and protection from falls. The fall protection legislation requires that, where a person is exposed to the hazard of falling from a work area that is:

1. 3 meters or more above the nearest safe surface or water;

2. above a surface or thing that could cause injury to the person on contact; and
3. above an open tank, pit or vat containing hazardous materials, the person shall wear a fall arrest system.

A guardrail, personnel safety net or temporary flooring may be used instead of a fall arrest system. A fall-arrest system consists of:

1. full body harness;
2. lanyard;
3. rope grab;
4. lifeline; and
5. lifeline anchor connectors.

All safety belts, full body harness and lanyards must be CSA-certified. Full body harnesses must be snug-fitting and worn with all hardware and straps intact and properly fastened. Safety belts are only allowed to be used as a travel restraint/restrict system. Fall arrest systems require a full body harness.

A lifeline can never be used as a service line. The only time a lifeline becomes a load bearing line is in the event of a fall. At all other times it should be just slack enough to permit free movement of the service lines. No more than one worker shall be attached to a life line.

LIFTING

LIFTING FROM THE FLOOR

1. Before lifting any object, keep in mind that the object might be heavier than it looks. Judge the weight of the bag or container by rocking it with your hand. Tip the load slightly or lift gently. A heavy container will fall out of your hands.
2. Starting position must be comfortable and effective. This position allows an erect spine due to increased hip and knee bending. Squatting from a walk standing position (half-squats) is preferable as it is more comfortable than a straight forward squat. (Walk standing position means that the feet are placed approximately shoulder width apart with one a small step ahead of the other)
3. Have load near to, or in contact with the body.
4. Use palm grip (not a finger grip) to hold the object.
5. When preparing to lift, tuck chin in and brace spine by tightening the stomach muscles.
6. Tense arms (biceps) to prevent the load from dragging the trunk forward.
7. Once the load is secure against the body, a powerful knee straightening extension thrust does the actual work of lifting the trunk and load.
8. Heavy objects should always be lifted and held above the stable base of support formed by the "feet apart" stance.
9. If a load must be moved the worker should use small steps to move or turn the body. The trunk of the body must not be twisted. If an object is held outside the base of support formed by the feet, the spine is put at risk.

10. Lifting from above shoulder height - To lift from above shoulder height, maintain a walk standing position, transfer weight and maintain erect spine without bending the lower back backward.
11. Pushing/Pulling - The same principles of erect spine and walk standing position apply. The use of body weight is essential in moving the load.
12. To avoid injuries during material handling, mechanical handling devices should be used wherever possible. Even relatively light lifts, 12kg (25 lbs.) to 25 kg (50 lbs.), can produce injuries under certain lifting conditions, or when lifted repetitively.
13. For loads heavier than 25 kg (50 lbs.) Two people should perform the lift whenever possible.
14. Repeated lifting for long periods can cause excessive fatigue. Fatigue, in turn, is a contributing factor in causing accidents. When fatigue becomes excessive, it can affect a worker's performance. A decrease in motivation or an error in judgment can occur.

TECHNIQUE FOR SAFE LIFTING

- Bend your knees
- Hug the load
- Avoid twisting

REFUSE COLLECTION

1. Avoid reaching over anything to reach for refuse. If you have to reach into a container, stand as close to the container as possible without touching it. As much as possible, use legs and not your back to lift the garbage to avoid putting extra strain on your back. Back and shoulder problems can be prevented by never attempting to carry too much at one time.
2. When lifting garbage, avoid carrying it in front of your face where it can block your line of vision.
3. Avoid coming into direct contact with garbage bags by carrying them slightly away from the body. Upon reaching the truck, place the garbage on the tailgate and then push it into the truck bed. Lighter items can be thrown to the back and on top. Attempt to distribute the weight inside the truck bed evenly, especially in adverse weather conditions.
4. Leave any materials that might be considered toxic or hazardous as they are not to be accepted at our disposal site but saved for special waste collection (i.e. car batteries, paints, solvents, acids, thinners, etc.). Note the location; notify the office and office staff will contact the resident or leave a notice taped to the items.

LIFTING AWKWARD LOADS

If you have to lift an object that's above shoulder level, use a step stool or ladder to avoid over reaching. If you have to lift an object out of a bin or a car trunk, stand with feet shoulder width apart, slightly bend your knees and start to squat, bending at your hip joints, not at your waist.

LADDERS

When climbing a ladder:

1. ensure both hands are free (never carry tools up a ladder, pull them up with a hand line)
2. use both hands when going up or down
3. always face the ladder
4. never over reach

It is the responsibility of the workers to check the ladder carefully to ensure it is in good condition. It must be clean, have no grease or oil on it and the rubber, non-slip feet must be in good condition. Return the ladder for repairs if it is defective.

1. The ladder must be held in place by one or more persons while being used, if it exceeds 9 m (30 ft.) in length and is not securely fastened.
2. The ladder must always be tied off to a support if possible.
3. The ladder must be designed, constructed, maintained and used properly to prevent injury to workers.
4. The ladder must extend at least 1 m (3 ft.) above the upper floor or landing place that it serves.
5. When placing ladders close to thoroughfares, install barricades and warning devices to protect passersby.
6. A ladder is not to be placed in front of door openings unless the openings are blocked or guarded
7. When placing ladders in doorways and exits, provide other entrances.
8. A ladder must be used so that the loads applied, will not over stress the materials used.
9. To position the ladder properly, use a 4:1 ratio. For every 1.2 m (4 ft.) in height, the foot of the ladder must be out 30 cm (1 ft.) from the vertical.
10. Secure ladders at the top and bottom with tie-offs. If tie-offs cannot be used, a standby worker must hold the ladder to prevent slippage and lateral movement.
11. Ensure the ladder sits squarely and without distortion on a firm footing.
12. Spike-feet ladders are to be used for soft surfaces.
13. Non-slip feet ladders should be used on hard, smooth surfaces. Use care as dirty non-slip feet can become slippery.
14. Ladders must be free from broken or loose parts or other faults.
15. A ladder must not be attached to another ladder to increase its length.
16. A ladder must not be used horizontally, as a platform, runway or scaffold or for any other purpose for which it was not designed.
17. A ladder must not be placed on boxes, barrels or other unstable bases.
18. Wooden ladders must not be painted, as the paint may hide defects.

LADDER RUNGS

- All ladders are to have rungs evenly spaced at 30 cm (12 inches) apart.
- Wooden rungs should be straight-grained material and free of knots.

STEP LADDERS

- The legs shall be fully extended and the spreader shall be locked.
- The top of the step ladder shall not be used as a step. The highest step to be used is the second from the top.

- The paint shelf is not to be used as a step.

PORTABLE LADDERS

- Will only support one person at a time.

WOODEN LADDERS

1. Wooden ladders should consist of wood that is straight grained and free from loose knots, sharp edges, splinters and shakes.
2. Wooden ladders must not be painted (preservatives on wooden ladders should be transparent, such as varnish shellac or clear preservative, so cracks and splits can be readily detected).
3. Have side rails of not less than 50 cm (18 in.) apart if it is the cleat type and shall have a nominal size of:
   a. not less than 5 cm by 10 cm (2 in. by 4 in.) where the ladder is not more than 5.8 m (20 ft.) long;
   b. not less than 5 cm by 15 cm (2 in. by 6 in.) where the ladder is over 5.8 metres (20 ft.) long.

METAL LADDERS

- Metal ladders must not be used or stored where there may be contact with an electrical source.
- Unpainted wooden or fibreglass protected ladders are the only type acceptable where contact with an electrical source is possible.

SAFETY CAGES

- A safety cage should be provided on all fixed ladders that extend more than 3 m (10 ft.) above the ground or platform.
- The lowest point of the ladder cage must be no more than 3 m (10 ft.) from a landing or the ground.

LADDER MAINTENANCE

1. Only knowledgeable personnel are allowed to maintain or repair ladders.
2. Ladders should be inspected frequently and those that have defects should be repaired or destroyed.
3. Ensure that defective ladders waiting for repairs are marked or tagged until the repairs can be made. (i.e., "DO NOT USE - DEFECTIVE")
4. Use linseed oil or clear varnish for wooden ladder coating and weather protection. Use only clear coatings because paint hides cracks and other flaws.
5. The joints between all sized parts should be tight, and hardware fittings securely attached.
6. The movable parts should operate freely, without binding or undue stress.
7. Metal bearings or locks, wheels, pulleys, etc., should be lubricated regularly.
8. Store wooden ladders only on an approved type rack and always protect them from the weather.
9. Ladders should be stored for easy access or inspection.
10. Wooden ladders stored in a horizontal position should be supported at enough points to avoid sagging and permanent set.

11. Wooden ladders carried on vehicles should be adequately supported to avoid sagging and securely fastened in place to minimize the effects of road shock. To prevent damage to ladders overhanging from vehicles, care must be exercised when backing up.
12. Wooden ladders should not be stored near radiators, stoves, steam pipes or other places subject to excessive heat or dampness.

SCAFFOLDING AND PLATFORMS

Where work cannot be done from the ground or from a building or other permanent structure, a scaffold or platform constructed according to the Occupational Health and Safety Act, shall be provided for the workers.

Ensure that:

1. the scaffold used is the correct one for the job
2. safe entry and exit have been provided to both the scaffold and the general work area (a separate ladder should be used for scaffold access)
3. the location in which the scaffold is to be constructed is level or provides secure footing
4. the scaffold has been erected and secured properly
5. legislative and manufacturer's requirements have been followed
6. tower scaffolds have outriggers or are guyed and have all component parts secured in place (i.e., cross braces, pins, lateral braces)
7. scaffold is square, straight & plumb in all directions
8. all scaffold components are tight and secure
9. levelling adjustment screws have not been over extended and lock nuts tightened
10. base plates & screws firmly supported on all legs
11. separate rope or hand line is in place at all platforms to raise and lower tools or material
12. warning devices/signs are provided if erected over walkway or roadways (reflective tape streamers or roped off)
13. minimum clearance from overhead power lines maintained according to OH&S regulations
14. rolling scaffold wheel brakes locked on each wheel
15. scaffold is not loaded more than the maximum designed load capacity

WOODEN SCAFFOLDING

1. any construction, alteration or design of the scaffolding must be done by qualified personnel, according to certified engineered drawings
2. the wood used to construct these scaffolds should be sound, close grained and planed on all sides (dressed lumber)
3. the scaffolding must be capable of supporting four (4) times the load that might be imposed on it
4. proper perimeter railings must be set in place, top rail, intermediate rail & toe board

SUSPENDED OR AERIAL SCAFFOLDING

- use individual safety lines which are independent of the scaffold support

- secure the anchor from which the scaffolding is suspended

PLATFORMS

A platform or ramp to which a worker has access and from which he may fall, from a vertical distance of 1.2 m (4 ft.) or more, shall be protected from open sides and ends by standard railing on all open sides, except where there is entrance to a ramp, stairway or fixed ladder.

1. the supporting parts of a working surface should be placed on a solid, smooth foundation to prevent lateral displacement. Masonry blocks, bricks or tiles should not be used as scaffold or platform supports.
2. planking must be construction grade no. 1 fir or equivalent material, of at least 38 mm by 235 mm (2 inch by 10 inch) finished, and the maximum span should not exceed 2.3 m (7.5 ft.) for heavy duty use and 3.1 m (10 ft.) for medium and light duty use.
3. planking used for working surfaces should be uniform in thickness and tightly laid. It should be supported to prevent excessive deflection, and secured to prevent tipping or displacement (CSA Standard 269.2-M87). Equivalent manufactured planking may be used if designed and approved by a Professional Engineer.
4. planks must be secured from movement by cleats or by being wired in place
5. planks must be kept clean and free of any obstructions that could cause slipping or tripping hazards

GUARDRAILS

Guardrails should be installed between 1 m (3 ft.) and 1.5 m (5 ft.) above floor, ground or platform level, with a mid-rail halfway between. Toe boards should be a minimum of 10 cm (4 in.) in height.

Requirement for Guardrails

1. a smooth surface top rail
2. shall be of such construction and mounting that they are capable of supporting at least 90 kg (200 lbs.) of lateral force
3. handrails shall be between 75 cm (30 in.) and 85 cm (33 in.) (handrails receiving additional stress from employees or material shall be supported by closer spacing of posts or bracing by other suitable means)

PRECAUTIONS

- work shall never be carried out on or under a scaffold or scaffold platform that is being erected, altered or dismantled
- never move the scaffolding when someone is working on it

WORKING IN THE SUN

The hazards identified with prolonged exposure to the sun's harmful rays include: sunburn, keratosis, skin cancer, and eye damage. To protect yourself from sun damage Personal Protective Equipment should be worn to protect the skin, head and eyes.

Safe Work Procedure

1. Wear a hat, long sleeved shirt and long pants. A hard hat is acceptable.
2. Wear tightly woven clothing covering as much of the body as is practical.
3. Where there is no danger of entanglement, clothing should be loose fitting, allowing sweat to evaporate.
4. Sunscreen will be provided for employees who work outdoors between the hours of 11:00 am and 4:00 pm.
5. Apply sunscreen with a sun protection factor (SPF) of 15 or higher on all exposed skin.
6. The sunscreen should be effective in filtering both UV-A and UV-B rays.
7. Sunscreen should be applied to dry clean skin 15 minutes before going out into the sun.
8. It should be re-applied every 2 hours, if employee is perspiring heavily.
9. Sunscreen should be worn between 11:00 am and 4:00 pm.

UTILITY CROSSINGS

Call before you dig! Before the commencement of work on an excavation the workers must establish the location of all underground pipelines, cables and conduits in the area where the work is to be done and have their location adequately marked. Requests for underground gas, telephone, electric, utility and pipeline site locates must be made at least 2 working days before excavation to have participants mark their underground facilities.

Avoid contact with buried pipelines and utilities by following safe excavating procedures. Types of underground or overhead facilities would include:

- gas line
- potable water line
- telephone line
- power line
- grounding cable
- overhead power lines
- structural cable supports
- guy wires
- cable television lines
- telephone lines

EXCAVATIONS/TRENCHING

Before a worker begins working in an excavation more than 1.5 m (5 ft.) in depth and closer to the wall or bank than the depth of the excavation, the following precautionary measures should take place to ensure that the worker will be protected from cave-ins or sliding materials according to the OH&S Regulations.

1. the cutting back of the walls of the excavation to reduce the height of the remaining vertical walls, if any, to not more than 1.5 m (5 ft.).
2. the installation of temporary protective structures, or

3. a combination of cutting back of the walls and the installation of temporary protective structures

SHORING

All excavations regardless of classification as to "trench" or "excavation" must be shored if the excavation is:

- more than 1.5m (5 ft.) in depth with vertical walls. All temporary protective structures must be certified by a Professional Engineer (See Occupational Health & Safety Act)

*** Experience has shown that walls have collapsed although earth conditions were judged to have sufficient stability for the construction of vertical walls.**

GUY WIRES

Guy wires erected by workers must be identified by hanging a sign from the wire warning of the low clearance.

TRAINING & RESPONSIBILITIES

All workers who may be required to work in or near an excavation/trench must be aware of the proper procedures and OH&S safety regulations required before digging can commence. Employees must be trained about the nature of the hazards to which they may be exposed.

TRAFFIC AND PEDESTRIAN SAFETY

To protect workers on site and individuals outside the construction area, protective barriers should be erected at the active limits of the construction site. Vehicle and pedestrian traffic should be directed away from the construction site. Applicable permits and authorizations must be obtained if required.

Work scheduling should avoid heavy traffic periods. If the volume of traffic is light and not likely to be influenced by the construction, scheduling is not usually a problem.

To warn traffic of hazards ahead, signs should be erected well ahead of the construction site. Signs should be placed strategically at key intersections and made easily visible. The use of barriers with flashing warning lights, cones, directional signs, warning signs, and flags is recommended. In heavy traffic and high speed areas, an employee should be used to direct traffic. Traffic must be stopped when the safety of either the driver or worker is threatened.

TRENCHING

Trenches are excavations in which the average depth exceeds the width.

A few general rules with respect to trench safety follow:

1. Shore trench walls and protect workers whenever shoring is being installed or removed.
2. Provide trench access and exits at 15.0 m (50 ft.) intervals for trench depths of 1.5 m (5 ft.) or greater.

3. Ladders should extend at least 0.75 m (3 ft.) above the trench top.
4. Ensure lengths of un-backfilled trench are minimized.
5. Control traffic.
6. Inspect the excavation for signs of lateral or vertical earth movement. Cracks or fissures paralleling the excavation are signs movement is occurring.
7. Watch for water entering the trench. Rain storms and other sources of water may weaken the strength of the walls. Isolate and be aware of sources of sudden inflow.
8. Ensure that qualified supervisors are on site at all times.
9. Inspect large construction sites on a daily basis.
10. Ensure that excavated material, or spoil material is kept at a distance from the edge of the excavation that is at least equal to the depth of the excavation or that a professional engineer has certified as safe.
11. Ensure that underground utilities are hand excavated to determine their location prior to excavating with machinery or equipment.

SHORING

Cave-in or slope failure of trenches is one of the major reasons for injuries to workers in trenches. Trench failures are caused by several factors such as:

1. Improperly shored trenches because of inexperience, haste, or negligence.
2. Inadequate shoring to restrain the trench walls.
3. Advanced trenching not followed closely by shoring.
4. Failure by workers or supervisors to recognize the instability of the soil.
5. Shoring not provided because the trench didn't appear deep enough.
6. Failure of shoring materials.
7. Spoil loading too great.
8. Undercutting of trench walls - A Professional Engineer is required to properly assess the need and the type of shoring for specific applications. Shoring may not be needed in all cases but failing to recognize the need can be catastrophic.

Methods of shoring are affected by:

a. Soil Structure and Strength;
b. Soil Moisture;
c. Weather and Moisture;
d. Stress;
e. Trench Depth and Width;
f. Time.

WORKING WITH HEAVY EQUIPMENT

There are several safety rules and precautions that must be observed when employees are working in, with, or around heavy equipment, such as dump trucks, backhoes, trenching machines, bulldozers, graders and front-end loaders.

1. The key should be removed from the ignition or a "lockout" system applied when not in use.
2. Place substantial blocking under any chain-hoist-suspended or jack-support equipment under which people must work.

3. Keep feet clear of passing automobiles or moving machinery when it is necessary to work underneath a car or other equipment. Always wear safety shoes.
4. Do not place yourself in a position where you may inhale excessive carbon monoxide gas from exhausts of running engines.
5. Provide proper ventilation.
6. Do not keep gasoline in open containers or pits. Store outdoors or in explosion proof containers.
7. Use a reasonably nontoxic solvent with a high flash point for cleaning parts. Never use gasoline or carbon tetrachloride.
8. Get help or use a hoist to lift unusually heavy loads.
9. Wear approved eye protection when needed.
10. Change clothes that become soaked with oil or gasoline; do not risk a fire.
11. Check that all lock washers and cotter pins are in place before deeming any maintenance work complete.
12. Always keep a suitable fire extinguisher ready. Inspect fire extinguishers regularly, and keep them in good operating order.
13. Enforce no-smoking rules.
14. Ground electrical tools, keep them in good working condition, and ensure that sparking will not ignite gases or vapours.
15. Put oily rags in closed metal containers for disposal, after use.
16. Use the proper tool for the job.

WORKING WITH CONTRACTORS

Much of the municipality's Roads and Disposal site maintenance work is contracted out to private contractors. The *Occupational Health and Safety Act* requires the municipality as principle contractor, to ensure that the work carried out by each of the contractors is in compliance with the Act and its regulations. The following points outline some of the basic things the Municipality can do to fulfill its obligations.

1. The contract documents should state in considerable detail that the contractor must comply with all safety standards established by law as well as the safety standards established by industry associations and the department's Health and Safety Program.
2. A breach of this condition will be a fundamental breach of the contract and subject to termination of the contract or other penalty.
3. Upon request, the contractor is required to provide a copy of its safety plan for the proposed work. The acceptable degree of detail in this plan will depend on the degree of risk of the activity and the usual practice in industry. The plan should be reviewed by the municipality and the contractor must be expected to comply with it.
4. Most importantly, the municipality should investigate and check on the contractor's safety performance. The frequency and detail of the monitoring by the municipal supervisor will depend on the nature of the work and the safety precautions specified. The municipality has a duty to reasonably satisfy itself that the safety specifications in the contract are actually being met.

WORKPLACE HAZARDOUS MATERIAL INFORMATION SYSTEM (WHMIS)

WHMIS is the Workplace Hazardous Materials Information System. It is a hazard communication program that is in effect across Canada.

The purpose of WHMIS is to make sure that workers and employers have the information they need to work safely with the hazardous materials at Ontario work sites. The materials included in WHMIS are called controlled products.

A controlled product is any product that meets the criteria for one or more of the six WHMIS hazard classes. Each class, except Class D, has a separate "hazard symbol". Class D has three hazard symbols - one for each of its divisions.

WHMIS has three components:

1. Labels
2. Material Safety Data Sheets (MSDS)
3. Worker Education

LABELS

There are two main kinds of WHMIS labels-supplier labels and work site labels.

Supplier Labels

Supplier labels are placed on all controlled products purchased from Canadian suppliers. They give the basic information needed for a worker to handle a product safely. Supplier labels can be recognized by their distinctive slash marked borders.

Supplier labels have 7 pieces of information:

1. Product name
2. Name and address of the supplier
3. Symbols for each of the product's hazard classes
4. Main hazards of the product
5. Precautions
6. First aid measures
7. Reference to the MSDS for more information

There are situations where the supplier label may be a bit different from the basic model. Controlled products in small containers (less than 100 ml) and laboratory chemicals are examples of these exceptions. Employers are required to teach workers about any of these variations that might be seen at the work site.

Work Site Labels

These labels are applied at the work site. They are used on controlled products that are transferred from suppliers' containers to worksite containers, and on controlled products that are manufactured at the work site. Work site labels are also used to replace supplier labels that have been damaged.
They are less detailed than supplier labels. Only three pieces of information are required:

1. Name of the product

2. Information on how to use the product safely
3. Reference to the MSDS for further information

In a few special cases, any form of clear identification, such as the name of the product, a colour code or a numbering system, may be used instead of a work site label. These include:

- Controlled products in pipes, reaction vessels, ore cars, on conveyor belts, and in or on other in-plant conveyance systems
- Controlled products that are transferred into work site containers, for use by one worker only, and that are used up during the shift when the container was filled.

Material Safety Data Sheets (MSDS)

1. The MSDS will provide more product information than can be found on the product label. These sheets have more detailed information about a product's properties, its hazards and how to keep from being overexposed to it.
2. WHMIS MSDSs have nine categories of information that must be provided. The blank MSDS form (pages 3.15-6 and 3.15-7) shows the nine categories, and the information that must be included for each of them.
3. An MSDS should be sent to a municipality with every new controlled product that it buys. In addition, every municipality will have developed an MSDS for any controlled product that it produces.
4. The MSDSs for all the controlled products at a work site must be kept in a place where workers can have easy access to them. Employers may transfer the information from suppliers' MSDSs to their own standardized MSDS form. This is done to make it easier for workers to find the information they want. If a municipality uses this practice, the MSDSs received from the supplier will be kept on file so that workers can refer to them if they wish.
5. There is no specifically required layout for the WHMIS MSDS, but each of the nine required categories of information must be included. More detailed information in each category must also be included, if available.
6. The MSDS must list all of the ingredients considered hazardous, along with their concentrations. These ingredients are included if:
    a. The most hazardous controlled product ingredients are listed if they make up more than 0.1% of the product.
    b. Other, less hazardous, controlled product ingredients are listed only if they make up more than 1% of the product.
    c. Ingredients that are included on the Ingredient Disclosure List (IDL), and that are present in the product at concentrations greater than the cut-off limits listed on the IDL.
    d. Ingredients that have not been tested for their toxic properties.
    e. Ingredients that the writer of the MSDS considers to be hazardous, even if they do not meet any of the first four conditions.
7. Much of the information on the MSDS is self-explanatory, but some terms may not be familiar to all workers. Supervisors should ensure that all workers are familiar with the terms used on each MSDS. The MSDS section on preventive measures provides information that is especially useful to workers.

a. Engineering Controls are measures for eliminating or reducing the hazards to which workers may be exposed. Examples include the substitution of less hazardous products, enclosure of processes to prevent the release of hazardous materials, or local exhaust ventilation to remove airborne contaminants at their point(s) of generation.
b. Spill/Leak Procedures specified on MSDSs are the steps to be taken in case of a spill or a leak of the controlled product.
c. Waste Disposal means effective and environmentally safe ways to dispose of waste that contains the controlled product.
d. Handling Procedures/Equipment specified on MSDSs are the basic precautions to be observed when handling the product or the basic equipment to be used.
e. Storage Requirements include special instructions for storing the product.
f. These instructions are designed to prevent "conditions of flammability, instability or reactivity" from developing.
g. Shipping Information includes special instructions for shipping the product safely. These instructions are designed to prevent "conditions of flammability, instability or reactivity" from developing.
h. The MSDS gives instructions for the specific first aid measures to be taken if a worker is affected by skin or eye contact or has been overexposed by ingestion or inhalation.
i. The name of the person or group who wrote the MSDS, their telephone number and the date that the MSDS was prepared is also given. This allows the worker to get further information about the product if necessary.

Vehicle Operation PROCEDURES

Driving Municipal Vehicles (or personal vehicle while on Municipal business)

1. When the vehicle is in motion the employee must wear the seat belt at all times and in a proper fashion, even when travelling short distances.
2. Do not operate the vehicle until and unless all passengers (if any) have seat belts fastened.
3. When leaving the vehicle, make sure that it is properly immobilized and the vehicle engine has been turned off.
4. When stepping out, check for uneven road surfaces, debris scattered on the road and/or slippery surfaces.
5. If the vehicle has adjustable steps on the rear, they should be in the raised position at all times when not being used for access to the truck bed.

Handling Traffic

1. Always look before entering any roadway. Cars, trucks, bicycles, children may be hidden behind obstructions. Remember, the majority of motorists are in a hurry and may not yield the right of way to the municipal vehicle.

2. For personal safety, wearing a reflective fluorescent vest with tear away straps over other clothing will increase the chance of being seen at all times.

Maintenance

1. Steps should be constantly inspected for any build-up of ice, grease etc. and kept free of any slipping hazards. Report any damaged steps and have worn step surfaces repaired.
2. Each worker is to perform safety inspections in their areas of responsibility on a regular basis and report deficiencies to your supervisor or Health and Safety representative.
3. Fire extinguishers and first aid kits are to be available in the Municipal vehicle and inspected monthly.

The Driver

1. It is the responsibility of each employee who drives a municipal vehicle to have the appropriate class of Provincial License.
2. It is also necessary to develop the knowledge and skills required to make defensive and safe driving practices a habit.
3. Vehicles must be checked and maintained properly.
4. Drivers should always show courtesy to pedestrians and other drivers and take pride in developing driving skills.
5. Drivers must know and automatically observe all traffic regulations.
6. Road tests and training should be given after an employee has had an accident to detect and correct unsafe driving habits.
7. Drivers must refuse to drive any unsafe vehicle and report deficiencies to their supervisor.

Preparing to Drive – Safety Circle Check

1. Before driving a vehicle each day, a worker must make a safety check. This includes lights, horn, muffler, defrosters, tires, wipers, oils and fluid levels. Mirrors, seat belts and seats must be adjusted to a comfortable position.
2. After the engine is started, the brakes, steering and turn indicators should be checked before entering traffic.
3. Vehicles should be equipped, as required by local law, with flares, flags, first aid kits, and fire extinguishers.
4. Trucks must also have suitable clearance lights and reflectors.
5. Vehicles used for construction and maintenance work should have adequate flashing or revolving lights to assure visibility.
6. Accident reporting forms, maintenance report forms and log books should be in each vehicle. Drivers must be instructed on how to use them.
7. If vehicles are to be used for transporting workers, proper seating must be provided for each passenger. Employees must not ride in truck boxes, on running boards or in equipment buckets.

ACCIDENT PREVENTION

The following suggestions will help to prevent accidents:

Intersections

1. Approach intersections with foot off the throttle and poised over the brake.
2. If applicable, especially if the light is "stale" green, or if the intersection is blind or uncontrolled. (A stale green light is one that was green when a vehicle reached the intersection).
3. First look left, then right, then left again.
4. In uncontrolled intersections always yield to the vehicle on the right.
5. Never assume the right-of-way; if in doubt always yield it.

Passing

1. Check for clearance ahead and behind, before passing.
2. Accelerate and pass, and return to the correct lane as quickly as possible. Usually the passed vehicle should appear safely in the rear view mirror.

Reversing

1. Make sure that back up alarms are installed on all vehicles except passenger vehicles.
2. If possible, park in a position that will not require backing.
3. If backing is necessary, be sure it is possible to do so safely. The employee is responsible for ensuring that the vehicle path is clear. Use mirror and visual checks to look behind. If any doubt exists, get out and look or use another person to assist.
4. If rear vision is restricted, have someone direct, using prearranged signals. Stop if the person guiding is no longer visible.
5. Always reverse at a walking pace, especially in areas with high traffic or pedestrians.

Bad Weather

1. Rainstorms can cause slippery pavement before the oil film on the road is washed away.
2. Always slow down when roads are wet, icy or snow covered.
3. Pump brakes gently on slippery surfaces. Do not depend on automatic braking systems to prevent skids.
4. If a vehicle skids, ease up on the gas. As traction is gained, steer gently in the direction of the skid. Add power smoothly and steer gently into the proper lane.
5. Front-wheel drive vehicles may require some acceleration to recover from a skid.

Following Too Close

1. Use the defensive-driving three-second interval rule to maintain a safe distance from the vehicle ahead. (Four-second rule for trucks over one half ton)
2. "Drive ahead" by watching the cars ahead of the one being followed.

3. Large vehicles restrict visibility and should be followed at longer distances.
4. Accidents can usually be avoided if drivers follow the rules listed above and remain attentive at all times.

Refueling Vehicles

1. Stop the engine
2. To avoid static sparks, insert the hose nozzle firmly in the tank, and make metallic contact.
3. Smoking is prohibited when delivering or receiving gasoline.
4. Hold the nozzle throughout the delivery to prevent spillage.
5. Maintain tight connection in the hose and nozzle to eliminate all leaks.
6. Do not allow the tank to overflow.
7. Drain the hose before removing the nozzle.
8. Hang the nozzle securely, and cap the tank tightly.
9. Change gasoline saturated clothing immediately to prevent burns or skin injury.

Inflating Truck and Car Tires

1. Always set the emergency brake and turn off the engine before inflating vehicle tires.
2. Thoroughly inspect tires before inflating. If obvious weak spots exist in the casing, have a qualified person inspect the tire.
3. Know and use the pressure recommended for each tire.
4. Use a reliable pressure gauge. Rough handling or cold weather may affect gauge accuracy.

If you have any doubts about any situation – talk to your supervisor before proceeding. Learn how to work and stay safe. Remember, it is your duty to report any accident or incident within the scope of your position. We cannot take corrective measures if we are not aware of the hazard.

APPENDIX A - ROUTINE BUSINESS CHECKLIST

Are your housekeeping habits up to par?

Floors and other surfaces

1. Are floors kept clean and clear of waste?
2. Are signs posted to alert workers when floors are being washed?
3. Are floors in good condition, i.e. there are no holes, worn planks or loose boards?
4. Is anti-slip flooring used where floors cannot be kept clean because of the nature of the work, e.g. where floors are awash with liquid, grease or oil for extended periods?

Storage

1. Are there places to store all materials and supplies that are safe and accessible?
2. Is material stacked securely, blocked or interlocked, if possible?
3. Are materials stored in areas where stairs, fire escapes, exits or firefighting equipment will not be obstructed?
4. Are materials stored in areas that do not interfere with the flow of people or material?
5. Are bins or racks provided where material cannot be piled?
6. Are all storage areas clearly marked?
7. Do employees understand the storage and handling procedures for all materials used in the workplace, e.g. Are flammables kept in clearly marked and approved containers in designated storage areas?

Aisles and stairways

1. Is there a well-defined system of traffic in the workplace?
2. Is the workplace lighting adequate?
3. Are aisles unobstructed and clearly marked?
4. Are convex mirrors installed at those corners where there is a chance of collision?
5. Are aisles wide enough to accommodate people and vehicles comfortably?
6. Are stairs well-lit?
7. Are stairs covered with an anti-slip tread?
8. Are faulty stair treads repaired or replaced as soon as possible?

Waste removal

1. Are safe loading practices enforced when hand and power trucks, skids, or pallets are used?
2. Are waste containers placed in convenient locations, i.e. Where the waste is produced?
3. Are waste containers emptied regularly?

Fire prevention

1. Are combustible materials present only in the quantities needed for the job at hand and kept in safety cans during use?

2. Are combustible materials otherwise stored in safe containers in storage rooms that are away from ignition sources?
3. If there are no sprinklers, is there at least a metre of clear space between stored material and the ceiling?
4. Are fire extinguishers located along commonly travelled routes and close to possible ignition sources?
5. Are oily or greasy rags placed in metal containers before being regularly disposed of?

Spill Control

1. Are all spills wiped up quickly?
2. Are spill absorbents used for greasy or oily material?
3. Are used absorbents disposed of promptly and safely?
4. Are tools and machinery inspected regularly for sources of leaks?
5. If leaks can't be stopped at the source right away, are drip pans or absorbent materials used?

Equipment maintenance

1. When equipment problems are found, are they fixed as soon as possible?
2. Are machines and tools cleaned regularly?