

DEPARTMENT OF
TRANSPORTATION AND
INFRASTRUCTURE
HEALTH AND SAFETY MANUAL



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FOREWARD

This internal document provides a general description of the health and safety program of the Department of Transportation and Infrastructure. Throughout the manual, other sources of information may be referenced. These sources of information, such as Internal Departmental manuals, NBOH&S Act and Regulations and CSA Standards should be consulted when required for more detailed and specific information.

The manual has been prepared for informing all employees of required Departmental policies, procedures and other applicable health and safety legislation.

The goal of the Department is to ensure a healthy and safe work environment for all employees and prevent occupational illness and injury and serves to consolidate many of the department’s policies and guidelines into one resource.

This manual is the property of the New Brunswick Department of Transportation and Infrastructure (NBDTI), and, as such, does not accept any responsibility for unauthorized reproduction or use of this manual.

For the most current version of this manual refer to the Health and Safety services in the Human Resources section of the NBDTI Intranet.

<https://internal.dti.gnb.ca/hr/Safety/safety-e.asp>

To confirm the manual has been updated, please fill the table below when changes have been added.

**Field Updates*

Year/ Month/ Day	Updates Added	Print Name	Signature

**Revision Tracking (HSU Use Only)*

Rev	Sections Changed	Change Made	Name	Date
1.0	All	New Manual Created	Brent Lyons	2021
2.0	3,4,5,11,10,14	3.17,3.18,3.19,3.20,4.15,4.10,4.13,4.14 5,11,F-8-5,F-10-5,14-6-3,14-6-4	Brent Lyons	2022

NEW BRUNSWICK TRANSPORTATION AND INFRASTRUCTURE – INTERNAL POLICY MANUAL

Number:	02-0130	Approved:	<u>Original signed by</u>
Subject:	Wellness, Health and Safety		John P. Logan
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OBJECTIVE

The Department of Transportation and Infrastructure (DTI) values its employees and recognizes the importance of ensuring a safe and healthy workplace by promoting a proactive, planned and sustained approach to health and safety for all employees. This can be achieved by the integration of health and safety into all planning and operational activities, and by ensuring that managers, supervisors and employees at all levels of the organization understand and fulfill their responsibilities to achieve the organization's safety objectives.

DTI commits to providing a safe and healthy workplace to all employees and will work in the spirit of cooperation with employees, unions, and joint health and safety committees.

APPLICATION AND SCOPE

This policy applies to all DTI employees.

RELATED LEGISLATION

Occupational Health and Safety Act

ACCOUNTABILITIES

Senior management is committed to ensuring a safe and healthy work environment for all employees by requiring managers and supervisors to implement appropriate control measures and precautions, and by establishing accountability through clear safety objectives.

Managers and supervisors are responsible to inform their employees on all applicable Acts and Regulations and to ensure that these are followed. It is the same for all applicable rules, practices, procedures and policies. They must also adequately supervise and ensure that each employee has the necessary tools, equipment and training to safely perform their assigned duties.

Employees are responsible to take an active role in workplace health and safety by immediately reporting to their supervisor/manager any hazard, incident, accident, injury or near miss related to the workplace. They must comply with all applicable Acts, Regulations, rules, practices, procedures and policies. They must also conduct themselves in a safe manner to create a safe and healthy workplace for themselves and others.

The DTI Wellness, Health and Safety Program provides the standards, procedures, rules and guidelines supporting this policy. The program will be reviewed on an annual basis to comply with the *Occupational Health and Safety Act*.

RELATED INFORMATION

DTI Health and Safety Manual, Workplace Area Traffic Control Manual (WATCH), Highway Maintenance Manual, Bridge Maintenance Manual, Ferry Operations Manual, Snow Fighter Manual, and other applicable manuals.

INQUIRIES

Wellness, Health and Safety Services
Joint Health and Safety Committee

1.1 Overview

The Department of Transportation and Infrastructure is committed to promoting and achieving a safe working environment for its employees and the public. Departmental policies and guidelines have been developed to be consistent and in compliance with the Occupational Health & Safety Act and Regulations.

Health and Safety are an integral part of everyday operations and tasks. In addition to everyday management and supervision, management supports and promotes health and safety in the workplace through 3 specific groups:

- Wellness Health and Safety Unit
- the Joint Health and Safety Committees
- the Wellness Committees

Management also supports various initiatives and programs to achieve its goals such as:

- Departmental Strategy Map
- Performance Management: inclusion of health and safety in individual workplans and annual reviews
- Promotion of targeted health & safety initiatives
- Disability management & return to work program
- Communication (bulletins, alerts, procedures, etc.)
- Financial Support
- Safety Awards Program

The Department has developed a Health & Safety Program based on the principles of the “Internal Responsibility System” (IRS). IRS is a system in which workplace stakeholders, including management and employees, work together for their own health and safety. This system stresses the need for employee participation, ensuring that all parties contribute to the organization’s success. Most program elements can be found in DTI’s Health and Safety Manual.

The Department uses various tools to establish the Wellness Health and Safety program objectives. These include but are not limited to the GNB objectives, periodic employee surveys, and health and safety statistics. Using the GNB Strategy Map, senior management, in conjunction with the Health and Safety Unit, establishes the Departmental health and safety objectives.

Employees at every level, including management, are responsible and accountable for the Department’s overall safety initiatives. Complete and active participation by everyone, everyday, in every job is necessary for the safety excellence the Department

expects. All employees will be made aware of their rights and responsibilities during their orientation. See *chapter 8 .3 Health and Safety Orientation*

The Department has developed a comprehensive orientation program where all persons hired will receive instruction in their responsibilities, the sections of the OHS Act that apply to them, the basic rights, and the hazard reporting system that they are encouraged to use during their employment with the organization.

1.2 Responsibilities

The New Brunswick Occupational Health & Safety Act contains the guiding principles for the Department's Wellness Health and Safety program and legal obligations. Below are summaries of important sections.

Owners

Every owner of a place of employment or part thereof shall

- Comply with this Act, the regulations and any order made in accordance with the Act or the regulations
- Take every reasonable precaution to ensure the health and safety of any person having access to or using that place of employment or part thereof.

Contracting Employer

A contracting employer who directs the activities of one or more employers involved in work at a place of employment shall

- Ensure, as far as is reasonably practicable to so do, that each employer complies with the Act and the regulations in respect of that place of employment.
- Comply with the Act, the regulations and any order made in accordance with the Act or the regulations

Employer

- Take every reasonable precaution to ensure the health and safety of his or her employees;
- Comply with the Act, the regulations and any order made in accordance with the Act or the regulations
- Ensure that his or her employees comply with the Act, the regulations and any order made in accordance with the Act or the regulations.
- Ensure that the necessary systems of work, tools, equipment, machines, devices and materials are maintained in good condition and are of minimum risk to health and safety when used as directed by the supplier or in accordance with the directions supplied by the supplier
- Ensure that the place of employment is inspected at least once a month to identify any risks to the health and safety of his or her employees;
- Acquaint an employee with any hazard in connection with the use, handling, storage, disposal and transport of any tool, equipment, machine, device or biological, chemical or physical agent

- Provide the information that is necessary to ensure an employee's Wellness Health and Safety
- Provide the instruction that is necessary to ensure an employee's Wellness Health and Safety
- Provide the training that is necessary to ensure an employee's Health and Safety
- Ensure that work at the place of employment is competently supervised and that supervisors have sufficient knowledge of all of the following with respect to matters that are within the scope of the supervisor's duties:
 - the Act and any regulations under this Act that apply to the place of employment;
 - any safety policy for the place of employment;
 - any health and safety program for the place of employment;
 - any health and safety procedures with respect to hazards in connection with the use, handling, storage, disposal and transport of any tool, equipment, machine, device or biological, chemical or physical agent by employees who work under the supervisor's supervision and direction;
 - any protective equipment required to ensure the health and safety of the employees who work under the supervisor's supervision and direction
 - any other matters that are necessary to ensure the health and safety of the employees who work under the supervisor's supervision and direction
- Ensure that work at the place of employment is sufficiently supervised
- Provide and maintain in good condition such protective equipment as is required by regulation and ensure that such equipment is used by an employee during work
- Co-operate with a committee, where such a committee has been established, a health and safety representative, where such a representative has been elected or designated, and with any person responsible for the enforcement of this Act and the regulations.
- Develop a program for the inspection with the joint health and safety committee, if any, or the health and safety representative, if any, and shall share the results of each inspection with the committee or the health and safety representative.

Supervisors

Every supervisor shall

- Take every reasonable precaution to ensure the Wellness Health and Safety of the employees who work under the supervisor's supervision and direction
- Comply with the Act, the regulations and any order made in accordance with the Act or the regulations;
- Ensure that the employees under the supervisor's supervision and direction comply with the Act, the regulations and any order made in accordance with the Act or the regulations;
- Co-operate with a committee, if a committee has been established, a health and safety representative, if a representative has been elected or designated, and any person responsible for the enforcement of the Act and the regulations.

- Acquaint the employees under the supervisor's supervision and direction with any hazard in connection with the use, handling, storage, disposal and transport of any tool, equipment, machine, device, or biological, chemical or physical agent
- Provide the information that is necessary to ensure the wellness Health and Safety of the employees under the supervisor's supervision and direction
- Provide the instruction that is necessary to ensure the Wellness Health and Safety of the employees under the supervisor's supervision and direction.

Employees;

Every employee shall

- Comply with the Act, the regulations and any order made in accordance with this Act or the regulations;
- Conduct them self to ensure their own health and safety and that of other persons at, in or near his or her place of employment;
- Report to the employer or supervisor the existence of any hazard of which he or she is aware
- Inspect, wear or use protective equipment as is required
- Consult and co-operate with the committee where one has been established or with the health and safety representative where one has been elected or designated
- Co-operate with any person responsible for the enforcement of the Act and regulations.

Supplier

Every supplier shall

- Take every reasonable precaution to ensure that any tool, equipment, machine or device or any biological, chemical or physical agent supplied
 - is reasonably safe when used as directed by the supplier or in accordance with the directions supplied by the supplier, and
 - complies with this Act and regulations;
- Provide directions respecting the safe use of any tool, equipment, machine or device or any biological, chemical or physical agent obtained by an employer to be used at a place of employment by employees; and
- Ensure that any biological, chemical or physical agent supplied by him is labelled in accordance with the applicable federal and provincial regulations.

Contractor and Subcontractor

Every contractor and sub-contractor shall

- Comply with the Act, the regulations and any order made in accordance with the Act or the regulations;
 - for every project site for which he is responsible take every reasonable precaution to ensure the health and safety of any person having access to such project site.

1.3 Due Diligence

Due diligence is the level of judgement, care, prudence, determination, and activity that a person would reasonably be expected to do under particular circumstances.

Applied to occupational health and safety, due diligence means that employers shall take all reasonable precautions to prevent injuries or incidents in the workplace. This duty also applies to situations that are not addressed elsewhere in the occupational health and safety legislation. Reasonable precautions are also referred to as reasonable care. It refers to the care, caution, or action a reasonable person is expected to take under similar circumstances.

Another term used is employers must do what is "reasonably practicable". Reasonably practicable means taking precautions that are not only possible, but that are also suitable or rational, given the particular situation. To exercise due diligence, an employer must implement a plan to identify possible workplace hazards and carry out the appropriate corrective action to prevent incidents or injuries arising from these hazards.

"Due diligence" is important as a legal defense for a person charged under occupational health and safety legislation. If charged, a defendant may be found not guilty if he or she can prove that due diligence was exercised. In other words, the defendant must be able to prove that all precautions, reasonable under the circumstances, were taken to protect the health and safety of workers.

Due diligence is demonstrated by your actions before an event occurs, not after.

The conditions for establishing due diligence include several criteria:

- The employer must have in place written OH&S policies, practices, and procedures. These policies, etc. would demonstrate and document that the employer carried out workplace safety audits, identified hazardous practices and hazardous conditions and made necessary changes to correct these conditions, and provided employees with information to enable them to work safely.
- The employer must:
 - provide the appropriate training and education to the employees so that they understand and carry out their work according to the established policies, practices, and procedures.
 - educate and train the supervisors to ensure they are competent persons, as defined in legislation.
 - Ensure that managers and supervisors:
 - talk to new employees about safety during orientation training.
 - meet regularly with staff to discuss health and safety matters.
 - inspect areas of the workplace under their responsibility and respond promptly to unsafe conditions and activities.
 - pay attention to routine and non-routine activities, ensuring that employees understand the hazards and the preventative measures to be followed.
 - monitor the workplace and ensure that employees are following the policies, practices and procedures. Written documentation of

progressive disciplining for breaches of safety rules is considered due diligence.

- have an incident (accident) investigation reporting system and investigation program in place. Employees are required to report all types of incidents including "near misses" and these should be investigated also. Acting on the recommendations, as well as incorporating information from these investigations into revised, improved policies, practices and procedures will also establish the employer is practicing due diligence.
- must document, in writing, all of the above activities. This documentation will give the employer a history of how the company's occupational health and safety program has progressed over time. Second, it will provide up-to-date documentation that can be used as a defense to charges in case an incident occurs despite an employer's efforts.
- must also ensure that all people who are at the workplace are included, such as contractors, visitors, students/interns and volunteers.
- There are obviously many requirements for the employer, but workers also have responsibilities. They have a duty to take reasonable care to ensure the safety of themselves and their coworkers - this includes following safe work practices and complying with regulations.

All of the elements of a "due diligence program" must be in effect before any incident or injury occurs. Remember, due diligence is demonstrated by your actions before an event occurs, not after.

Due Diligence Documentation

Written documentation is essential. Records, reports and documentation for the following activities can include:

- Worker orientation, education, and training.
- Workplace inspections, including corrective actions taken.
- Incident reports, including corrective actions taken.
- Supervisor notes (e.g., supervisor inspections, meetings with workers or contractors regarding safety, etc.).
- Health and safety committee meeting minutes.
- Equipment log books and maintenance records.
- Emergency response drills and exercises.
- Instructions or safe work procedures, including any changes.
- Forms and checklists used when following safe work procedures (e.g., confined space entry permits).
- Sampling and monitoring records from exposure testing.
- Statistics about the frequency and severity of injuries, etc.
- Enforcement of health and safety rules and procedures.

Remember: Ignorance of the law is no defence and misinterpretation of the law is not a defence. The only defence will be due diligence, that is within the scope of the worker.

1.4 Employee Health and Safety Rights

Under New Brunswick's Occupational Health and Safety Act, all workers have 3 basic Rights;

1. **The Right to know** – about hazards in the workplace, the right to be informed about, actual and potential dangers in the workplace
2. **The Right to Participate** – Every worker has the right to participate in safety meetings when it concerns his/her safety. The primary purpose is to involve workers and their employers in the exchange of safety information.
3. **The Right to Refuse** – Every worker has the right to refuse work when there is reasonable grounds for believing that the act is likely to endanger themselves or the health and safety of another person.

All workers have the right to refuse work that they have reasonable grounds to believe might endanger their health or safety, or the health or safety of others. Exercising this right is serious and should not be done lightly or as a routine method of solving workplace problems. A worker cannot be disciplined for exercising their right to refuse.

All parties involved in a work refusal must follow the Right to Refuse process and document the process.

When an employee has exercised their Right to Refuse the task may be assigned to another worker if the employee is advised:

1. That another worker has refused the task;
2. Why the worker has refused the task;
3. That he/she also has the right to refuse the task.

Every worker has the right to make a complaint or file a grievance as set out in the Occupational Health & Safety Act.

The general steps to take are as follows:

1. **Report immediately to your supervisor or person in charge giving your reasons for refusing to do the work. Stay at your workplace for your normal working hours. Your concerns should be written.** If the employer resolves the matter to your satisfaction, go back to work.

If your concern has not been addressed or you still believe the work is dangerous.

2. **Bring the matter to the attention of the joint health and safety committee, if it exists, as soon as possible, giving the reasons for refusing to do the work.** This must be done in writing. If the committee resolves the matter to your satisfaction, go back to work.

If your concern has not been addressed, or you still believe the work is dangerous.

3. **Call WorkSafeNB at 1 800 999-9775 and explain your situation. An officer will investigate.** Potential outcomes after investigation:

- Officer finds the working conditions are not dangerous, go back to work.
- Officer believes the work is dangerous; he will issue an order to the employer to improve the working condition. When the officer finds that the order has been carried out and the working conditions are no longer dangerous, go back to work.
- The decision of an officer can be appealed to the Chief Compliance Officer and then to the Appeals Tribunal. While the refusal is being investigated, the employer may assign the worker to other work. See section 22(1) of the Act. The employer must not assign someone else to do the work that has been refused unless the second worker is told of the first refusal, the reasons for it and his or her right to refuse hazardous work under the Act. See section 21(2) of the Act.
- If you are discriminated against for exercising your right under the Act, you may file a complaint with WorkSafeNB. They will appoint an arbitrator to hear the matter.

Note: Department employees and management are encouraged to consult with the **Wellness Health and Safety Unit** at any time they have a concern or issue regarding health and safety.

1.5 Joint Health and Safety Committee

A joint health and safety committee (JHSC) is a group of worker and employer representatives working together to identify and solve health and safety problems at the work site. The committee is an important communication link between workers and management. Active, involved employees can create and maintain interest in health and safety, and establish positive attitudes throughout the work force. An effective JHSC can help reduce losses resulting from accidents and occupational illness.

The department has several JHSCs throughout the province which are set up in a manner to best represent the employees and management in various work units.

A Departmental JHSC meeting provides a forum for these groups to share safety information and innovation as well as adding to the strength of the program at a corporate level. The department encourages employees to put their name forward for JHSC participation.

The Wellness Health and Safety Consultants will sit in on several meetings per year as a non-voting guest offering advice and guidance as technical experts.

Role of Joint Health and Safety Committees

The principal duties and responsibilities of the committees are:

- Actively work to promote Health and Safety Initiatives.
- Annual review of the Health and Safety Program.
- Review make recommendations and follow-up on a variety of health and safety issues, incident investigations, and concerns or complaints.
- Investigate and report on any right to refuse that is brought to their level.
- Aid the department in the development and review of codes of practice, procedures and other health and safety related policies.
- Help to maintain a positive working relationship between the employee and management groups.
- Help Identify potential or hazardous situations in the workplace through activities the review of reports such as workplace inspections, accident investigations and information analysis.
- Help identify potential or hazardous situations in the workplace through activities such as conducting workplace inspections, doing information analysis or reviewing reports as determined by management.
- Evaluate these potential hazards and situations, giving particular attention to employee concerns, complaints and recommendations.
- Recommend corrective plans by participating in the development of assessment and control programs, discussing problems, recommending solutions, and providing input into existing and proposed health and safety programs.

Other duties and powers include:

- **Workplace inspections:** Regular or scheduled inspections help identify hazards. Employers must ensure that health and safety inspections are conducted monthly, and that a plan for these inspections is developed in conjunction with the JHSC. Results of these monthly health and safety inspections must be shared with the JHSC.
- **Accident investigation:** The JHSC reviews all incident investigation reports or summaries and some committee members could be trained and designated to investigate accidents, especially those resulting in fatalities or critical injuries.
- **Right to refuse investigations:** Trained committee members must be available to promptly investigate a right to refuse situation and recommend appropriate remedial action.

Selection of Members

Management selects and appoints their employer representatives including their co-chair. Employee representatives, and their co-chair, are chosen either thru vote of the employees or by appointment (All committee members have to attend a WSNB approved JHSC training session within 1 year of being appointed to the JHSC).

Terms of Reference

Each committee is required to establish and file a Terms of Reference with the Wellness Health and Safety Manager and ensure the document is reviewed on an annual basis.

Composition

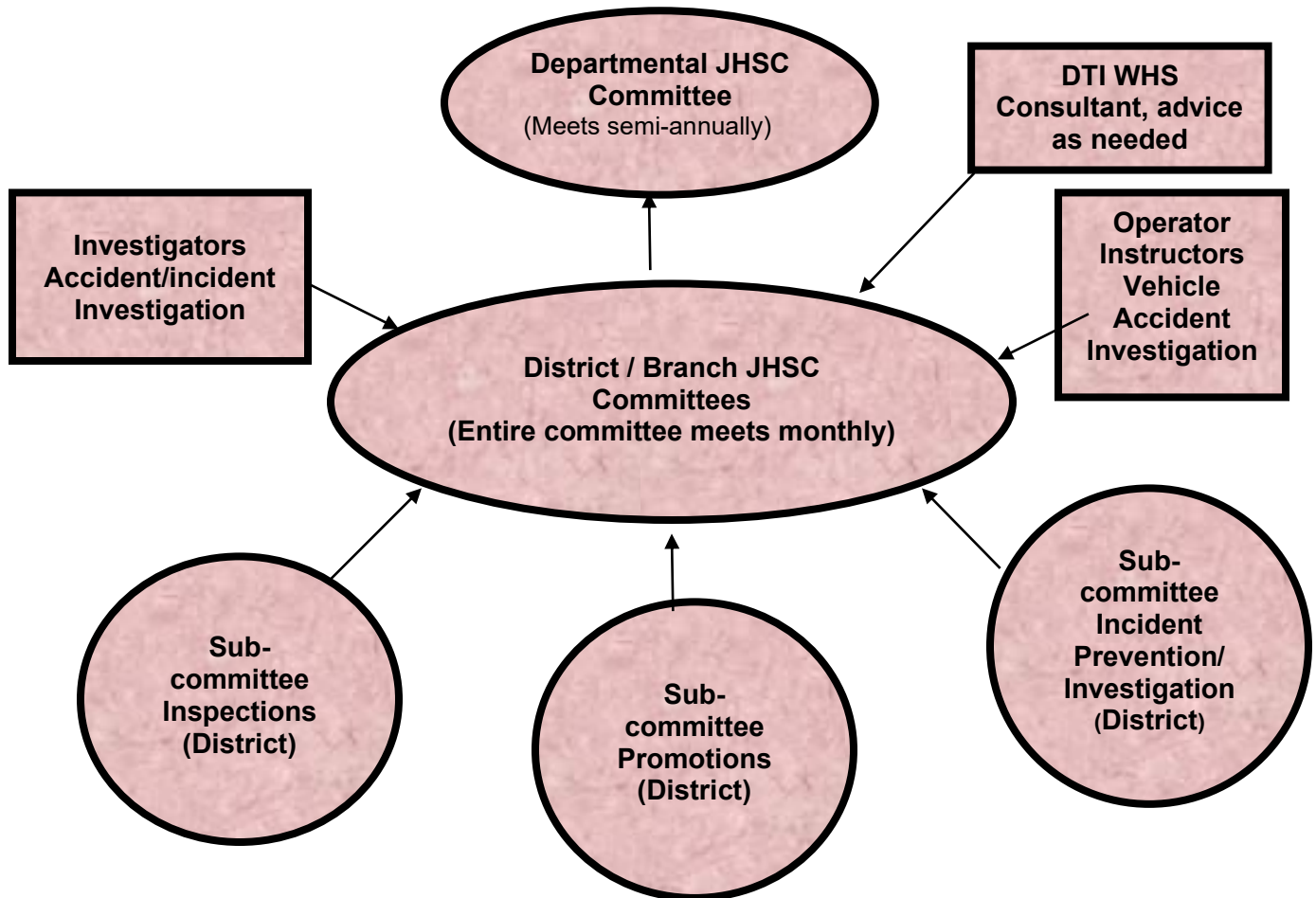
- The committee normally consists of 4 plus members; each having an alternate.
- There must be equal representation from the employer and employee groups.
- The membership would represent the geographical and occupational makeup of the region and is open to any employee. Good communicators, peer group leaders, and those who show genuine concern for health and safety matters are good candidates.
- Member terms are three years in duration. In order to maintain experience within the membership, there will ideally be no more than a 25% rotation of members each year. Former members may be appointed after an absence of one year.
- A recording secretary may be appointed to the committee to prepare meeting minutes, correspondence and keep records as required by the committee. The recording secretary should have an alternate to attend meetings in his / her absence.

JHSC Executive

- The Committee Executive consists of one co-chairperson from each of the employer and employee groups and a secretary.
- The co-chairpersons are responsible to prepare, plan and chair the monthly committee meetings.
- They must ensure agenda items are covered in a thorough and timely manner and that items recorded on the minutes are resolved in a timely manner.
- The co-chairpersons act as a liaison between the JHSC and District / Branch Management.
- The secretary is responsible to take, prepare and distribute minutes and prepare other committee correspondence. The secretary is also responsible to maintain file(s) of committee information.
- Members of the executive normally serve a two-year term and are elected by their respective groups.

Committee Structure and Functions

Following is an illustration of the JHSC structure in the Department:



Sub-committees

To support the JHSCs, a system of subcommittees is established. These subcommittees consist of 2 to 4 members from the regular committee. Subcommittee meetings would preferably occur just prior to full committee meetings and the subcommittee chairperson would report at the monthly committee meeting or as required by activities. Sub committees should be established for all of JHSC's however if a sub-committee is not established, the functions of the sub committees must be taken on by the JHSC.

1. Promotions/Wellness Sub-Committee

This sub-committee is responsible to recommend and develop promotional programs and/ or materials to the full JHSC to increase awareness of workplace

risks. This group looks at ways of getting more employees interested in wellness, health and safety, and familiar with the department's health and safety program, policies and procedures.

The Subcommittee may;

- Promote physical and psychological wellness of DTI employees by;
 - liaising with the DTI and GNB Wellness Consultants
 - posting wellness information in health and safety bulletin boards
 - promoting and helping to organize local wellness activities
- Look at incident trends in the work area or province;
- identify high risk activities through consultation to help develop safe work procedures;
- Review longer term incident trends to look at preventative measures;
- Track safety talks and employee understanding the H & S Message;
- Audit H & S initiatives to see if objectives are being met
- Help organize NAOSH and physical and psychological health week activities in their area.
- Help identify and take on other tasks to promote H & S in consultation with senior management;
- Review sections of OHS legislation to see if we are in compliance or make suggestions to achieve compliance. Etc.

2. Inspections Sub-Committee

The role of this subcommittee is to review monthly *Worksite Inspection* reports submitted by each crew/ work unit as well as reports from other agencies such as WSNB, fire marshal etc. This sub-committee will meet on a monthly basis at a convenient time (e.g. just prior to the monthly JHSC meeting).

The Subcommittee reviews the reports to identify:

- New problems/ issues and/ or issues not being addressed
- Potential barriers and work units not submitting reports
- Acknowledgement of work units resolving their safety issues
- Common issues, which may require review / development of procedures.
- Recommendations to the JHSC for specific action/ review of apparent work place risks/ review of inspection process.

Annually the subcommittee, based upon ongoing review of the inspection reports, will identify specific work units for an inspection by the sub-committee. The subcommittee maintains reports of their ongoing reviews as well as those work units that they inspect. There should be a rotation in which all areas are formally inspected by the subcommittee every 2 to 3 years.

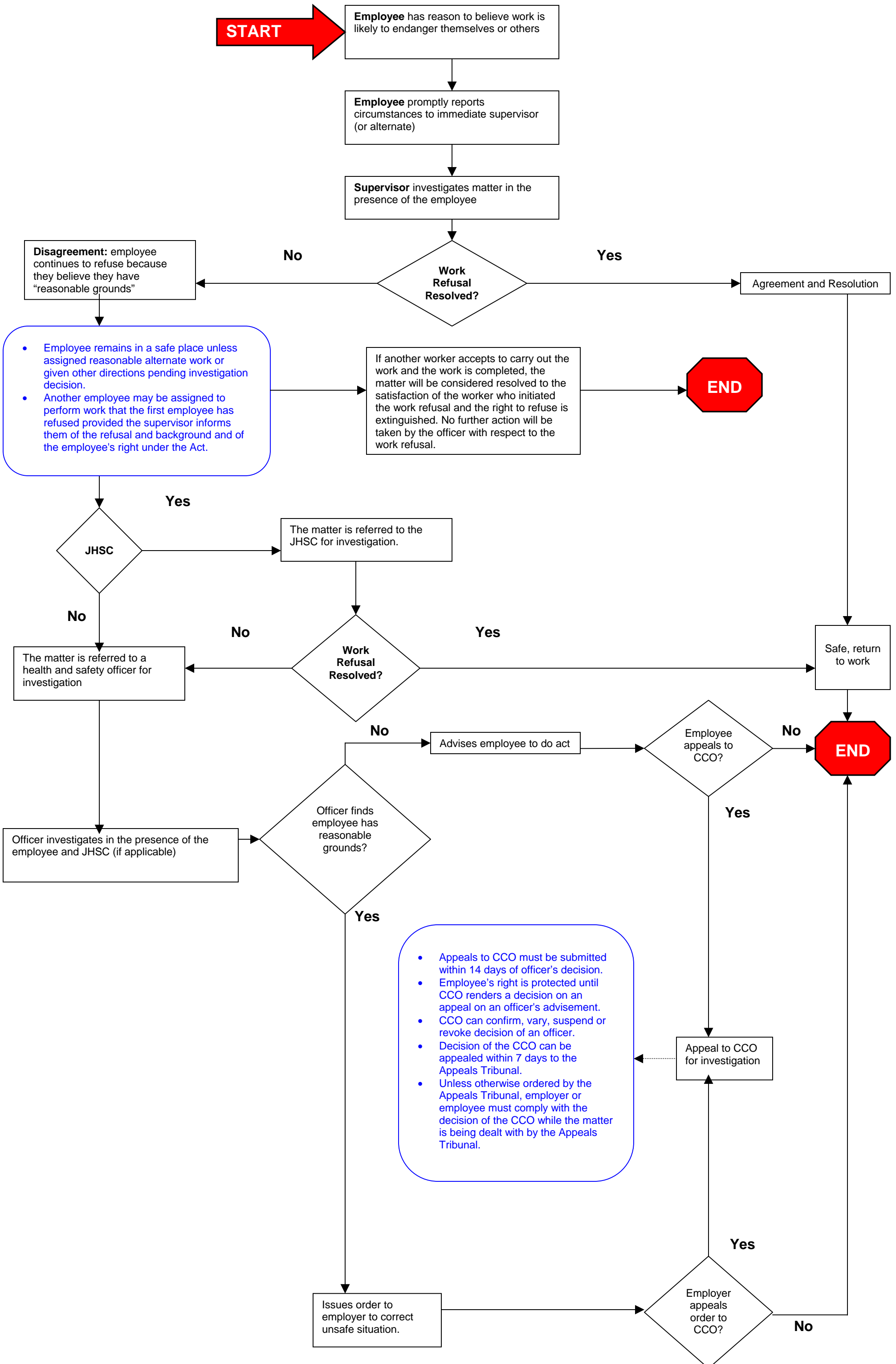
3. Prevention / Incident Investigation Sub-Committee

The role of this subcommittee is to receive and review all personal injury claims and accompanying investigation reports. This sub-committee will meet on a monthly basis at a convenient time (e.g. just prior to the monthly JHSC meeting).

The Subcommittee reviews the reports to identify:

- Details of the incident;
- Timeliness of reporting and completion of the incident investigation;
- Details of the investigation report for thorough analysis of the event, determination of root causes of the incident and appropriate recommendations;
- Trends within the department and within specific work units.
- Recommendations to the JHSC for employee awareness; review of process; new training needed; etc.

Work Refusal Flow Chart



CHAPTER: 1

Company Health and Safety Policy
Right to Refuse Form

HSM-F-1-1
Rev.1 2021

Step 1: The employee reports the concern to his immediate supervisor

I, _____, refuse to do the act assigned by my supervisor. I believe that this act is likely to endanger-my health and safety (or the health and safety of others) for the following reason(s):

I am not properly trained for the job	I do not have the necessary equipment for the job
Physical or mechanical hazards	Chemical hazards
I do not have enough experience for the job	Biological hazards
I do not have the necessary skills for the job	Other (specify)

Detailed explanation:

Employee _____ Date _____ Time _____
 Submitted to _____ Date _____ Time _____
 Supervisor Signature: _____ Date _____ Time _____

Supervisor Response:

I find that _____ **has** reasonable grounds for believing that the act is likely to endanger the health and safety of the employee or the health and safety of others. Therefore, I recommend the following remedial action(s) to be taken **or** I will take the following remedial action(s) **so that the employee may** resume work.

I find that _____ **does not have** reasonable grounds for believing that the act is likely to endanger his/her health and safety or the safety of any other employee. **Therefore, I advise the employee to do that act.**

Date _____ Time _____
 Signature of supervisor: _____
 Signature of worker: _____

Copy Forwarded to JHSC Committee

Date: _____

Step 2: The employee refers the matter to the JHSC.

JHSC. Received by: _____, representing the workers, and
_____, representing the employer
on (date)_____ at (time)_____

We, the members of the JHSC, have studied the reasons for this right to refuse submitted by
_____, and we make the following recommendation (s):

The JHSC finds the employee **has** reasonable grounds and make the following
recommendation(s) to the employer

Employer accepts recommendation _____ (Employer) Employer refuses recommendation _____

The JHSC finds that the employee does not have reasonable grounds for the following
reason(s)

The JHSC cannot reach a decision and have the following positions:

The JHSC advises _____ to refer the matter to an officer of the WorkSafeNB

_____ (Employee Representative)

_____ (Employer Representative)

Step 3: Referral to an officer at WorkSafeNB

When the matter is not resolved to the satisfaction of the employee, the employee refers it to an
officer by calling WorkSafeNB at 1 800 222-9775.

2.1. Overview

By its very nature, DTI work presents varying degrees of hazards to people and equipment. At DTI, hazards are managed at multiple levels, from engineering to field crews. By working collectively, we minimize hazards, so work can be carried out incident-free. Carrying out a task or job safely is an expectation of the Department.

All work must be assessed for risk, and all reasonable steps taken to mitigate the potential for loss to people, property, and the organization.

Tasks that, by their nature, expose employees to an abnormally high degree of personal risk are subject to special planning. Employees and managers are expected to conduct the hazard assessment, identifying hazards and then taking appropriate measures to ensure the work can be done in a safe manner.

2.2. Definitions

Hazard: Potential source of injury, illness, damage or loss, or a condition or practice able to cause an incident.

Risk: Likelihood that a hazard could cause harm or damage, and how severe the consequences could be.

2.3. Types of Hazards

Safety Hazards: These are the most common and will be present in most workplaces at one time or another. They include unsafe conditions that can cause injury, illness and death.

Safety hazards include

- Spills on floors or tripping hazards, such as blocked aisles or cords running across the floor
- Working from heights, including ladders, scaffolds, roofs, or any raised work area
- Unguarded machinery and moving machinery parts; guards removed or moving parts that a worker can accidentally touch
- Electrical hazards like frayed cords, missing ground pins, improper wiring
- Confined spaces
- Machinery-related hazards (lockout/tagout, boiler safety, forklifts, etc.)

Biological Hazards: Associated with working with animals, people, or infectious plant materials. Work in schools, day care facilities, colleges and universities, hospitals,

laboratories, emergency response, nursing homes, outdoor occupations, etc. may expose you to biological hazards.

Types of things you may be exposed to include

- Blood and other body fluids
- Fungi/mold
- Bacteria and viruses
- Plants
- Insect bites
- Animal and bird droppings

Physical Hazards: Are factors within the environment that can harm the body without necessarily touching it. Physical Hazards include

- Radiation: including ionizing, non-ionizing (EMF's, microwaves, radiowaves, etc.)
- High exposure to sunlight/ultraviolet rays
- Temperature extremes – hot and cold
- Constant loud noise

Ergonomic Hazards: Occur when the type of work, body positions and working conditions put strain on your body. They are the hardest to spot since you don't always immediately notice the strain on your body or the harm that these hazards pose. Short-term exposure may result in "sore muscles" the next day or in the days following exposure, but long-term exposure can result in serious long-term illnesses. Ergonomic Hazards include

- Improperly adjusted workstations and chairs
- Frequent lifting
- Poor posture
- Awkward movements, especially if they are repetitive
- Repeating the same movements over and over
- Having to use too much force, especially if you have to do it frequently
- Vibration

Chemical Hazards: Are present when a worker is exposed to any chemical preparation in the workplace in any form (solid, liquid or gas). Some are safer than others, but to some workers who are more sensitive to chemicals, even common solutions can cause illness, skin irritation, or breathing problems. Beware of

- Liquids like cleaning products, paints, acids, solvents – ESPECIALLY if chemicals are in an unlabeled container!
- Vapors and fumes that come from welding or exposure to solvents
- Gases like acetylene, propane, carbon monoxide and helium

- Flammable materials like gasoline, solvents, and explosive chemicals.
- Pesticides

Work Organization Hazards: Hazards or stressors that cause stress (short-term effects) and strain (long-term effects). These are the hazards associated with workplace issues such as workload, lack of control and/or respect, etc. Examples of work organization hazards include

- Workload demands
- Workplace violence
- Intensity and/or pace
- Respect (or lack of)
- Flexibility
- Control or say about things
- Social support/relations
- Sexual harassment

2.4. Sources of Hazards

Sources of hazards are numerous, but the most common ones include

- Tools
- Substances
- Source of energy
- Condition or work environment
- Process
- Type of Industry

General Principles

The hazard and risk management process has four main elements:

1. Identifying and Reporting Hazards
2. Assessing Hazards and Risks
3. Controlling Hazards and Risks
4. Evaluating Control Measures

2.5. Identifying and Reporting Hazards

Before a task is performed, all hazards must be identified while completing a hazard assessment with one or several of the following assessment tools:

- Safe Work Procedures and Practices

- Job Hazard Assessment
- Field Level Hazard Assessment (FLHA)

While completing an assessment using an assessment tool, work will be divided into task parts or task steps. Each part or step of a task will be looked at to determine if any type of hazard is present. To facilitate this part of the assessment, any document known or found relating to the hazard, its source, or the task itself should be reviewed. Documents may consist of examples of completed assessments, user manuals, labels, instructions sheets, training manuals, standards, factsheets, policies, incident reports, etc.

Documents mentioned above may be obtained from suppliers, manufacturers, government organizations, professional organizations, etc.

Under the *OHS Act*, it is the duty of every employee to report the existence of any hazard of which he or she is aware.

2.6. Hazard Assessment Tools

The tools used to help employees identify and reduce or eliminate the hazards associated with the job are listed below.

Comprehensive Hazard Assessment

A master list of the overall operations of an organization used to identify hazards, measure risk (to help prioritize hazards), and develop, implement and monitor related controls. Jobs or types of work are broken down into separate tasks. Comprehensive hazard assessments are detailed, can involve many people, and will require time to complete.

Project Hazard Assessment (Contractor)

Before the start of any project, project management, clients, and safety specialists will conduct an in-depth hazard assessment. Project Hazard Assessments are established in advance of a project, in situations where the work involved multiple tasks, trades or workgroups. The Hazard Assessment includes the work to be done and captures the task hazards, location hazards, worksite conditions, presence of contractors, workers training and experience and any critical tasks to be performed at a minimum. The hazards assessment then needs to be shared and reviewed with those involved to encourage feedback and improve the safety of the project.

From a health and safety perspective, the Project Hazard Assessment identifies and mitigates key sources of risk to people, property, and the organization.

Some tools that communicate the nature of the work that is being performed include

- Photographs - These may include photos of site preparation, such as foundations for heavy equipment and tie in points.
- Graphics/Diagrams - Use arrows to indicate where critical lifts will be picked and placed.
- Past Work Plans - Refer to these for the most appropriate ways to communicate hazards and work processes.

Job Hazard Assessment

Developed by the superintendents and/or foreman responsible for the work and must be generated before work is started for the specific worksite. The supervisors will evaluate the work, break out tasks step by step and consider related hazards, control measures, and PPE. The risk ranking of each task will be recorded on the Job Hazard Assessment. The supervisor will ensure that skills and competencies are confirmed to ensure that workers can execute their work safely. Codes of Practice, Safe Work Practices and Safe Job Procedures may assist in this process.

The supervisor will review the Job Hazard Assessment with the crews involved. The crew will then sign off the supervisor's Job Hazard Assessment Sheet, acknowledging the work steps and their roles in the work.

Field Level Hazard Assessment (FLHA)

Performed daily before work starts at a site and at a site where conditions change or when non-routine work is added. The FLHA is a method of evaluating a job in order to

- identify the hazards or potential accident causes associated with each step of the operation, and
- develop solutions that will eliminate or control the hazards that are identified.

An FLHA must be conducted by the crew at the workplace before starting a task, or when an existing task has changed. The FLHA will be conducted at the workplace. The task analysed will reflect the work instructions received by the supervisor. Each crew member will participate in the hazard assessment and is responsible for providing input into risk planning and controls.

There are five basic steps to a hazard assessment:

1. Select the job to be analyzed.
2. Break the job down into steps.
3. Identify the hazards or potential accidents.
4. Develop solutions for the hazards or potential accidents.
5. Track change.

When a choice is made to control (rather than eliminate) a hazard, it is imperative that ongoing inspections are conducted. During these inspections

- Crews must be on the lookout for any changes to the scope of work, duties of workers, or environmental changes.
- Crews will monitor the effectiveness of the controls in place and be sure that the controls themselves are not the source of new hazards.

Where a change affecting an FLHA has occurred, work must be suspended while the task is reassessed. The FLHA must be updated to reflect the change.

For routine, short duration tasks, the supervisor may direct the worker to complete an FLHA. NOTE: Even short duration tasks may carry significant risk and the supervisor must exercise good judgement and due diligence when planning work and assessing risk. Job Hazard Assessments are written by the superintendents and/or foreman responsible for the work and must be generated before work is started. Job Hazard Assessments are subject to audit.

Supervisors

- Will evaluate the work, break out tasks, and rank each task according to severity. The risk ranking of each task will be recorded on the hazard assessment.
- Are responsible for identifying and scheduling all required equipment for the job, and for ensuring that the equipment is inspected and deemed safe for use. This includes mobile equipment, scaffolding, power tools, and rigging.
- Will ensure that skills and competencies are confirmed, to ensure that workers can execute their work safely.
- Will remain in control of the Job Hazard Assessment until the conclusion of the work. Where the work is taken over by a second shift or another crew, the supervisors involved will ensure an appropriate handover of the document.
- Must document and communicate any change in scope, process, or sequence to the crew. Where any changes relevant to the Job Hazard Assessment have occurred, the task must be suspended pending a reassessment and communication to the affected crews.
- Will review the Job Hazard Assessment with the crews involved. The crew will then sign off the supervisor's Pre-Job Hazard Assessment Sign in Sheet, acknowledging the work steps and their roles in the work.
- Will ensure that the crew reviews the Job Hazard Assessment document at the beginning of each shift (and sign off on new sign in sheet daily), where the job takes longer than one day. **NOTE:** Supervisors are not required to turn in the Job Hazard Assessment at the end of each shift unless the work is completed.

Exemption from the Job Hazard Assessment

For routine, short duration tasks, the supervisor

- May direct the worker to complete a Field Level Hazard Assessment. **NOTE:** Even short duration tasks may carry significant risk.
- Must exercise good judgement and due diligence when planning work and assessing risk.
- Must participate in the development of the FLHA, then review and sign off the card before work commences.
- Must confirm that the worker has been deemed competent to safely execute the task.
- Must ensure that any changes are assessed for impact, and that the FLHA is changed/modified accordingly.

2.7. Procedures and Practices

Safe Job Procedure: A written, specific step-by-step description of how to complete a job safely and efficiently from start to finish. Safe Work Practice A set of positive guidelines or “Do’s and Don’ts” on how to perform a specific task that may not always be done in a certain way. (See Chapter 4)

Safe Work Practice: Methods outlining how to perform a task with minimum risk to people, equipment, materials, environment, and processes. (Do’s and Don’ts) (See Chapter 3)

Code of Practice: Provides detailed information on how to achieve the standards required under work, health and safety (OH&S). Examples: Fall Protection Use, Use of Explosives, Respiratory Use and Care, Electrical Safety, Noise and Vibration, Radiation, Asbestos, Confined Space, Diving Operations. (See Chapter 14)

2.8. Controlling Hazards and Risks

Once identified, hazards should be classified as having a low, medium or high hazard level. The higher the level, the more effort should be made to eliminate and/or reduce the hazard and the risk.

Hazard Level	Description (exposure to hazard)	Examples
High	Can cause very serious or fatal injuries (includes long-term exposures).	Installing signs on the highway, working at heights, working under a blocked vehicle; inhaling asbestos, using a saw, and

		working in a confined space.
Medium	Can cause serious injuries (i.e. deep cuts, fractures, and severe sprains).	Improperly lifting or carrying heavy objects, using vibratory or heavy tools, and walking on slippery surfaces.
Low	Can cause minor injuries (i.e. cuts, bruises, sprains, irritations, and pain).	Using a computer, lifting or carrying light objects, using light tools.

Types of Control Measures

The main ways to control a hazard include

1. **Design/Engineering Controls:** eliminating the hazard altogether; substituting for a less hazardous product or process; isolating or shielding hazard such as using machine guards; designing or modifying work environment, equipment, ventilation systems, and processes to eliminate or reduce the source of exposure.
2. **Administrative Controls/Work Practices:** controls that alter the way the work is done. Measures could be worker rotation; rescheduling work; following policies and other rules; following safe work practices such as standards and procedures (including training, housekeeping, and equipment maintenance, and personal hygiene practices).
3. **Personal Protective Equipment:** equipment worn by individuals to reduce exposure such as contact with chemicals or exposure to noise.

Evaluating and Selecting Control Measures

- The above types of control measures are also known as the "hierarchy of control" because they should be considered in the order presented.
- To provide better protection, eliminating a hazard or removing the hazard from the workplace should always be considered first.
- If the hazard cannot be eliminated, then the other types of control measures must be implemented to minimize the risk.
- Using personal protective equipment is the last control measure to consider.
- In many situations, more than one type of control measure is required to adequately protect workers from a hazard.
- Selection of appropriate control measures should be based on information gathered during the hazard & risk assessment.

2.9. Hazard Reporting

To provide a process and mechanism for the prevention of injury, illness, environmental harm or property damage within the Department of Transportation and Infrastructure

through the identification, assessment, elimination or control of workplace hazards and risks.

The aim of this procedure is to encourage all personnel to have a proactive approach to the identification, assessment, elimination or control of hazards and risks

Definitions

- Hazard Management:** A process where hazards are identified, risk assessed, eliminated or controlled so that injury, illness, property damage or environmental harm is removed or reduced.
- Hazard:** Potential source of injury, illness, damage or loss, or a condition or practice able to cause an incident.
- Risk:** Likelihood that a hazard could cause harm or damage, and how severe the consequences could be.
- Risk Assessment:** The process of deciding how dangerous or potentially severe a hazard is.
- Control Measures:** The process of eliminating or minimising the risk of harm.
- Supervision:** Manager, supervisor or team leader.

Responsibilities

All parties involved with work of any nature have responsibilities with regard to workplace health and safety under the *NB Occupational Health and Safety Act* and *NB Regulation 91-19*.

This includes officers, managers, supervisors, workers and others.

Workers:

- Take immediate actions or start the process to eliminate or control a hazard when identified. This may include telling others in the immediate area to avoid the hazard, tagging, flagging or otherwise visually identifying the hazard until a solution can be found.
- Report Hazards immediately to their immediate supervision and discuss appropriate control measures.
- Complete **PART A** of the Hazard Report Form and forward form to supervision.

Supervision:

- Ensure all personnel under their control understand the hazard identification process and are informed that they are to report all hazards.

- As with all workers, report any hazard that might impact on the health and safety of workers, plant or the environment.
- Investigate the hazard and complete the hazard investigation found section in **PART B** of the Hazard Report Form.
- Assess whether hazards can be eliminated immediately or require appropriate control measures.
- Assess the Hazards severity using the Risk Ranking section on the Hazard Report Form to identify the risk level.
- Engage in consultation with DTI Wellness, Health and Safety Services Consultant (DTI WHSS Consultant) if needed to determine appropriate control measures.
- Complete the action taken to implement controls in **PART B** of the Hazard Report Form.
- Ensure **PART B** of the Hazard Report Form is **fully completed** and signed off only when totally satisfied that the Hazard is either eliminated or adequately controlled.
- Provide feedback to the worker who raised the Hazard Report Form.
- Review and monitor the effectiveness of the control measures by ensuring the implementation of ongoing routine workplace Inspections and the continual use of this procedure within their area of responsibility.

H&S Consultant:

- As with all workers, report any hazard that might well impact on the safety of workers or the environment.
- Assist supervision in defining appropriate short and long-term control measures in **PART B** of the Form.
- Promote discussion of Hazard Reports at the monthly JHSC meetings, other health and safety meetings / toolbox talks etc.
- Ensure that there is a process in place, within each department, for tracking of hazard reports and escalation of action if needed.
- Retains Hazard Report Forms for a minimum period of 3 years.

Managers:

- Verify hazard has been controlled and signs off on the Hazard Report Form.
- Maintain a tracking register.
- Provide statistical performance indicator of Hazard control closure.
- Ensure all personnel in their work environment and under their control (employees, GNB representatives, third party contractors, service providers), understand the hazard identification process and are informed that they are to report all hazards.

- As with all workers, report any hazard that might impact on the health and safety of workers, plant or the environment.
- Ensure adequate resources are made available to control hazards which have been identified and assessed.
- Regularly review and monitor key performance indicators and risk management strategies related to hazard management.
- Ensure implementation and continual use of this procedure within their area of responsibility.
- Ensure the hazard controls are suitable and effective.
- Ensure the Hazard Report Form is **fully completed** and **signed off** and is forwarded to **HSU** for record keeping.

Joint Health and Safety Committee:

- Review Hazard Reports, completion rates as a key performance indicator.
- Recommend improvement initiatives if failures are identified within the system.

Training

All new and existing workers shall be instructed on hazard identification and the process for hazard management as part of their department induction, training modules and refresher training.

CHAPTER: 2

Hazard and Risk Management
Hazard Report Form

HSM-F-2-1
Rev.1 2021

PART A: HAZARD DETAILS – TO BE COMPLETED BY WORKER

Workers Name: _____ Time Reported: / am / pm Date: / /

Workers Supervisor: _____

Exact Location of Hazard: _____

Description of Hazard: _____

Workers Suggested Solution to control the Hazard: _____

Worker's Signature: _____

PART B: TO BE COMPLETED BY SUPERVISION

Can Hazard be Eliminated Immediately?

YES Supervision to eliminate Hazard and signoff Part B then forward to Manager.

Describe Actions Taken: _____

NO Supervisor to Assess Hazard and determine Risk level (Refer to Risk Ranking below) then forward to manager.

RISK RANKING MATRIX

Severity (How severe would a possible injury be):	Probability (Likelihood that an incident will occur):
1 Extreme: Stop work until risk control implemented <input type="checkbox"/>	A Very unlikely <input type="checkbox"/>
2 High: Implement risk control within __ Hrs/Days <input type="checkbox"/>	B Unlikely but possible <input type="checkbox"/>
3 Moderate: Implement risk control within 1 week <input type="checkbox"/>	C Somewhat Likely <input type="checkbox"/>
4 Low: Regularly monitor hazard <input type="checkbox"/>	D Probable <input type="checkbox"/>

RISK RANKING

Action	Responsibility	Target Date	Completed

Are Controls Completed and Assessed? **YES** **Do Not pass on unless risk has been Satisfactorily Controlled!**

Feedback to Worker who raised Hazard Report Form? **YES**

Supervisor's Signature: _____ Date: _____

PART C – TO BE COMPLETED BY MANAGER

Hazard has been Assessed and Controlled to my satisfaction

Manager's Signature: _____ Date: _____

Job Hazard Assessment

Task/Project		Date	
Task/Project #		Crew Size	
Location:		Task /Project Description	
Contractor			
Prepared By			
Reviewed By			
Critical Task- Refer to Code of Practise			
<input type="checkbox"/> 1. Fall Protection <input type="checkbox"/> 2. Confined Space <input type="checkbox"/> 3. Asbestos <input type="checkbox"/> 4. Energy Isolation /Zero Energy <input type="checkbox"/> 5. Working Alone			
<input type="checkbox"/> 6. Excavation/ Trenching <input type="checkbox"/> 7. Respiratory Protection <input type="checkbox"/> 8. Vibratory Protection <input type="checkbox"/> 9.Silica <input type="checkbox"/> Other			
Work Area Traffic Control (Mark each box as applicable)			
<input type="checkbox"/> Traffic Control <input type="checkbox"/> Inspection of Traffic Devices <input type="checkbox"/> Buffer Vehicle TMA <input type="checkbox"/> TCP /TCA <input type="checkbox"/> Other			
HAZARD CATEGORIES (Mark each box as applicable)			
Work Area	Equipment & Tools (Inspected)	Ergonomic	Environmental
Hazardous Materials	Energy		
<input type="checkbox"/> Communications	<input type="checkbox"/> Aerial mobile platform	<input type="checkbox"/> Ackward body Position	<input type="checkbox"/> Heat / Cold
<input type="checkbox"/> Compressed gas	<input type="checkbox"/> Ground Conditions	<input type="checkbox"/> Over exertion	<input type="checkbox"/> Windy
<input type="checkbox"/> Flammable / Combustible	<input type="checkbox"/> Scaffolding	<input type="checkbox"/> Twisting / Bending	<input type="checkbox"/> Tidal
<input type="checkbox"/> Oxidizing	<input type="checkbox"/> Remote location	<input type="checkbox"/> Heavy Lifting	<input type="checkbox"/> Sea storm
<input type="checkbox"/> Toxic	<input type="checkbox"/> Forklifts	<input type="checkbox"/> Pushing/ Pulling	<input type="checkbox"/> Snowing / freezing
<input type="checkbox"/> Corrosive	<input type="checkbox"/> Excavations /Trench	<input type="checkbox"/> Over Extension	<input type="checkbox"/> Foggy
<input type="checkbox"/> Biological / Biomedical	<input type="checkbox"/> Cranes /Boom trucks	<input type="checkbox"/> Repetitive Motion	<input type="checkbox"/> Noise
<input type="checkbox"/> Explosives	<input type="checkbox"/> Overhead Work	<input type="checkbox"/> Line of Fire	
<input type="checkbox"/> Chemical	<input type="checkbox"/> Excavators/ backhoes		
<input type="checkbox"/> Potential	<input type="checkbox"/> Utilities		
<input type="checkbox"/> Residual	<input type="checkbox"/> Rigging		
	<input type="checkbox"/> Trucks / Trailers		
	<input type="checkbox"/> Non-Powered hand Tools		
	<input type="checkbox"/> Powered Hand Tools		
TOOLS / EQUIPMENT / MATERIALS REQUIRED		PERSONAL PROTECTIVE EQUIPMENT REQUIRED	
		<input type="checkbox"/> Basic PPE (Hardhat, Vest, Boots, Eye Protection)	<input type="checkbox"/> Fall protection
		<input type="checkbox"/> Face protection	<input type="checkbox"/> Specialized PPE
		<input type="checkbox"/> Gloves	<input type="checkbox"/> Hearing Protection
		<input type="checkbox"/> Respiratory Protection	<input type="checkbox"/> Other

Probability: 1. Almost Impossible 2. Unlikely 3. Heard of 4. Possible 5. Has Happened 6. Almost Certain

Severity: 1. First Aid 2. Medical Aid 3. Lost Time 4. Disability 5. Fatality 6. Multiple Fatalities

Risk Level: - Low - Medium - High - Extreme

JOB STEPS	HAZARDS	Initial Risk			CONTROL MEASURES	Residual Risk			Person
		P	S	RL		P	S	RL	

I confirm that I have presented this Job Hazard Assessment to the workers under my supervision who will execute the work described in this JHA and that all control measures have correctly been implemented:

Supervisor : _____ Date: _____
Name & Signature

I confirm that I have read and understood the Job Hazard Assessment which is provided for this work:

NAME (Print)	SIGNATURE	Date

**NBDTI
FIELD LEVEL HAZARD ASSESSMENT**

Task to be Completed:	Date:
Task location:	PPE Inspected: <input type="checkbox"/> Yes <input type="checkbox"/> No
Pre-use inspection of all tools/equipment completed? <input type="checkbox"/> Yes <input type="checkbox"/> No	Working alone? <input type="checkbox"/> Yes <input type="checkbox"/> No

Check off the hazards that apply to this task. List the items in the hazard's column, indicate the priority ranking and identify the plans to eliminate or control on the other side of this form.

Environmental Hazards	Access / Egress Hazards	Rigging & Hoisting Hazards
1. Material storage <input type="checkbox"/> 2. Dust / Mist / Fumes <input type="checkbox"/> 3. Noise <input type="checkbox"/> 4. Extreme temperatures <input type="checkbox"/> 5. Spill potential <input type="checkbox"/> 6. Waste properly managed <input type="checkbox"/> 7. Open Excavation <input type="checkbox"/> 8. Other workers in area <input type="checkbox"/> 9. Chemical use <input type="checkbox"/> 10. Working over or near Water <input type="checkbox"/>	16. Aerial lift/Man basket <input type="checkbox"/> 17. Scaffold (inspected) <input type="checkbox"/> 18. Ladders (tied off) <input type="checkbox"/> 19. Trips/falls <input type="checkbox"/> 20. Open holes <input type="checkbox"/> 21. Evacuation (routes, ph. #) <input type="checkbox"/> 22. Confined / Restricted space <input type="checkbox"/> 23. Traffic Control <input type="checkbox"/>	29. Lift study required <input type="checkbox"/> 30. Proper tools used <input type="checkbox"/> 31. Hoisting (tools, equipment) <input type="checkbox"/> 32. Tools / Sling inspected <input type="checkbox"/> 33. Equipment inspected <input type="checkbox"/> 34. Hoisting or moving loads overhead <input type="checkbox"/> 35. Lift Plan <input type="checkbox"/>
Ergonomic Hazards	Overhead/Fall Hazards	Electrical Hazards
11. Awkward Body Position <input type="checkbox"/> 12. Over extension <input type="checkbox"/> 13. Prolonged Twisting / Repetitive/ Bending Motion <input type="checkbox"/> 14. Working in a tight area <input type="checkbox"/> 15. Lift too heavy / Awkward to lift <input type="checkbox"/>	24. Barricades & signs in place Harness <input type="checkbox"/> 25. 100% Tie-off <input type="checkbox"/> 26. Falling objects <input type="checkbox"/> 27. Others working overhead / below <input type="checkbox"/> 28. Power lines <input type="checkbox"/>	36. Utilities Identified <input type="checkbox"/> 37. Lighting levels too low <input type="checkbox"/> 38. Working on / near energized equipment <input type="checkbox"/> 39. Fire extinguisher <input type="checkbox"/> 40. Hot work <input type="checkbox"/>

PPE Required			
<input type="checkbox"/> Hearing protection	<input type="checkbox"/> Hi Visibility clothing	<input type="checkbox"/> Life Jacket/ PFD	<input type="checkbox"/> Chemical goggles
<input type="checkbox"/> Cut-resistant gloves	<input type="checkbox"/> Fall protection	<input type="checkbox"/> Traction Aids	<input type="checkbox"/> Gloves
<input type="checkbox"/> Hard hat	<input type="checkbox"/> CSA Approved footwear	<input type="checkbox"/> Safety Glasses/ Face shield	<input type="checkbox"/> Respiratory protection

Emergency Communication			
Emergency Services Meeting Point:		Emergency Contact #	
First Aid Provider:		Civic Address	

“Safety A Team Responsibility”

TASK STEPS	HAZARDS	Priority	PLANS TO ELIMINATE/CONTROL
Severity:	Severity + Probability = Priority		Probability:
1.Imminent Danger - causing deaths, widespread occupational illness, loss of facilities 2.Serious - severe injury / illness, property and / or equipment damage 3.Minor - non-serious injury, illness, or damage 4.Not Applicable N/A			A. Probable - likely to occur immediately or soon B. Reasonably Probable - likely to occur eventually C. Remote - could occur at some point D. Extremely Remote - unlikely to occur

Print and sign below (All members of the crew) prior to commencing work)

Worker's Name (Print)	Signature	Worker's Name (Print)	Signature
1.		2.	
3.		4.	
5.		6.	
7.		8.	
9.		10.	

Supervisor Name and Signature (Sign upon reviewing completed): _____

Note: All names must be legible.

“Safety A Team Responsibility”

CHAPTER: 3	Safe Work Practices	Rev.1 2021
SECTION 3.0	General Information	

Overview

By its very nature, DTI work presents varying degrees of hazards to people and equipment. At DTI, hazards are managed at multiple levels, from engineering to field crews. By working collectively, we minimize hazards, so work can be carried out incident-free.

All work must be assessed for risk, and reasonable steps taken to mitigate the potential for loss to people, property, and the organization. Tasks that, by their nature, expose employees to an abnormally high degree of personal risk are subject to special planning.

Safe Work Practices

The safe work practices contained in this section are to be used as working guidelines.

Managers and supervisors are responsible for ensuring that all OH & S regulations and legislative requirements are met.

All workers are required to maintain, review and follow safe work practices in the workplace. Managers and supervisors have the responsibility of informing, directing and maintaining compliance to health and safety standards, regulations and best practices are always achieved in the workplace.

If the manager, supervisor or worker is aware of a more efficient method of completing a task that does not compromise the health and safety of those involved, the other method may be substituted after a hazard assessment is conducted and if it complies with provincial legislation and DTI policy.

Employer/Supervisor Responsibilities

- Ensure administrative controls such as safe work practices are developed.
- Ensure adequate control measures are implemented for all known or reported hazards.
- Ensure control measures are monitored for effectiveness and make changes as necessary.

Employee Responsibilities

- Follow all control measures as directed by their supervisor.

Reference

- *Occupational Health and Safety Act*, section 9(1).

CHAPTER: 3
SECTION: 3.1Safe Work Practices
Testing of Compressed Air for BreathingHSM-SWP-1
Rev. 1 2021**Overview**

The Occupational Health and Safety Regulation 91-191, sections 45 thru 47 deal with respiratory protective equipment. In this section, we are referred to CSA/CANZ94.4-93, "selection, use and care of respirators" which deals with the various types of hazards and respirators to protect us. Then, section 6.2.1 of the above standard directs us to CSA standard CAN3-Z180.1-00 (R2010) "Compressed Breathing Air and Systems" that provides information on the testing we need to perform when we use respiratory equipment with air supplied from a compressor.

Guidelines:

1. Before allowing anyone to use respiratory protection and breathe air through a compressor, the supervisor shall follow the respiratory protection rules in Chapter 14 section 14.7.
2. The immediate supervisor is responsible for the verification of the quality of air for any compressor used for breathing air (e.g. rented, leased or owned).
3. If a complete system is rented, testing may be required as a term of the rental. Consequently, a copy of the testing results must be retained by the employer.
4. Air produced by the breathing air system must be submitted for purity analysis at least once every six months.
5. The air tests shall be analyzed by a qualified laboratory acceptable to WorkSafeNB.
6. Prior to the commissioning of new systems or the first use of modified or repaired systems, samples shall be taken at the farthest outlet from the source to verify air purity.
7. Routine maintenance of the compressor and purification systems must be carried out every six months, or more frequently as needed.

Documentation

The supervisor must retain documentation of the air quality testing results as a permanent record.

References

- Occupational Health and Safety Regulation 91-191

CHAPTER: 3	Safe Work Practices	HSM-SWP-2
SECTION: 3.2	Chain, Clear and Pole Saw Use	Rev. 1 2021

Overview

There is potential for serious injury when using either chain saws or brush saws both to the operator and employees working in close proximity.

Personal Protective Equipment Required

Hard hat, hearing protection, eye and face protection, appropriate safety boots, chain saw pants or chaps, snug fitting clothing, gloves, and pressure bandage.

Hazard-Specific Training

NB DOT Chain Saw and Clearing Saw Training Level II, Arboricultural “Green Card” Course (see general practices), and NB Power Awareness Session (optional).

General Practices

- The supervisor and saw operator must perform an on-site Hazard Assessment of the potential hazards prior to commencing work, including but not limited to
 - Locating all underground utilities in and near worksite
 - Identifying overhead wires in and near worksite
 - Identifying and removing lodged (must be removed by mechanical means) or standing dead or dangerous trees inside or near the site (a hazardous area with a minimum radius of two tree lengths from the stump must be established for lodged trees)
- If the brush/trees to be cut are smaller in size (up to 10 cm diameter) and cannot contact the lines, no arboricultural training or green card is required.
- If there are any trees that, when felled, could fall onto or closer than the specified distances to the overhead lines (within 1 m up to 750 v and 3.6 m up to 100,000 v), do one of the following: mark those trees with flagging tape for another crew with arboricultural training to cut them, or hire a contractor who specializes and is certified in arboricultural work to remove the trees. If the supervisor is not sure of proximity of trees to the overhead wires he/she should contact NB Power and have an onsite assessment.
- Supervisors shall verify that operator(s) have the required training in the use of saw(s). Identify the safest tool to use for removal of the brush or trees (if possible use a clearing saw).
- Stay alert to changing conditions such as new equipment, new employees and adverse weather conditions.

- Complete a “**tailgate**” meeting informing all employees of the scope of the work, hazards, and procedures.
- All required personal protective equipment must be worn.
- Establish and review the first aid procedure with all employees, including completing in an emergency communication procedure.
- Ensure WATCM and fire prevention (Fire Index and equipment) requirements are followed.
- Verify equipment is free of any deficiencies. Repair or replace any damaged, loose or missing parts.
- Verify that blades and chains are appropriate for the job and properly sharpened.
- When handling fuel and refueling, stop engine, use approved containers, beware of static electricity and sparks, keep saw clean and move 3 m away from fueling point before starting engine.
- Ensure that the operator is aware of the kickback zone and never position in line with the chain.
- Maintain a minimum of safe distance between the saw operator and others in the area:
 - 10 m while operating the brush saw
 - 40 m when felling a tree with a chain saw
- Stop the motor when carrying the saw from one location to another.
- Shut off saw before putting it on the ground.
- Around steel rails, be careful not to touch the steel with the blade or chain.
- Never work alone when operating a saw. Minimum team size of 2 for any saw activities.

Specific Practices for Chain Saws

- Ensure chain brakes are installed and in good working order.
- Begin cutting when you have an escape route, clear work area and secure footing.
- Hold the saw firmly with both hands when the engine is running. Use a firm grip with thumb and fingers encircling the saw handles.
- For better control, operate the saw at a height between your knees and hip whenever possible
- Do not operate a chain saw above shoulder height
- When felling trees with a chainsaw, use proper felling techniques and have and use a felling wedge or lever as required.
- Never work under, climb on or leave a partially felled tree unattended.


Specific Practices for Clearing Saws

- Never start the saw while it is attached to the harness.
- Stop the engine before maintenance cleaning or clearing of debris around the blade or blade guard.


Specific Practices for Pole Saws

- Use a harness as supplied by the manufacturer and ensure it is properly adjusted.
- Never start the gas-powered model while attached to the harness.
- Use the same PPE as is used for the chain saw except for footwear. The same footwear as for clearing saw can be worn.
- Never cut branches while other people are under the cut area.
- Check for electrical wires that could be tangled in the tree before cutting
- Rest the saw body slightly elevated from the ground when starting.

Footwear for Chain Saws

- Use chainsaw-resistant boots meeting the following requirements below:
 - CSA-Z195-M92 standard and/or CSA-Z195-09, **and**
 - Offers protection on the top and sides, has non-slip soles, **and**
 - Displays all the following symbols: 

Footwear for Clearing Saws

- Use grade 1 footwear with sole protection meeting the following requirements:
 - CSA-Z195-M92 standard and/or CSA-Z195-09, **and**
 - Height of boots must be 6" to 8" for ankle protection, **and**
 - Displays all the following symbols: 

Other Required PPE

- For eye, face, head and ear protection, wear a CSA hard hat with a visor.

- For hands, use leather or chain saw gloves.
- For legs, use chaps or pants which meet CAN/BNQ 1923-450-M91, or an equivalent standard as referred to in BC's OHS regulations with a minimum threshold chain speed protection of 3600 ft. /min, and protect the leg from the top of the footwear to the groin. Chaps and pants must be the wrap around type which covers the back of the lower part of the leg. Chaps must also be secured to the legs as recommended by the manufacturer.

Chainsaw Requirements

- Use chain saws meeting CSA-Z62.1-95 and Z62.3-96 standards as required by section 348(1) of regulation 91-191. These standards require safety features such as chain brakes and guards.
- Ensure chain saw is in good working order with all safety devices operating properly.



Clearing Saw Requirements

- Use clearing saws maintained in accordance with manufacturer's specifications. Safety features must include a stop switch, a blade guard, and a blade with no signs of cracks or fractures.
- Ensure the shut-off is working, handle bars are secured, and trigger lock is working.
- Ensure the harness as recommended by the manufacturer is well maintained, properly adjusted and the emergency release works properly.
- Ensure the snap for attaching the harness to the saw is secured before use.

Other Required Equipment

- A 4" pressure bandage wrapped in plastic and first aid supplies.
- Fire extinguisher **or** round point shovel, and an Ansul pack (Fire pack).
- Any equipment such as back tanks required by Natural Resources work permits.

References

- Occupational Health and Safety Regulation 91-191 Parts XIX, XXI and XXII
- Saw Owner's manual
- Reference other applicable safe work procedures
- NBDTI Safety Bulletin on Overhead & Underground Hazards
- NBDTI Safety Bulletin on Lodged Tree
- NBDTI Chain Saw/Brush Saw course

CHAPTER: 3
SECTION: 3.3Safe Work Practices
Warming & Cooling of Heavy Equipment EnginesHSM-SWP-3
Rev. 1 2021**Overview**

The idling of diesel and gasoline engines results in the emission of CO, CO₂ and NO₂ and other hazardous products into the atmosphere.

Responsibilities

To avoid the emission of these gases inside department buildings, the following operating procedure shall be followed at **all** Maintenance Depots and Repair Facilities. The procedure utilizes the shop compressors to build up the air pressure for brakes to minimize the time assets are idling in the facility.

It is the responsibility of the Highway Supervisor/Mechanic Supervisor to ensure that all employees understand this operating procedure. It is the responsibility of each employee to ensure that this procedure is followed.

Procedure:

1. Before starting up heavy equipment, build up the air pressure in the asset by hooking up the air compressor to the tanks (recommended compressor setting 125 to 130 psi).
2. Once the air has attained operating pressure, disconnect the air hose from the compressor.
3. Complete a walk around visual inspection.
4. Open the bay door.
5. Start up the asset and immediately remove it from the building.
6. During the warmup, park the asset so that exhaust is not near the building fresh air intakes.
7. Any idling necessary to properly cool down engines should also be done outside. It is recommended that trucks begin cool down phase by slowing down 1 to 2 km prior to arriving at the depot followed with an idling time of 3-4 minutes.
8. **Shut down all equipment immediately after moving it into the bay.**
9. In repair facilities, where a properly operating ventilation system exists, engines should never idle unless the ventilation system hoses are connected and operating.

Note: To prevent damage to engines limit idling time to less than five (5) minutes

References

- Occupational Health and Safety Regulation 91-191
- Reference other applicable safe work procedures

CHAPTER: 3	Safe Work Practices	HSM-SWP-4
SECTION: 3.4	Removing a Damaged Guide Rail	Rev.1 2021

Overview

Serious injury can occur when working around a guide rail that has been damaged. There is potential for hidden stresses on the metal to be released during the removal of the bolts or working in close proximity to the rail. The main point is, if you are unsure how to remove a damaged section, ask for assistance.



Personal Protective Equipment Required

Hard hat, hearing protection, eye and face protection, snug fitting clothing, gloves and safety footwear

Hazard-Specific Training

WATCM, safe use of cutting torches, safe use of power cut off saw, and tractor loader backhoe.

General Practices

- The supervisor must perform an on-site assessment of the potential hazards prior to commencing work, including but not limited to
 - Locating all underground utilities on and near worksite
 - Identifying overhead wires on and near worksite
 - Attempt to identify potential stresses (see the options below) on the guide rail and ensure that appropriate safety measures are in place in order to either eliminate or control the potential for injury.

Complete an initial assessment to determine the best approach to remove the damaged guide rail section(s). If it is heavily damaged and/or has a large bow in

it, may have hidden potential energy that could be released when the rail is moved or bolts are loosened. The following are a few options available to safely remove the damaged rail:

1. Using a metal cut off saw or a set of cutting torches, go back one section past the damaged area on each side of the damaged area and cut off the entire damaged section, once it has been cut away you can then cut it up into pieces to be hauled away.
2. If you have a Tractor Loader Backhoe (TLB), set the bucket on one side as close to the metal as possible and wrap a heavy chain around the steel rail a couple of times then attach to the bucket. The energy is now controlled on both sides so you can now move just beyond the attachment area and cut off or unbolt the rail. As the rail is being unattached, all energy is controlled in both directions.
3. Position yourself on the back side of the guide rail post so it is between you and the steel. Slowly start backing off the nut from the bolt until you can see some movement, this may only be a few centimeters. Using a pry bar try to see if the guide rail will move in either direction, this way it is still attached and will help you determine which way it wants to move. Once you determine the direction of stress relief, you can take adequate precautions to control the energy in the guide rail.

Other safety issues to consider

- If there is any equipment onsite which could make contact with the overhead lines, take appropriate measures by having NB Power de-energize the line or use smaller equipment which cannot make contact with the overhead lines. You should not be able to come closer than the specified distances to the overhead lines (within 1 m up to 750 V and 3.6 m up to 100,000 V).
- Supervisors shall verify that operator(s) have the required training for the equipment needed on the job and they are competent.
- Stay alert to changing conditions such as: new equipment, new employees, traffic and weather conditions.
- Complete a “**tailgate**” meeting informing all employees of the scope of the work, hazards and procedures.
- All required personal protective equipment must be worn.
- Establish and review the first aid procedures with all employees.
- Ensure WATCM requirements are followed.
- Ensure equipment is free of any deficiencies. Repair or replace any damaged, loose or missing parts.

References

- Occupational Health and Safety Regulation 91-191
- NBDTI Safety Bulletin on Overhead & Underground Hazards
- WATCM
- DTI Standard Specifications Items 510 - 513

CHAPTER: 3	Safe Work Practices	HSM-SWP-5
SECTION: 3.5	Winter Maintenance of Parking Areas And Walkways	Rev.1 2021

Overview

This safe work practice is put in place to guide the employees performing winter maintenance activities to provide safe access to and egress from the parking lots to the office, garage etc.

Personal Protective Equipment Required

Good winter footwear, traction aids, hard hat and vest and other appropriate body covering for the conditions.

Hazard-Specific Training

Training on the mobile equipment and other equipment used to perform the job, work alone procedures if applicable

General Practices

The employee performing winter maintenance activities will be attentive to weather reports before leaving work and during the evening for the following day.

When there is just snow, the employee will be at work to have the parking area and walkways cleared before employees show up for work, generally this will be before 7:30am.

During the day, the employee will use sound judgment and do a periodic cleaning thru the parking lot, generally before lunch and at about 4-4:30 pm before the office closes for the day.

Specific Practices for areas where there are buses parked on our premises

We must provide safe access to and from the bus parking area to the parking lot, so any maintenance activity must be performed prior to the bus drivers arriving in the morning, generally before 6am. If school is cancelled this will not be required at that time.

The expectation is to have the area from the parking lot to the front of the buses cleaned and sanded or salted. Once the buses are gone the whole parking area should then be cleaned. Prior to the buses returning at the end of the day the yard will be checked to ensure it is in good condition and if needed cleaned of snow with sand or salt spread as is necessary.

Specific Practices for Freezing Rain or Rain

If it rains or there is freezing rain over the snow or frozen ground, the employee performing maintenance will have to determine if sand or salt is needed and at appropriate times and apply enough to provide solid footing for employees.

References

- Occupational Health and Safety Regulation 91-191

CHAPTER: 3	Safe Work Practices	HSM-SWP-6
SECTION: 3.6	Emergency Eyewash and Shower	Rev.1 2021

Overview

The intent of this document is to provide guidelines to assist Department personnel identify needs for emergency eyewash and shower equipment in their work area. This equipment allows workers to flush away hazardous substances if the worker comes in contact with them.

It is important to note that this equipment is not a substitute for primary protective devices such as face and clothing protection. Always look at removing or substituting products which are corrosive or harmful to the eyes and skin with those which are less harmful or not at all.

The legislated requirement for eyewash stations is found in OHS Regulation 91-191 Section 11(1) and 11(2) as noted below:

11(1) Where an employee's skin or eyes may be exposed to contamination from materials at a place of employment, an employer shall provide emergency showers or eyewash fountains in the area where the contamination may occur.

*11(2) An employer shall ensure that an emergency shower or eyewash fountain provided under subsection (1) complies with the requirements of **ANSI standard ANSI Z358.1-1990**, "American National Standard for Emergency Eyewash and Shower Equipment".*

The following requirements are for plumbed and self-contained eyewashes to comply with the ANSI standard referred to in OHS Regulation 91-191 Section 11(2):

- Provide a controlled flow of flushing fluid (preferably at a tepid temperature) to both eyes at the same time. The flow velocity should be such so as not to injure the eyes of the user.
- Be protected from freezing where the possibility exists.
- Be protected from airborne contaminants in a way that the removal of the protection shall not require a separate motion by the operator when the eyewash is activated.
- Deliver to the eyes not less than 1.5 liters per minute for at least 15 minutes. Specific hazardous materials may require greater flows for longer periods of time. Always refer to the Safety Data Sheet (SDS).
- Be designed so that the flow remains on without requiring the use of the operator's hands.
- Be located in an accessible location that requires no more than 10 seconds to reach and should be within a travel distance no greater than 30.5 meters (100 ft from the hazard).
- Be positioned so that the flow nozzles are between 83.8cm (33inches) and 114.3cm (45 inches) from the floor.

- Have the eyewash location identified with a highly visible sign.
- If plumbed without a temperature regulated mixing valve, always open the cold supply first and then gradually open the hot to achieve a tepid temperature.

Supervisor Responsibilities

Ensure

- All workplace hazardous materials are reviewed and their SDS are on site
- All employees are trained and aware of eyewash stations use and locations
- Safety eyewear is being used at all times and properly worn
- Adequate signs are posted identifying location of equipment
- Employees, work practices and site operations are regularly observed and coached and mentored as necessary
- Test equipment regularly to ensure it is operating properly

Employee Responsibilities

- Comply with regulations and departmental standards
- Review hazardous materials on site and know the location of the SDS
- Wear the appropriate eyewear for the activity
- Know the eyewash station locations and how to use
- Participate in drills to ensure emergency procedures are in place

Determining Employees Needs

The best way to determine the need for eyewash stations in any workplace is to look at the Safety Data Sheet (SDS) for products being used on site. The SDS will normally state the length of time required to adequately flush the eyes. Based on that information, the determination can be made if there is a need for eyewashes that comply with the requirements of ANSI Z358.1-1990.

Equipment options

1. Plumed eyewash or shower station (Includes faucet mounted)

The equipment must meet the ANSI standard and must be able to deliver fluid to both eyes simultaneously at a volume of not less than 1.5 liters per minute for at least 15 minutes of uninterrupted flow. However, the volume should not be at a velocity which may injure the eyes. The unit must remain operational without the operator's hand(s) on the lever or handle.

2. Portable, self-contained eyewash or shower station

The equipment must meet the same requirements as in option number one. In addition, these units have a limited amount of fluid. As a result, maintenance is critical to ensure that units are fully charged at all times. Fluids need to be maintained according to manufacturer's instructions to prevent microbe's presence and/or growth.

3. Personal wash station (squeeze bottles)

This equipment does not meet the ANSI standards. However, they can be used to supplement options 1, 2, 4 and 5. They are designed to deliver flushing fluid immediately, personal wash stations can be used while transporting the victim to the permanent eyewash station or medical facility. These stations do not replace the requirement to have a 15+ minute-supply eyewash station. The expiry date of the fluid should be printed permanently on the unit.

4. Drench hoses

This type of equipment can be used to supplement other options, however if it is designed to meet the standard as per options 1 and or 2 above, it would be acceptable on its own. Drench hoses may be used to "spot" rinse an area when a full shower is not required, to assist a victim when the victim is unable to stand or is unconscious, or to wash under a piece of clothing before the clothing is removed.

5. Combination units

This name refers to the equipment stated above such as shower, eyewash, eye/face wash or drench hose which would be included as a combination, but most commonly it refers to a shower and an eye wash station. It is important that pressure and volume requirements for each piece of the unit (as described above) are in compliance with the standard.

Testing Equipment

To avoid creating a slippery floor surface when testing emergency equipment (monthly or as per manufacturers specifications For the portable self contained units, you need to conduct the following tests when first installed and every 6 months when the water with solution is changed, fill with clear water and then test to make sure that there is a good flow , watch to make sure the water is pushed high enough to wash someone's eyes and that it lasts the full 15 minutes.), catch the water dispensed if there is not a natural drain.

Employee Instruction

Following the installation of an eyewash unit, the supervisor shall ensure that all employees in the work area are instructed on proper use and quick access to the unit.

Reference

- Occupational Health and Safety Regulation 91-191, section 11.

CHAPTER: 3	Safe Work Practices	HSM-SWP-7
SECTION: 3.7	Office Ergonomics	Rev.1 2021

Overview

There are many benefits to be gained by applying ergonomic principles and modifying work habits. These include preventing musculoskeletal injuries (MSI), increasing productivity and improving job satisfaction. Some of the principles include adopting proper postures, modifying and varying work tasks, and modifying work environments.

The Department strongly encourages employees to adopt ergonomic principles as much as possible. To facilitate this, the department will endeavor to match the workstation to the employee's physical characteristics such as height. The HSU can provide a list of professional outside consultants.

Who offer office ergonomic assessments, as described at the end of this guideline, to assist supervisors and employees with ergonomic issues.

Below are some of the basic ergonomic principles in the form of tips to minimize undue physical stress leading up to discomforts, strains or MSI's.

Basic Ergonomic Tips & Principles

- **Match or adjust your workstation to your physical characteristics**
While sitting, your elbows and knees should be bent at approximately 90° with your back and head in a straight position. Wrists, back and neck should not be bent.
- **Vary work tasks to vary your posture**
Plan the day by diversifying the work tasks. Alternate with non-computer activities by doing other tasks that do not require the same posture and position as typing does (i.e. faxing, copying, filing and using the phone).
- **Maintaining good posture**
Stand, walk and take stretch breaks every 30 minutes. Sit at the back of your chair. Minimize reaching and twisting. Stand to get work items or place them within easy reach. Move frequently from your seated posture at your workstation.
- **Avoid eye strain**
Position your monitor straight in front of you. Minimize glaring by adjusting your monitor or your blinds. Follow the 20-20-20 rule: every 20 minutes take 20 seconds and look 20 feet away. Remember to blink fully and often.
- **For more tips**
Please refer to the *Ergonomic Safe Job Procedure* for more details located on Department's Health & Safety website.

Office Ergonomic Assessment (OEA)

- **When should an OEA be performed?**

Assessments should be performed when an employee's workstation prevents them from following ergonomic principles or when employees start experiencing discomfort or pain. Family physicians or other health professionals may also recommend an assessment following a consultation initiated by an employee. Certain illnesses, injuries or work tasks specific to an employee may increase his chance of developing an MSI. Supervisors may request an assessment to further improve employee's workstations.

- **Who performs OEA's?**

OEA's are performed by the Health and Safety Unit or by outside consultants. Before requesting an assessment, employees should follow adjustment instructions in the *Ergonomic Safe Job Procedure* for their workstation.

- **How is an OEA requested?**

Employees should inform their supervisors of workstation concerns, discomfort, pain or recommendations from their healthcare professionals. Then, supervisors/managers would request an OEA through the Health & Safety Unit.

- **How is an OEA done?**

The consultant/trainer will contact the employee to arrange a convenient time to meet. The supervisor may be contacted for more details prior to the OEA. The Consultant or Trainer visits the employee at his workstation and discusses or observes the kind of tasks performed and the workstation set-up. Measurements are taken to compare existing heights and distances (chair, desk, keyboard, and monitor) against suggested standards. Simple modifications to an office set-up may be done immediately. Other more complex modifications may require time to be implemented. This one-on-one visit lasts between 30 to 45 minutes.

- **What to expect from an OEA?**

A report with findings and recommendations is completed and sent to the supervisor and employee. A time period is suggested for completion of recommendations requiring modifications to the workstation. After the time period, the employee is contacted to determine if the modifications have improved conditions or addressed the original concern(s).

Resources

- Department Health & Safety Web Homepage
- WorkSafeNB Website

CHAPTER: 3	Safe Work Practices	HSM-SWP-8
SECTION 3.8	Manual Material Handling	Rev.1 2021

Overview

The intent of this document is to inform DTI employees about “Manual Material Handling Best Practices” to prevent manual handling injuries. Included in the “Best Practices” are techniques, control measures, and a process to identify high-risk manual handling tasks. Also, information will be provided to determine when to use mechanical aids.

It is important to note that this guideline is not intended to replace carts, hoists, or other tools designed to lift and carry heavy items.

The legislated requirement for manual material handling is found in OHS Regulation 91-191 Section 52 and 53.

Primary Risk Factors

Forceful exertion occurs when a high level of physical effort is required by a specific body part or parts to accomplish a task. It is one of the primary risk factors that increases the likelihood of an injury.

Other primary risk factors include awkward postures, repetition or frequency of tasks, and the overall physical condition of the employee.

Determining Employees Needs

In NB, no legislation indicates what is too heavy to lift or move for an individual. However, there are guidelines used by the regulator that indicate what principals we should adhere to at work. The following is a list of the most important principals:

- Limit individual lifts to less than 25kg or 15kg for those with less physical capability. The greater the frequency and duration of lifting, the more the individual lift weight should be reduced.
- Always push rather than pull and limit to loads that can be started and moved with reasonable effort.
- If lifting a lot of objects, try not to lift over 10,000kg in an 8 hours shift (i.e. for 25 kg = 400 movements/shift or 50 movements/hr).
- When working on tables try to set them up so the person is not bending over or raising their arms.
- Try not to work above shoulder height.
- Keep heavier items on lower shelves.

What should you do before lifting

- Gauge the weight of the load before attempting to lift.
- Always check before lifting to see if mechanical aids such as hoists, lift trucks, dollies or wheelbarrows are available.
- Get help with heavy or awkward loads.
- Be sure that the load is "free" to move.
- Be sure that the path to the load destination is free of obstacles and debris such as grease, oil, water, litter that can cause slips and falls.
- Apply the correct handling and lifting techniques for the type of load or material being handled (i.e., small bags, large sacks, barrels, cylinders, sheet materials).

General tips for lifting and carrying

- Prepare for the lift by warming up the muscles.
- Stand close to the load and face the way you intend to move.
- Use a wide stance to gain balance.
- Be sure you have a good grip on the load.
- Keep your back and arms straight while lifting.
- Tighten abdominal muscles.
- Lift the load as close to and as centered to the body as possible.
- Lift smoothly without jerking.
- Avoid twisting and side bending while lifting.
- Avoid carrying loads with only one hand.
- Have the larger stronger person on the bottom of the load when carrying through a stairway.

Control Measures for Forceful Exertion

More often, forceful exertion occurs when lifting, pushing, pulling, and/or carrying objects or materials. The following measures can be implemented to reduce the risk of musculoskeletal injuries (MSIs):

- Provide mechanical aids such as conveyors, floor cranes, carts, balancing mechanisms, vacuum hoists, turntables, tilt tables, hooks, automatic pushers, wheels, etc.
- Minimize the total cumulative weight handled each day.
- When moving an object, consider pushing instead of pulling.

- Introduce team lifting.
- Modify the object (change the shape, change the size, use lighter containers, divide into smaller units, move the center of gravity closer to the employee, create handles, improve casters, etc.).
- Provide education in proper body mechanics, in proper selection of clothing and footwear, in use of personal protective equipment, etc.
- Develop a work procedure & provide training for complex and/or higher hazard tasks.

Awkward Postures

In general, tasks should be designed to allow employees to work close to their neutral joint posture.

- For the **back**, when possible, you should avoid frequently flexing and avoid twisting while performing manual handling activities.
- For the **shoulder**, when possible, you should avoid reaching frequently above shoulder height and avoid reaching behind or fully across your body.

Control Measures for Awkward Postures

- Use proper body mechanics – turn by moving the feet rather than twisting the upper body.
- Use storage systems – wall brackets, shelving, gravity feed – to reduce holding, carrying, lifting, etc.
- Minimize the number of times the load is lifted below mid-thigh height or above shoulder height.
- Add posture variety by introducing job rotation or add other tasks to the job.
- Add posture variety by using a footrest or a sit-stand device.
- Provide anti-fatigue matting or shoe inserts for workers who stand for long periods.
- Adjust the height of the workstation to the worker's optimal working height.
- Take frequent micro breaks and do regular stretching.

Other measures when Handling Objects or Materials

- Add lighting to improve the employee's ability to see objects.
- Use mirrors and other visual aids to help an employee maneuver safely around corners and other obstacles.
- For removing items from a storage bin, tilt them, or have the side open and tilt down, or put in a spring-loaded base that rises as the objects are removed.
- If possible, make modifications to equipment to reduce reaching for objects or materials.

- Implement a warm-up and stretch program.

Repetition

Ideally, workers should use different muscle groups and vary their posture (sitting, standing, walking) as often as possible. The physical intensity of the work should also vary, especially for lifting tasks.

In general, increasing the frequency of the task (the number of times the task is performed per minute) or the duration of the task increases the risk of injury.

Control Measures for Repetition

- Introduce proper task rotation or add a variety of tasks to the job.
- Introduce short and frequent work-rest cycles.
- Try to find other ways to accomplish the task with less repetition.
- Introduce task-specific exercises.
- Reduce the pace of the task or the pace of the machine or feeder.
- If frequency is very high, provide mechanical aids or automate the task.

Supervisor Responsibilities

Ensure

- Employees receive training on manual material handling, and on the use of any equipment provided to move heavy/awkward objects.
- Carts, hoists, and specific lift tools are all available and maintained.
- Safety gloves, knee pads and ergo mats are available to all employees.
- Employee work practices and site operations are regularly observed, coached and mentored as necessary;
- Tools for lifting and moving are used whenever appropriate.
- Tools and equipment are regularly tested to ensure they are operating properly.

Employee Responsibilities

- Assist in training as provided.
- Comply with regulations and departmental standards.
- Use all tools and equipment designed to assist in lifting and moving heavy items.
- Wear and use gloves, knee pads, etc. when appropriate.
- Report defective carts, lifts, and other tools to your supervisor immediately.

- Participate in other in-house training and activities designed to reduce MMH hazards.

Selection Guide for Carts or Platform Trucks

Below are some basic principles to consider when deciding to use a cart or other handling equipment.

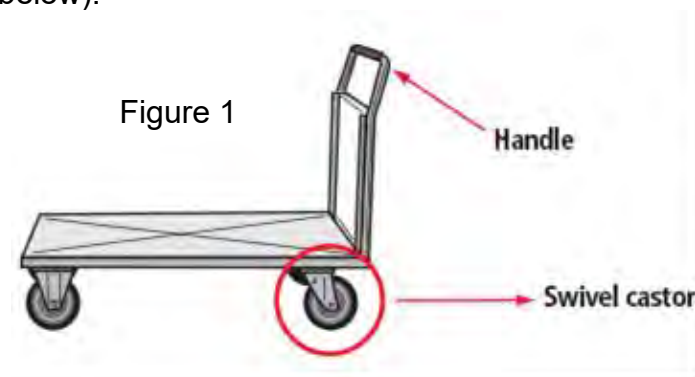
1. Cart Characteristics

A. Wheels/Castors:

- Use a larger diameter wheel. Increasing the diameter of the wheels generally decreases force requirements.
- A harder caster/tire generally decreases force requirements.
- Pneumatic wheels should not be used for heavy loads as they may compress and substantially increase the force requirements.

B. Handles:

- Use swivel castors on the same end of the cart as the handle (Figure 1 below).
- Handles on pallet trucks should be long enough to prevent workers from having to bend over to push as well as maintain a separation between their feet and the wheels (Figure 2 below).
- Length of “Y” should be far enough away that the worker does not hit or bump into the cart. (Figure 2 below).
- Fixed horizontal handles should be at a height between 91 cm and 112 cm above the floor (Figure 3 below).



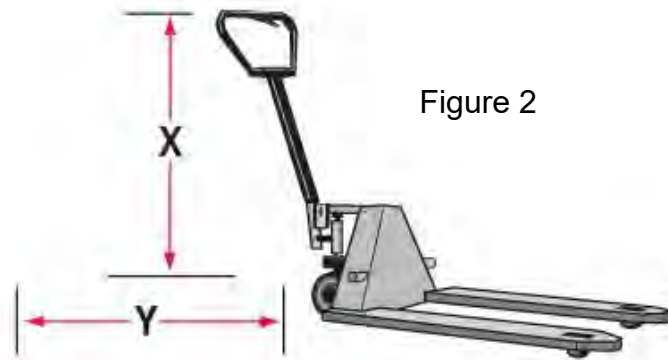


Figure 2

Length of "X" should be far enough away that the worker does not hit or bump into the cart.

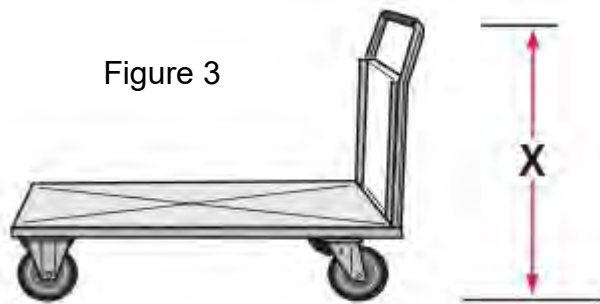


Figure 3

The distance of "X" should be between 91 cm and 112 cm.

2. How to use a Cart

Employees should

- Be trained on appropriate body positioning for the type of cart and load being handled.
- Receive training on how to maneuver heavy loads.
- Walk at an appropriate cart speed - recommended speeds should match a typical walking pace (3-4 km/h).

High hazard movements that should be avoided



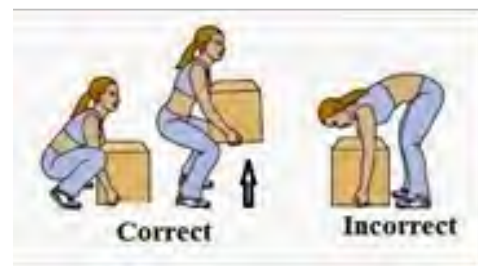
Lifting over the shoulders



Lift and twist



Bending over



Bending at the waist

Reference

- Occupational Health and Safety Regulation 91-191, section 52.

CHAPTER: 3	Safe Work Practices	HSM-SWP-9
SECTION: 3.9	Handling Dead Animals	Rev.1 2021

Overview

Just like people, animals can be infected with several different types of microorganisms that could be directly transmitted to people.

Infectious microorganisms from live or dead animals can be transmitted to humans as a result of exposure of mucous membranes (e.g., eyes, nose or mouth) or skin abrasions (scratches or cuts) to these microorganisms. Types of microorganisms vary according to the type of animal species:

- Mammals – Rabies virus, E. coli, Salmonella, Giardia, Hantavirus, etc.
- Birds – West Nile Virus, parrot fever, psittacosis, Salmonella
- Reptiles – Salmonella,
- Ticks on vegetation or animals – Lyme disease, Tularemia, many viral diseases

If not treated early, some infections like rabies would be fatal. Although some might cause a mild infection, others like Lyme disease or E. coli can be debilitating and cause permanent damage to the body.

Although the risk (chance) of acquiring a disease from animals is low, some basic precautions for handling live or dead animals will prevent an infection.

Precautions for handling dead animals to prevent rabies transmission:

- Care should be taken to prevent being bitten or scratched by dead animals, and to prevent any exposure of the bare skin (which may have microscopic wounds) and mucous membranes (eyes, nose, mouth) to animal saliva and tissues that may contain the rabies virus.
- **Do not touch dead animals with your bare hands.** Wild animals should be handled wearing disposable rubber gloves. Rubber gloves should be worn even if using heavier gloves for protection. If disposable gloves are unavailable, then animals can be handled with heavy-duty leak-proof rubber gloves (such as used in house cleaning). Take care that teeth or claws do not puncture your gloves.
- Alternatively, one or several leak-proof plastic bags may also be used as a glove. Grasp the animal with your hand protected by several layers of leak-proof plastic bag and then turn the bags inside-out over the animal so it ends up inside the bags, with your hand on the outside.
- Ensure that you and your clothing do not contact the animal or its blood, feces, or brain material. Protective clothing should be worn while handling dead animals, and then properly cleaned and disinfected afterwards.

- **Wash your gloved hands and then your bare hands** after handling an animal. Hands should be thoroughly washed for **five** minutes using a disinfecting soap and hot water.
- If you do receive a wound from the animal, **wash the wound with soap and warm water for 10 minutes**. Seek medical attention immediately. The carcass should be tested for rabies. For more information, contact the **Rabies Information Line at 1-877-372-2437 or call 811**.
- The rabies virus can survive freezing for months, refrigeration for weeks and room temperature for hours to days. Gloves, shovels and any surface that may have been exposed to saliva containing the virus should be disinfected with a solution of bleach (**1 part concentrated bleach to 9 parts water**).

Disposal of Dead Animals:

Dead animals, if not submitted to the Provincial Veterinary Laboratory for surveillance testing for diseases, should be incinerated. They may also be buried several feet deep in a site that will not be disturbed, or double-bagged and placed in a sanitary landfill (dump). Each municipality will have regulations about carcass disposal and this should be checked beforehand.

Dead animals shall be disposed of in such a manner such that they will not be handled by other people or be readily available to be scavenged by other wild animals. Recommended methods include

- Incineration
- Double-bagged and placed in a sanitary landfill
- Buried several feet deep

Injured Live Animals

Injured animals should be evaluated for rehabilitation or possible humane euthanasia. While it is very compassionate to want to help any injured or sick wildlife, trained professionals are best able to handle and care for wildlife, and a permit is required to keep any wild animals in captivity. Please contact the nearest DTI District Office of the Department of Natural Resources and Energy, or local veterinarians.

Reference

- Occupational Health and Safety Regulation 91-191, section 52

CHAPTER: 3	Safe Work Practices	HSM-SWP-9
SECTION: 3.9	Handling Dead Animals	Rev.1 2021

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Reference

- Occupational Health and Safety Regulation 91-191, section 52

CHAPTER: 3	Safe Work Practices	HSM-SWP-10
SECTION: 3.10	Working around Bird or Bat Waste	Rev.1 2021

General

This Safe Work Practice shall be used by all Department personnel working in areas where there is known or potential exposure to bird or bat waste. This Code of Practice will provide guidelines to prevent exposure to fungus which can cause a respiratory infection called histoplasmosis.

Personal Protective Equipment

To ensure exposure to bird or bat waste is minimized, the following shall be followed:

- properly fitted disposable NIOSH approved respirator
- rubber gloves and rubber boots
- sealed eye protection
- disposable coveralls

Work Practices in Salt/Sand Domes and Salt Sheds

Proper work practices must be used and should include

- **Personnel shall practice good hygiene** to avoid unnecessary exposure to waste particles including
 - after working in a contaminated area, wash hands and faces before eating, drinking or smoking
 - do not eat, drink or use tobacco products in the contaminated area
 - park assets where they will not be contaminated with bird or bat waste
- **Operating loader in salt/ sand dome** – keep loader door closed. No additional personal protective equipment normally required.
- **Inspections/ Cleaning or Repairs** – wear required PPE. After exiting the contaminated area, dispose of or wash the PPE with a disinfectant solution.
- **Sand/ salt quantity measurement** – wear required PPE. After exiting the contaminated area, dispose of or wash the PPE with a disinfectant solution.

Other Precautionary Steps

When an asset has been used in a contaminated area and will be moved into a bay or the shop for repairs, the asset must be spray washed (out-of-doors) prior to entering. Care should be taken to ensure bird or bat waste is not tracked into vehicles (i.e. from boots).

Incident Reporting

Incidents involving potential exposure to bird or bat waste will be immediately reported to the supervisor and documented.

Reference

- Occupational Health and Safety Act Chapter O-0.2, Section 50(2)

CHAPTER: 3	Safe Work Practices	HSM-SWP-11
SECTION: 3.11	Oxy-Acetylene Cutting	Rev.1 2021

General

This SWP should be used in conjunction with relevant manuals and manufacturer recommendations.

Cutting and welding DO NOT proceed in this operation unless employees are appropriately instructed equipment safe use and operation and permission to operate has been given.

Compulsory PPE

- Foot protection
- Flame Resistant Protective Clothing
- Hand Protection
- Eye and Face Protection Shade #4 Minimum

Potential Hazards

1. Explosion
2. Burns
3. Eye injury
4. Fire and explosion

No personnel are to use this equipment prior to obtaining the following:

- Competency in the correct use of the equipment
- Reading and fully understanding the operator’s manual
- Reading the standard operating procedure
- Undergoing thorough practical training while properly supervised

Pre-Operational Safety Checks

1. Wear proper clothing and Personal Protective Equipment (PPE).
2. Ensure this OXY welder has a suitable safe work area.
3. Ensure the equipment is fitted with appropriate flash arrest (blow back) arrest system.
4. Keep the area clean & free of grease, oils and flammables.
5. Hoses and regulators to be inspected and in good condition.
6. Ensure the area is well ventilated (with fume extraction if required).

Leak detection

All joints and hoses must be checked for leaks before any welding or cutting is attempted. Acetylene may be detected by its distinctive smell (usually at levels of less than 2%) oxygen is odourless.

Leak detection is best carried out applying a weak (typically 0.5%) solution of a detergent in water or a leak detecting solution from one of the gas supply companies. It is applied to the joints using a brush and the escaping gas will form bubbles. On curing the leak, the area should be cleaned to remove the residue from the leak detecting solution.

Operational Safety Checks

1. When setting up, check that the oxygen and acetylene regulator adjusting knobs are closed (OFF), and are loose.
2. Check that both handpiece blowpipe valves are closed.
3. Slowly open the cylinder valves on each gas cylinder by half a turn (180°) only – for a faster emergency shutdown.
4. Screw in the regulator adjusting knobs slowly until the delivery pressure gauges are both correct.
5. Regulator Adjusting-Screw. OXYGEN=15-30 PSI ACETYLENE=5-8 PSI *NO GREATER
6. Never use acetylene at a gauge pressure above 100 kPa.
7. Purge the oxygen gas line and check for constant gas flow. Re-adjust delivery pressure if necessary.
8. Then purge the acetylene gas line and check for constant gas flow. Re-adjust pressure if necessary.
9. Open the acetylene blowpipe (handpiece) valve very slightly and light with a flint lighter ONLY.
10. Continue to slowly open the acetylene valve until the correct flame length is achieved.
11. Slowly open the oxygen blowpipe (handpiece) valve until a neutral flame is produced.
12. Always be very aware of the dangers of a naked flame.
13. Note: When shutting down, always close the acetylene blowpipe valve first.

Housekeeping

- Ensure both gas bottles are off and secured with bottles stored upright at completion of work.
- Leave the work area in a safe, clean and tidy condition.
- Ensure torch tips are cleaned as per manufacturer's recommendations.
- Use Safe Operating Procedures.

References

- Welding - Personal Protective Equipment and clothing, Canadian Centre for Occupational Health and Safety (CCOHS).
- Local Exhaust – Section 273 of the OHS regulations 91

CHAPTER: 3	Safe Work Practices	HSM-SWP-12
SECTION: 3.12	Highway and Shoulder Compaction	Rev.1 2021

Overview

There is potential of serious injury when using a roller to compact the shoulder of any highway for both the operator and others who are working in the area.

Personal Protective Equipment Required

Hard hat, eye protection, hearing protection, safety vest, and CSA safety footwear.

Hazards Identified

Slips/trips/falls, general traffic, bodily injuries, dust, vibrations, crushing, equipment roll over.

Hazard-Specific Training

WHMIS, WATCM awareness, roller operation.

General Practices

- The supervisor shall perform an on-site assessment of the potential hazards prior to commencing work, including but not limited to: Identifying soft areas, unusual dips in the shoulder or a steep shoulder slope which could cause a roller to upset.
- Supervisors shall verify that operator(s) have the required training in the use of type and size of roller(s).
- Supervisor to stay alert to changing conditions such as: new equipment, new employees and weather conditions.
- Complete a “tailgate” meeting informing all employees of the scope of the work; hazards; and procedures.
- All required personal protective equipment must be worn.
- Establish and review the “Emergency Communication Procedure” with all employees.
- Ensure WATCM requirements are followed.

Specific Practices for Rollers

- The supervisor and roller operator shall perform an on-site Hazard Assessment of the potential hazards prior to commencing work, including but not limited to

identifying soft areas, unusual dips in the shoulder or a steep shoulder slope, which could cause a roller to upset.

- Ensure all equipment is safe to operate, equipped with a Roll-over protective Structure (ROPS) and fill in any daily logs.
- Ensure all safety devices including, back up alarms, seat belts, brakes, lights etc. are in good condition, operational and used.
- Verify that the roller being used is safe for the conditions on the job.
- If equipped with a movable seat inside the cab, the seat must always be locked in position and seatbelt used.
- Roll along the shoulder of the road parallel to the roadway with a minimum 3/4 of the roller drum on the paved or chip sealed surface.
- The first pass must always be completed in a forward motion to reduce the risk of tip over blind spots and other hazards.
- If material is soft, shut off the vibration function on the roller to reduce the risk of the roller slide if on an incline or slope.
- If possible, use a single drum roller as its rubber tires have better adhesion to the gravel conditions.
- Ensure the roller used is appropriate for the material being compacted.
- Always operate mobile equipment at safe speeds, and constantly be aware of others working around equipment on foot. Look in direction of travel. Use mirrors if necessary.

References

- Occupational Health and Safety Regulation 91-191, sections 218-230

CHAPTER: 3	Safe Work Practices	HSM-SWP-13
SECTION: 3.13	Lightning	Rev.1 2021

General

Lightning kills more Canadians than hail, wind, rain and tornadoes combined. Each year lightning kills approximately 10 Canadians and injures approximately 100 – 150 people. A lightning bolt is a million times more powerful than household current and carries 100 million volts of electricity. Lightning bolts can travel 220,000 kilometers per hour and can exceed 30,000 Celsius, which is six times hotter than the surface of the sun. The average length of a lightning bolt is 10 kms long and these storms can move at 40 kms/hr. Lightning can strike without rain. Most lightning fatalities and injuries occur when people are caught outdoors without shelter. People who have been struck by lightning do not carry an electrical charge and can be safely handled.

General Practices

30-30 RULE:

- 30 Seconds: Count the seconds between seeing the lightning flash and hearing the thunder. Each second represents about 300 meters. If this time is 30 seconds or less, then the lightning storm is less than 10kms away and there is an 80% chance that the next strike will happen within that 10 kms next.
- 30 Minutes: After seeing the last lightning flash or thunder clap, wait 30 minutes before leaving shelter. More than half of lightning deaths occur after the thunderstorm has passed. Stay in a safe area until you are sure the threat has passed.

Procedure(s)

If thunder is heard and the ratio, as per the 30-30 Rule, is calculated to be 30 (representing 10 km) or less, supervisory personnel will inform field personnel of the potential for lightning in the area.

If the ratio intensity reaches a value of 15 (i.e. 5 km), supervisory personnel will suspend all crane hoisting and elevated work activities.

If the ratio reaches a level of 9 (i.e. 3 km), the site shall be cleared, and the following safety protocols be implemented.

In the Event of a Thunderstorm:

- Get inside a home or large building (best choice) or inside an all-metal vehicle with the windows up.

- Stay away from windows, sinks, toilets, tubs, showers, electrical boxes, outlets and appliances. Lightning can flow through these systems and “jump” to a person.
- Do not take a shower or bath during a thunder and lightning storm.
- Avoid appliance use and unplug appliances if possible.
- If you are inside a vehicle during lightning, avoid parking under trees or powerlines that may topple over during the storm. Be aware of any downed powerlines that may be touching your vehicle. You are safe inside your vehicle; however, you may receive a shock if you step outside.
- If you are outside, with no time to reach a safe shelter (building or vehicle):
 - Do not stand under a natural lightning rod: tall isolated trees, towers, powerlines, telephone poles etc.
 - Avoid all unsafe shelters: metal objects such as power poles, fences, gates, bleachers, small sheds, partial shelters, electrical equipment, mowing and road machinery. Avoid solitary trees, hilltops, water, open fields, high ground and caves.
 - Avoid wire fences, clotheslines, metal piping, rails and other metallic paths which could carry lightning towards you.
- If you are in a wooded area, seek shelter in a low area under a thick growth of shorter trees. Crouch down away from the tree trunks. In open areas, seek shelter in low places such a valley.
- Get out of and away from open water as well as puddles, even if wearing rubber boots. Lightning can strike water and travel quite a distance from its point of contact.
- Get off of and away from motorcycles, scooters, mowing equipment, bicycles and metal machinery.
- Ensure all tools are put down. Holding something can make you the tallest object and a target for lightning.

If with a group of people, ensure there are several meters between each person to avoid lightning from jumping from person to person.

If you feel your skin tingle, your hair stands on end, and/or you hear “crackling noises” a strike may be about to happen. If outdoors, immediately remove metal objects and get into the “lightning safety crouch”.

Crouch down on the balls of your feet with your feet close together. Keep your hands on your knees and lower your head. Some people may prefer to wrap their hands over their ears or cover the back of their neck. Make yourself the smallest target possible and minimize your contact with the ground. **DO NOT LIE ON THE GROUND.**



Lightning Safety Crouch

Helping someone that has been struck by lightning:

- Get emergency help as soon as possible.
- Administer First Aid immediately; common injuries include burns, wounds and fractures.
- If numerous people have been struck by lightning, treat those who are unconscious first, they are at the greatest risk.

CHAPTER: 3	Safe Work Practices	HSM-SWP-14
SECTION: 3.14	Excavator / Backhoe / Loader – General Use & Lifting Operations	Rev.1 2021

Overview

The purpose of this document is to define general precautions that must be respected when planning and carrying out lifting operations with excavators and other types of earth moving equipment (backhoe and loaders) to enable the work to be done safely and in accordance with governing standards.

Personal Protective Equipment Required

Hard hat, eye protection, hearing protection, high-visibility vest, CSA safety footwear and any additional task-specific PPE identified during the risk assessment.

Hazards Identified

Rapid slewing – crushing/jamming, equipment Roll over, loss of load(s), rigging failure.

Hazard-Specific Training

WHIMS, Rigging Awareness

General Practices Excavators / Backhoes / Loaders

- The supervisor shall perform an on-site assessment of the potential hazards prior to commencing work.
- Supervisors shall verify that operator(s) have the required training in the use of type and size of equipment.
- Supervisor to stay alert to changing conditions such as: new equipment, new employees and weather conditions.
- Complete a “tailgate” meeting informing all employees of the scope of the work, hazards, and procedures.
- All required personal protective equipment must be worn.
- Establish and review the “Emergency Communication Procedure” with all employees.
- Ensure WATCM requirements are followed. All excavators shall be operated as per operator's handbook. A copy of operator's handbook shall always be kept in the cab of the machine.
- A pre-trip inspection specific to the machine must be completed prior to each use and manufactures maintenance schedules must be maintained.

- Operators shall remain in the cab and wear safety belts. Only trained / competent workers shall operate equipment.
- Only trained / competent workers shall give signals to machine operators.
- No person under eighteen years of age will operate the machinery or be employed to give signals to the operator.
- Machinery shall not be operated while under the influence of alcohol / drugs, this includes prescribed drugs that may affect motor functions.
- Cell phones shall not be used in mobile machinery.
- No loose clothing / jewelry / belts etc. shall be worn by the operator.
- No unauthorized riding mobile machinery. One seat, one person.
- No bypassing or interfering with safety devices on machines I.e. excavators / buckets.
- All hydraulics shall be used within their design limit / as per manufactures instructions.
- Before adjusting / repairing / maintaining / leaving the excavator, always turn off the engine.
- Under no circumstances will the hydraulics be relied upon to maintain raised equipment while working underneath. Unless the machine is designed for such purpose.
- As a general rule, persons should not be working within the working radius of a machine. An exclusion zone should be defined and respected.
- The Safe working load of the machine shall always be respected.
- Excavator buckets shall be secured to quick hitch i.e. the insertion and location of a locking pin to prevent the inadvertent dropping of the bucket.
- All equipment shall be secured when left unattended to prevent unauthorized use, especially at the end of working day.
- Before excavation activities are engaged, a locate (underground utilities) shall take place and be reviewed with the operator to determine if safe to do so.
- Copies of locates should be kept in the machine to be used as a reference
- When working near overhead power lines a spotter will be required, and safe limits of approach shall always be respected.
- Ensure all equipment is safe to operate, equipped with a Roll-over Protective Structure (ROPS) and fill in any daily logs.
- Ensure all safety devices including, back up alarms, seat belts, brakes, lights etc. are in good condition, operational and used.

Lifting Operations

- It's critical to ensure the machine is rated to handle the load.

- Ensure operators are thoroughly trained to read lift charts for the machines they operate.
- Before lifting, inspect the machine to ensure there is no damage or other factors that could impede its lifting capacity.
- Make sure the machine is positioned on a stable work surface, as far back from the edge of any nearby excavations as possible.
- Once the machine is properly positioned, it should be set up for maximum stability and lift capability. I.e. Blade (excavator) or stabilizers (backhoe) down
- Clear the area of any workers.
- As you're performing the lift, keep in mind that a machine will always have its highest lifting capacities closer to the machine.
- Slow movements are stable movements.
- When selecting rigging for the lift, check its load rating.
- Know the condition of the rigging.
- Always ensure the load is properly secured.
- Also take precautions, as needed, to minimize the risk of sudden shifts while moving the load. Tag lines etc.

Before lifting operations begin, it is essential that all personnel involved are fully briefed on the findings of the Field Level Risk Assessment, the JHA and their individual roles in carrying out the task.

The supervisor must ensure that persons are kept well away from the lifting area, and that there is no one working under a suspended load.

The rigger / operator must check the lifting accessories, including the lifting point before use to ensure they are not damaged or worn. Any defective lifting accessories should be removed from service immediately.

Chain slings should not have any distorted links or components, hooks should not be bent, and the safety latch should be in working condition. Synthetic slings & connecting hardware must be rejected when damaged with no exceptions.

Where the hook device (the point on the machine designed for connection of the load) is not part of the bucket, the bucket should (where possible, and unless the operator instructions specify otherwise) be removed to improve visibility and reduce the total weight being lifted.

If the bucket is retained, then the weight of both the bucket and quick hitch must be added to the load when determining whether the load is within the rated capacity of the machine.

The operator must ensure that the acoustic/visual warning device indicating the load moment is on / operational prior to any lifting operation.

As all applied forces must be known during lifting operations. Pulling imbedded, stuck, welded and/or bolted objects is not permissible as the load moment of the machine can be surpassed before the hydraulic capacity is reached. Potentially leading to equipment tip over / roll over.

References

- Occupational Health and Safety Regulation 91-191

CHAPTER: 3
SECTION: 3.15Safe Work Practices
Backing up with Vehicles or Mobile EquipmentHSM-SWP-15
Rev 1 2021**Overview**

Operating mobile equipment or vehicles is inherently a hazardous task, however, backing up creates more risk for incidents to occur. All too often unnecessary backing is responsible for injuries or property damage incidents. It is important to consider the hazards of backing and what can be done to mitigate these hazards.

With increased blind spots, backing leaves drivers and operators at more risk for error resulting in damage or injury. Mobile equipment, large trucks followed by light duty pickups are responsible for the majority incidents in the past years on job sites. Outside of struck-by incidents involving ground personnel, and facilities there are many other hazards to consider. A few hazards include:

- Fixed objects
- Moving equipment or vehicles
- Uneven terrain (construction sites)

Best Practices and Safeguards to Mitigate the Hazards of Backing**When Planning Work:**

- Identify mobile equipment and vehicles that require back-up alarms and have them installed. Back-up alarms are required on mobile equipment and vehicles with a capacity of one tonne or more OHS Regulation 91-191 230.21(1)
- Test back-up alarms on mobile equipment and vehicles when doing monthly and pre-use inspections. If not functioning, have them repaired or replaced.

Before Backing Up:

- The single best way to prevent backing-related incidents is to eliminate backing as much as possible. Most work areas and tasks can be setup in such a way that backing up is not necessary. Preplanning of movements is another way to eliminate unnecessary backing.
- Think in advance. Drivers should not put themselves into unnecessary backing situations.
- If you are backing from light area to dark or area, use a signaler.
- Get to know a vehicle's blind spots. In a medium-sized truck, blind spots can extend up to 16 feet in front and 160 feet behind a vehicle. Drivers need to remember that mirrors can never give the whole picture while backing up.
- Do a walk-around. Walking around a vehicle gives a driver firsthand view of the backing area and any limitations. They can check for children, soft or muddy areas, potholes, tire hazards, and other dangers.

Use a signaler when appropriate. If backing is necessary and there are hazards such as other ground personnel or fixed objects in the area, then a signaler is required. The driver and signaler should use hand signals instead of verbal signals to ensure they understand each other. **When signaller required NB OHS 191-91 226**

- Always consider the additional hazards created when a signaler is used in a work area with moving equipment or vehicles.
- Mark fixed objects, so they are more visible to those operating a motor vehicle or heavy equipment in a work area.
- A spotter is necessary when driving a vehicle in reverse and the driver does not have a full view of the working area and there is the possibility of injuring someone or causing property damage.
- Ensure all **mirrors** are intact, functional and properly adjusted for the best view.
- Use mirrors, use back-up cameras (if available), **beep** the horn twice (if there is no back-up alarm), **proceed very slowly** and be prepared to stop.
- **Signalers** and/or traffic control persons (TCP) can signal equipment to **reduce speed** as necessary. They must warn ground workers of backing-up hazards.
- If backing-up hazards have been identified during a **hazard assessment**, ensure controls are included in the assessment.
- Ensure backing up controls are reviewed and **understood by all workers** when reviewing the hazard assessment before work starts.
- **Stay alert.** Do not stand and talk in blind spots or equipment paths. Find a safe area. **Do not turn your back** to moving equipment.
- Make **eye contact** with the equipment operator before approaching any equipment and before signaling as a TCP or a spotter.
- Follow the WATCM traffic control plan.

Additional Protection

- For additional protection on longer jobs, **signs and barricades** should be used to direct internal traffic and separate areas within a worksite where workers are more vulnerable.
- Consider installing **side towing mirrors** on trucks that have obstructions in the rear mirror. These offer a better view.
- Consider installing **back-up alarms** and cameras on all trucks including pick-ups.
- When possible, back-into parking spaces, so that you can exit forward.

Backing can almost always be eliminated or greatly reduced when proper preplanning is used. Elimination should always be the first choice before relying on less effective safeguards.

References

- Occupational Health and Safety Regulation 91-191, Sections 213.11 (f) & (g), 216 (1)(g), 224(f) and 230.21(1)(f).
- Occupational Health and Safety Regulation 91-191 **Definition of vehicle 230.2**
- Occupational Health and Safety Regulation 91-191 **When signaller required 226**

CHAPTER: 3
SECTION: 3.16Safe Work Practices
Grinder UseHSM-SWP-16
Rev 1 2021**Overview**

Like all power tools, portable grinders can present safety concerns, including flying particles and electrical hazards. This procedure outlines requirements in the New Brunswick Occupational Health and Safety Regulation.

Personal Protective Equipment Required

Wear appropriate PPE - safety glasses or goggles, **face protection to protect against flying particles**, hearing protection to guard against hearing loss.

- Wide vision goggles, safety glasses and face shield
- Earmuffs or ear plugs
- CSA approved safety boots
- Coveralls or other fitted clothing
- Do not wear jewelry or other items that could become entangled in moving parts.
- Tuck or secure long hair.
- Well-fitted gloves that allow a good grip of the tool, and to avoid snagging on the abrasive wheel or wire brush

Hazards Identified

Exposed moving parts and electrical hazard with the potential to cause harm through entanglement, impact and abrasion, exposure to heat, noise, projectiles, sharp objects, friction and sparks.

Kick Back

- Always use and never remove provided safety attachments {handle & guard};
- Never let the grinder go until the disk has stopped;
- Do not apply excessive force to the disk;
- Good work practices i.e.do not overreach, do not use the grinder without both hands on the tool {handle & grinder}, do not use the grinder in a cramped area when you do not have full control of the grinder.

Wet conditions, fire hazards

- Conduct a workplace inspection before starting work {are there any hazard that could put you at risk while grinding or what hazards are in the area when you grind};
- Use Proper housekeeping practices;
- Properly barricade/barrier in place for the work being performed.

Inspection

- Unplug power cord from power supply before inspecting, adjusting, removing or replacing parts.
- Ensure wheel guard is in place. *See Guard Removal Exception below. The guard must be approved for use by the manufacturer and cover 180° of the wheel.
- Check abrasive wheel for cracks or flaws – replace if necessary.
- Verify the RPM rating of the grinder does not exceed the RPM rating on the abrasive wheel.
- Tag out grinder if any deficiency is found – do not use grinder until the deficiency has been corrected.
- Ensure that you are using the proper type of grinding or cutting disk for the workpiece.
- Check the condition of the disk before using the grinder; If any defects or fractures found, remove and discard disk;
- Use proper disk for application to prevent "glazing" thus resulting in disk overheating causing failure;
- Make sure to use the proper disk for the material being cut or ground {plugged or glazed disk causes overheating resulting in failure or the premature wear of the disk.}.
- Ensure all grinders are regularly checked for electrical safety and that all defects are repaired by a competent person

General Practices

- All PPE and clothing must be in good order and free of oil and grease;
- Areas must be free of combustibles;
- Control spark direction by being aware of your surroundings;
- Use proper barriers like guarding of the work area, fire blanket, welding curtain;
- Identify required respiratory protection for work being performed
- Ensure work area is clean, free from slip, trip, and fall hazards and well maintained.
- Never use a cutting disc for grinding or a grinding disc for cutting
- When not in use, disconnect the power and place the grinder on a bench with the disc facing upwards.
- Keep the power cord away from the grinding wheel and the material being ground.
- Have personnel not involved in the immediate work step away a safe distance from the grinding area.
- Secure work with clamps or a vice to free both hands to operate the tool if required.
- Be aware the process of grinding can dislodge material from the workpiece and become an airborne
- The guard on grinder must be properly secured and in the proper position to protect the user from projectiles from the disk;

- When using a grinder that can switch between left-handed and right-handed operation, remember to move the wheel guard when you move the handle.
- Never use excessive force to the grinder disk;
- Never bump the rotating grinder disk onto the workpiece;
- Keep the grinding disk at a 15 to 30-degree angle to the workpiece;
- Check that the disk speed marked on the disk is equal to or greater than the maximum speed of the grinder;
- Do not twist or bend a cutting disk in operation;

Replacing the Wheel

- Disconnect power to grinder;
- Use proper tools for the removal of the retaining nut {if provided};
- Follow manufactures instructions;
- Do not strike grinder disk to loosen;
- Use a locking device to aid in the removal of the disk;
- Use Proper PPE.
- The mounting nut should not be tightened excessively. Do not overtighten the knurled nut that secures the disk;
- Run a newly mounted wheel at operating speed for 1 minute before grinding.
- Always follow the manufacturer's instructions.

The abrasive wheel should not be forced onto a grinder nor should the mounting hole size be changed. To control cracking of the abrasive wheel, it must fit freely on the spindle and be tightened to hold the wheel in place without distorting the flange.

Other Precautions

- Do not use liquid coolants with grinders as this may cause the metal to shatter
- Do not clamp portable grinders in a vise for grinding hand-held work.
- Do not keep any materials close to the grinding wheel when it is not in use.
- Do not carry a grinder by the power cord.
- Do not pull on the power cord to disconnect it from the power supply.
- Keep cords away from heat, oil and sharp objects or edges.

Maintenance & Storage

- Always Store portable grinders on racks or hooks, not on the floor or ground.
- Clean and service grinders according to the manufacturer's recommendations, including lubricating and changing accessories.

References

NB OH&S Regulation Abrasive wheels and grinders 244 (1)-(5)

CHAPTER: 3
SECTION: 3.17Safe Work Practices
Load Binder UseHSM-SWP-17
Rev 5 2021**Overview**

You should never exceed the working load limit shown on the binder. Hand effort will tighten binder to working load limit. Always inspect the load binder before use. Always position the load binder so the handle goes downward when securing or tightening the load. A load binder should be operated only by hand from a firm standing position. Do not operate load binder while anyone is on the load.

Personal Protective Equipment Required

- Wear appropriate PPE –
- Safety glasses
- CSA approved safety boots
- Coveralls or other fitted clothing
- Do not wear jewelry or other items that could become entangled in moving parts.
- Tuck or secure long hair.
- Well-fitted gloves that allow a good grip of the tool, and to avoid snagging on the abrasive wheel or wire brush

Hazards Identified

- Failure to use this load binder properly may result in serious injury or even death to you or others.
- Do not operate load binder while standing on the load.
- Move handle with caution. It may whip – Keep body clear.
- Keep yourself out of the path of the moving handle and any loose chain laying on the handle.
- You must be familiar with state and federal regulations regarding size and number of chain systems required for securing loads on trucks.
- Always consider the safety of nearby workers as well as yourself when using load binder.
- While under tension, load binder must not bear against an object, as this will cause side load.
- Do not throw these instructions away. Keep them close at hand and share them with any others who use this load binder.
- Do not use handle extender – see instructions.
- Do not attempt to close or open the binder with more than one person.

Inspection

- Load binder should be inspected prior to each use for damage, distortion, cracks, nicks, or wear.
- Bending of any feature in any plane of more than 10 degrees is cause for removal of the unit from service.
- Distortion indicates overloading or misuse. This applies to distorted or elongated connecting links also and is cause for removal of the unit from service.

- If wear of connecting link ends is more than 10% of the original stock, remove unit from service.
- On lever-type binders, inspect yoke periodically for distortion and make certain it is seated on the pins.
- Deep nicks and gouges should be smoothed out to relieve stress concentrations providing that the material removed does not exceed 10% of the total material.
- If distortion, cracks, nicks, or wear affect more than 10% of the stock, the unit should be discarded.

Instructions – Lever Type Load Binders

- Hook load binder to chain so you can operate it while standing on the ground. Position load binder so its handle can be pulled downward to tighten chain (see photo). **Be aware of ice, snow, rain, oil, etc. that can affect your footing. Make certain your footing is secure.**

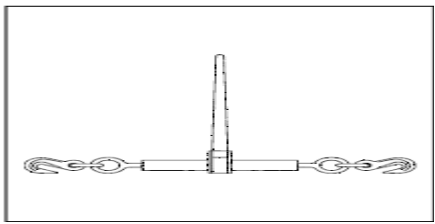


- Worksafe NB specifically recommends AGAINST the use of a handle extender (cheater pipe). If sufficient leverage cannot be obtained using the lever type load binder by itself, a ratchet type binder should be used.
- During and after tightening chain, check load binder handle position. Be sure it is in the locked position and that its bottom side touches the chain link.
- Chain tension may decrease due to load shifting during transport. To be sure the load binder remains in proper position: Secure handle to chain by wrapping the loose end of chain around the handle and the tight chain, or tie handle to chain with soft wire.
- When releasing load binder, remember there is a great deal of energy in the stretched chain. This will cause the load binder handle to move very quickly with great force when it is unlatched. Move handle with caution. It may whip – Keep body clear.
- Never use a cheater pipe or handle extender to release handle. Use a steel bar and pry under the handle and stay out of the path of handle as it moves upward.
- If you release the handle by hand, use an open hand under the handle and push upward. Do not close your hand around the handle. Always keep yourself out of the path of the moving handle.

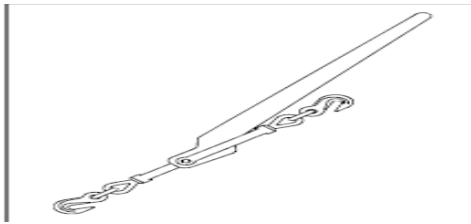
Maintenance of All Load Binders

- Routinely check load binders for wear, bending, cracks, nicks, or gouges. **If bending or cracks are present – Do not use load binder.**
- Routinely lubricate pivot and swivel points of Lever Binders, and pawl part and screw threads of Ratchet Binders to extend product life and reduce friction wear.

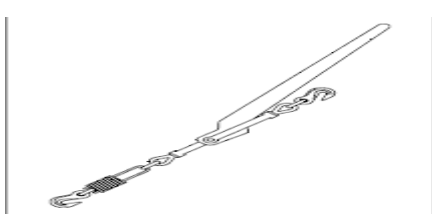
Binder Types:



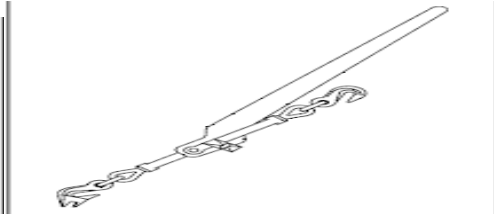
Ratchet Type



Lever Type



Lever Snubbing Type



Lever Walking Type

Mechanical Advantage

Lever Type Binder = 25 : 1

Ratchet Type Binder = 50 : 1

Example: 100 pounds of effort applied to the binder results in the following force on the binder.

Lever Type:

2500 (100 lbs. x 25) lbs. of force

Ratchet Type:

5000 (100 lbs. x 50) lbs. of force

CHAPTER: 3
SECTION: 3.18Safe Work Practices
Trailer and Float UseHSM-SWP-18
Rev 1 2021**Overview**

The safe and legal transportation of heavy cargo and construction equipment is no easy task. Preparation is key. When nearly half of all injuries occur during loading and unloading heavy equipment, safety measures need to be taken from the beginning for mitigating liabilities and avoiding construction accidents. Trailers and equipment floats have the potential of becoming unguided missiles if they are not properly hooked up or cared for.

Personal Protective Equipment Required

- Safety glasses
- CSA approved safety boots
- High Visibility apparel
- Do not wear jewelry or other items that could become entangled in moving parts.
- Wear appropriate Gloves for task

Hazards Identified

- **Pinch points**
- **Awkward Positions**
- **Strains, sprains**
- **Slips, trips, falls**
- **Stored Energy**

Inspection

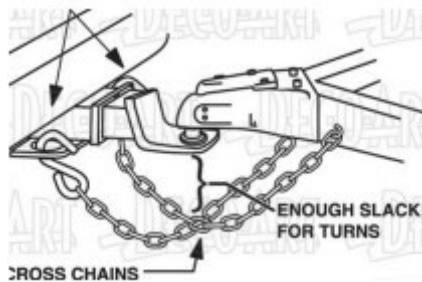
- ✓ Prior to hook-up, inspect the hitch on the tow vehicle for loose bolts, deformation, and damaged pins.
- ✓ Check the ball or hitch point on the tow vehicle to make sure that it matches the coupler size on the trailer.
- ✓ Always secure the trailer coupler connection with a pin to ensure it can't disengage from the ball.



- ✓ If you have a trailer coupler with a tension bolt, ensure it is properly adjusted.



- ✓ Connect trailer electrical plug and breakaway cable to vehicle & ensure all are working correctly.
- ✓ Attach safety chains to tow vehicle. Cross the safety chains underneath the coupler with enough slack to permit turning, but not dragging the ground. This will help to hold the tongue up if the trailer comes loose.



- ✓ Inspect chains before each use and remove any from service with cracked, stretched or fatigued links
- ✓ Connect the brake and signal lights. Double check to make sure the trailer's brakes, turn signals and taillights are synchronized with the tow vehicle.
- ✓ Check all trailer jacks, gates, ramps, etc. to ensure they are secured.
- ✓ Ensure that the load is tied down or tarped, and trailer deck is free of any loose tools or debris (mud chunks, rocks, etc.).
- ✓ Check tow vehicle & trailer tires for proper inflation.
- ✓ During long hauls, stop periodically to do a quick walkaround ensuring trailer is still in good shape and the load is secured.

Instructions

Properly Secure the Load

Important for any equipment move is properly securing the equipment to the trailer. You need to have a working knowledge of proper tie-down techniques, as well as which chains and binders are most appropriate for the load being transported.

Chain comes in various grades and thicknesses. The most commonly used chain for securing loads is Grade 70, 3/8 in., which has a 6,600-lb. maximum pull. For heavier loads, there is Grade 70, 1/2 in., with 11,300 lbs. maximum pull.

The basic requirement is that tie-downs must have a combined strength equal to at least 50% of the load being secured.

Permanently mark all binders, chains, hooks and clevis pins with their capacity. One consideration is that ratchet binders have twice the strength of mechanical lever binders and are much easier to tighten.

For example, if you're hauling a 20,000-lb. backhoe-loader, you need chains that can support a minimum of 10,000 lbs. A 3/8-in. Grade 70 chain has a rated capacity of 6,600 lbs. Because this would be divided by two according to the load limit calculation, you would need four 3/8-in. chains to properly secure the machine. If you're hauling a 40,000-lb. excavator, you would need to either add more chains or upgrade to 1/2-in. chain for greater capacity.

"Each piece of equipment requires a certain quantity of chains and binders. They must be rated accordingly.

Be careful you don't over tension chains because workers could be injured when releasing the load tension device when unloading

Here are some of the minimum requirements:

If the loaded vehicle has crawler tracks or wheels, at least four tie-downs need to be used to prevent movement side to side, forward, rearward and vertically.

An indirect tie-down routed through an anchor point and attached to both sides of the trailer is counted as a single tie-down.

A chain can be used as two tie-downs if properly attached to two anchor points using two binders, with slack in the middle of the chain so that a break in the middle would not affect either tie-down.

The sum of the working load limits of the tie-downs must equal at least 50% of the weight of the cargo. If unsure of the cargo's weight, additional tie-downs may be needed.

Inspect chains before each use and remove any from service with cracked, stretched or fatigued links. Also make sure any tie-down points, binders, hooks and clevis pins meet capacity regulations. The tie-downs are only as strong as the lowest rated component.

Adequately Matched Chain and Hook Binder Grades: If you look closely, every 4-5 chain links you'll find a number etched into the metal. Cross-reference that number with the one printed on the boomer handle, making sure they're aligned. The sum of the working load limits of all your tie-down components must equal at least 50 percent of the weight of the cargo. Always ensure the grade of the chain and its working load limit doesn't exceed the boomers' listed limit.

Think about how you are tying the machine down. It is easy to damage equipment by routing chains in sensitive areas such as tie-rods or near hydraulic hoses. When securing the equipment, a chain angled at 45° between the equipment and deck provides the maximum working load. This angle provides a clamping load that prevents equipment from sliding, while also pulling the load down to the trailer. Some heavy equipment requires even more. Any machine with attachments or appendages must have those attachments dislodged and

separately secured, meaning now a minimum of five tie-down points. A typical example of this is when securely transporting excavators.

During transport, you should periodically pull over and check the load since chains and straps have a tendency to shift and stretch. Re-tighten them as necessary.

CHAPTER:3
SECTION: 3.19Safe Work Practices
Mechanical Chain Sling Assembly
Application - Plow Wing StorageHSM-SWP-19
Rev.1 2021**Overview**

The purpose of this document is to define general precautions that must be respected when selecting / assembling components for chain slings used for the storage of plow wings to ensure the work is conducted safely, and in accordance with governing standards.

Personal protective equipment required

Hard hat; Eye protection hearing protection; hi-viz vest, CSA safety footwear & any additional task specific PPE identified during the risk assessment.

Hazards identified

Rigging failure – Crushing / Jamming.

Hazard specific training

WHIMS, Rigging Awareness, Rigging Inspection

Chain Sling Components:

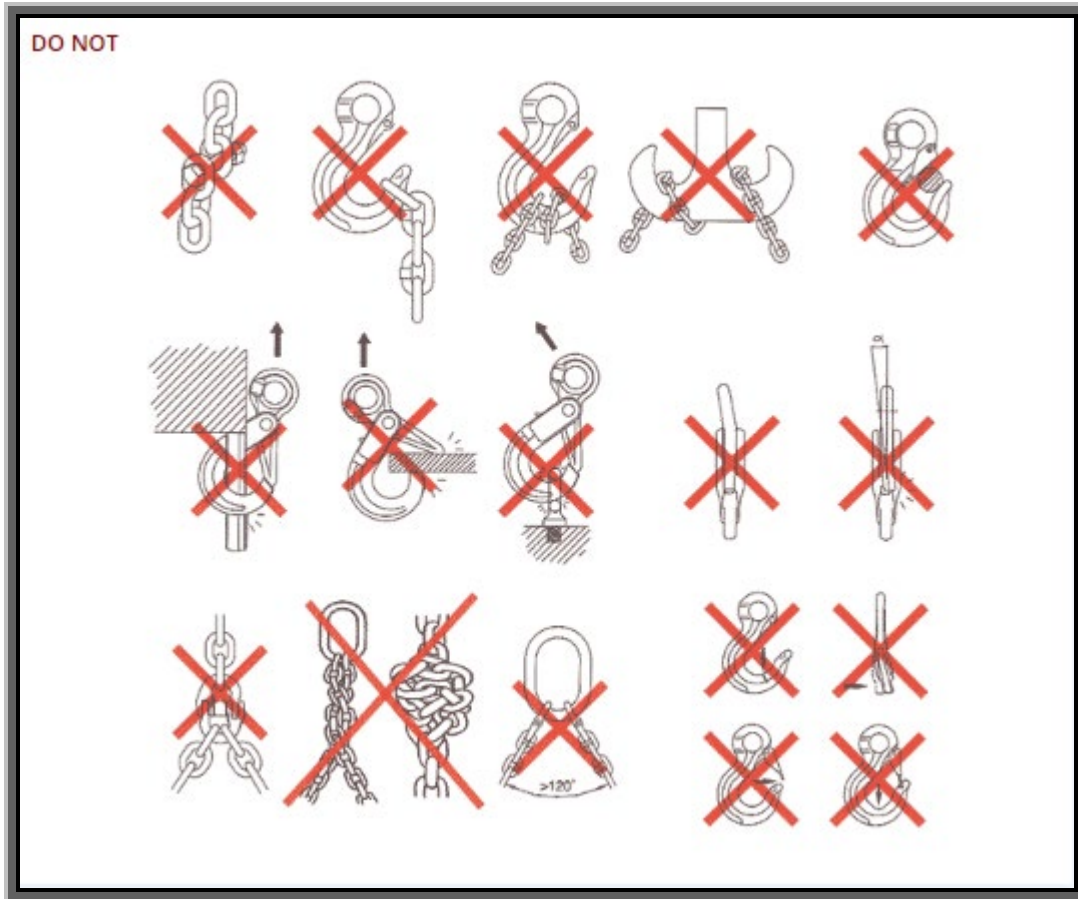
It is essential that the correct components are selected for the assembly of the chain sling. The following list of components have been specifically selected for this application to ensure a 5:1 safety factor is included in the Safe Working Load (SWL) of the sling; to ensure that each individual component is of grade 80 – 100 forged alloy steel; and to ensure that each individual component has been proof tested to at least 2 times its SWL meeting or exceeding the requirements of NACM, ASTM A952 / A952M, ASTM A973 / A973M.

- Peerless Item# 5510424 – 3/8” Grade 100 Alloy Chain
- Peerless Item# 8453210 – 3/8” Grade 100 Coupling Link
- Peerless Item# 8810003 – 1/2” Grade 100 Master Link
- Peerless Item# 8418480 – 3/8” Grade 80 Sling Hook w/safety Latch
- Identification tag w/the following information;
 - Size – 3/8
 - Grade – 80/100
 - Serial ID# (I.e. DTI-CS-001)
 - Length
 - Safe Working Load (SWL) @ 90 degrees – (1300lbs.)
 - DTI – “Plow Wing Storage use Only”

Chain Sling Assembly:

Assembly of chain sling components must be conducted by competent personnel only, and assembly instructions of the components respective manufactures must be adhered to at times during assembly, use, inspection and maintenance.

Note: This SWP specifically applies to this sling, for this **specific** application **only**, this sling has been load rated for 1300lbs @ 90 degrees. It is not load rated for any other application than storing plow wings).



Note: Mechanical assembly utilizing forged components meeting the design, and testing criteria referenced above is an acceptable method of sling assembly – requiring an inspection by a competent person prior to putting it into service, prior to each use, and periodically. **Do not** attempt to assemble chain slings with welded components, as this assembly methodology requires the sling to be load/proof tested prior to entering service.

CHAPTER: 3
SECTION: 3.20Safe Work Practices
Replacing Hydraulic HosesHSM-SWP-20
Rev 1 2021**Overview**

This safe work practice is intended to provide Management, Supervision and Employees a 'Brief' overview of Roles, Responsibilities and Safety Rules which if followed should reduce or eliminate the likely hood of an injury or incident occurring.

This safe work practice contains some general guidelines while Replacing Hydraulic Hoses. This Safe Work Practice combined with the DTI Safety Rules and/or, Provincial & Local Regulations, and Manufacturers recommendations for its safe operation, this information can help you remain incident free.

Personal Protective Equipment Required

- Safety glasses
- Face shield
- CSA approved safety boots
- High Visibility apparel
- Hand Protection
- Do not wear jewelry or other items that could become entangled in moving parts.
- Wear appropriate Gloves for task

Hazards Identified

- Pinch points
- Awkward Positions
- Strains, sprains
- Slips, trips, falls
- Stored Energy

Supervisor

1. Supervisors are responsible to provide proper instruction to their workers on protection requirements and safe operation.
2. Only suitably trained, competent workers may be delegated for this task.
3. Ensure workers are following all company safety rules, associated SWPs and procedures.
4. Provide required PPE.
5. Review all hazards, work steps, & controls and sign off on Field Level hazard Assessment (FLHA) before work commences. Provide feedback as required.
6. Have a Job Hazard Assessment completed for the task.

Workers

1. Complete FLHA prior to starting work or when work changes.
2. Regularly inspect tools and materials before using.
3. Wear suitable clothing and personal protective equipment.
4. Practice good housekeeping.
5. Follow company policies and procedures at all times for safe job completion.

Safety Precautions:

Never perform this task if working alone

Always ensure that the hose is at zero energy

Wear safety glasses and face shield

Never use a tool to beat the fittings off, if it is not coming off using the procedure below it is under pressure and UNSAFE

Procedure:

Note: hydraulic hoses can only be made by competent individuals at the VMA shops. This procedure is only addressing the replacement of hoses that have fittings already attached.

1. Ensure that the equipment is at zero state of energy by ensuring the attachment is extended down so that the hydraulic hose is not under pressure. Turn off equipment and place keys in your pocket. Place a zero-energy steering wheel cover. Chock wheels if needed.
Verify the hose is not under pressure: *if the hose was leaking and is no longer leaking this verifies that the hose is not under pressure.
2. Allow the hose to cool down and wear work gloves.
3. Place an oil pan or a quick absorb oil pad under the fittings to capture any leaking hydraulic fluid
4. Disconnect the quick coupler by pulling the sleeve down
5. Using a wrench unscrew the hose from the opposite end, place the hose in a plastic bag if not in the division or in a garbage can

Install the new one

1. Using the wrench screw in the end without the quick connect
2. Slide the end with the quick connect in, ensure that the fittings are tight together as there are 2 spring loaded tabs. If it is not connected properly it will push back out
3. Clean up the oil pan or remove and properly dispose of the oily pad in waste oil/oily rag disposal

Start-up procedure:

Once a hydraulic hose has been changed the hose must fill up with oil before it will move.

To exercises the attachment:

1. Start the unit up
2. Engage the attachment to start the flow
3. The attachment will not move until the oil has filled up
4. This also bleeds the air that may be in the lines.

Emergency Response Plan (ERP):

Each employee must be familiar with the Site-specific Emergency Response Plan.

The ERP must be discussed during the hazard assessment

CHAPTER: 3

Safe Work Practices
Request for Development

HSM-F-3-1
Rev.1 2021

Request for Development of a Safe Work Practice or Procedure

Name:		Branch		Date:	
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Topic Requested:

Information Required:

Reason for Request:

Additional Comments:

Completed By:		
Print Name	Signature	Date

Submitted By:		
Print Name	Signature	Date

Received By:		
Print Name	Signature	Date

CHAPTER: 4	Safe Job Procedures	Rev.1 2021
SECTION: 4.0	General Information	

Overview

By its very nature, DTI work presents varying degrees of hazards to people and equipment. At DTI, hazards are managed at multiple levels, from engineering to field crews. By working collectively, we minimize hazards, so work can be carried out incident-free.

All work must be assessed for risk, and reasonable steps taken to mitigate the potential for loss to people, property, and the organization. Tasks that, by their nature, expose employees to an abnormally high degree of personal risk are subject to special planning.

Safe Job Procedures

The Safe Job Procedures contained in this section are to be used as working guidelines

Managers and supervisors are responsible to ensure that all OH&S regulations and legislative requirements are met

All workers are required to maintain review and follow Safe Job Procedures in the workplace, Managers and supervisors play a key role to ensure the internal responsibly system of informing, directing and maintaining compliance to health and safety standards regulations and best practices are always achieved in the workplace.

Employer/Supervisor Responsibilities

- Ensure administrative controls such as Safe Job Procedures are developed
- Ensure adequate control measures are implemented for all known or reported hazards.
- Ensure control measures are monitored for effectiveness and make changes as necessary.

Employee Responsibilities

- Review and follow all Procedures as directed by their supervisor.

Reference

- Occupational Health and Safety Act, section 9(1).

CHAPTER: 4	Safe Job Procedures	HSM-SJP-1
SECTION: 4.1	Installation of Head Works	Rev.1 2021

Introduction

During the removal and installation of head works, there is potential for serious injury by being struck by the head works. This procedure was developed to minimize this danger and for the safe installation and removal of them.

Hazards Identified

Getting struck or crushed by equipment, caught between, high pressure air, Flying pieces, overexertion, impact noise.

Personal Protective Equipment Required

Hard hat, eye protection, hearing protection, safety boots, safety vest, work gloves.

Hazard-Specific Training

Operation of TLB. Operation of cranes.

Preparation:

- Equipment Needed:
 - TLB (Tractor Loader Backhoe) with Lifting Hardware, Overhead Crane (Optional)
 - Metal Rod (5 feet long, 1-inch diameter)
 - Jack or Wood Block with Crow Bar
 - Hammer, Sledge Hammer, Pliers
- Supervisors shall verify that employees are competent in the use of equipment and that all required personal protective equipment is worn.
- Procedure is to be completed by two employees plus TLB operator. If using a crane, two employees are required.
- There needs to be good communication between the employees to safely follow this procedure.
- The TLB operator must be very vigilant and keep other employees in view at all times.
- Employees must position themselves so the TLB operator can see them and use all necessary precautions to ensure onsite safety.

Procedure for Installing Head Works

1. Preparing Equipment

- a. Remove truck bumper and any other attachments that interfere with the installation of the head works.
- b. Use proper lifting hardware and attachments that can handle the load.
- c. Inspect lifting hardware, attachments, TLB bucket and crane (if used) to ensure they are in good condition.
- d. Coat the four pins with grease or never seize.

2. Positioning Lifting Hardware

- a. Attach lifting hardware to head works at the attachment point or at the presumed center of gravity and to the TLB bucket and step back.

Danger: *Ensure lifting hardware can not slip out of position. If not, Head Works could shift suddenly.*

- b. Slowly lift the bucket of the TLB to remove the slack in the lifting hardware.

Caution: *Do not stand under the bucket or the crane in case they accidentally come down.*

- c. Continue lifting head works off the ground till it hangs.
- d. If the head works tilts too much on one side while hanging, reposition the lifting hardware at the presumed center of gravity.

3. Inserting Pins

- a. Place TLB with the head works in front of the truck or underneath the crane.

Caution: *When using hands to align, grab the head works where your hands and fingers are in no danger of being trapped or crushed and stay an arms length away from the head works.*

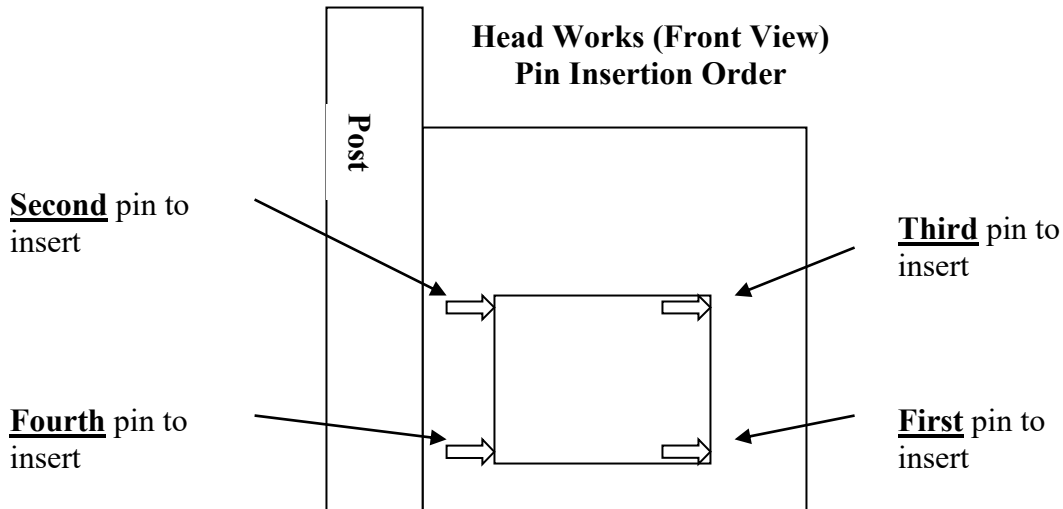
- b. If using a crane, attach lifting hardware to the crane and follow the steps above in section (2.).
- c. Operator of the TLB or Crane slowly lines-up pin holes of the head works with the pin holes of the nose of the truck.

Caution: *Do not stand under the bucket or the crane in case they accidentally come down.*

- d. Insert the rod through the top holes from the driver's side to the passenger's side.
- e. Bring the bucket down to the ground and remove lifting hardware.
- f. **Secure the Rod with a spring pin near the end.**
- g. Place a floor jack or a wood block under the base of the head works.
- h. Use the jack, crane or the block and crowbar to align the holes when inserting the pins.

- i. Insert the bottom pin on the driver's side from the center towards the outside and secure with a spring pin (nut).

Note: All pins must be inserted in the same direction, from the passenger's side towards the driver's side, for the "Procedure for removing Head Works".



- j. Push the rod out of the top hole on the passenger's side while inserting the second pin in the same hole, and secure with the spring pin (nut).

Danger: Do not remove the spring pin on the rod while inserting the second pin. Head Works will fall forward if rod is accidentally removed.

- k. Remove the rod and insert the third pin in the top hole on the driver's side from the center towards the outside and secure with the spring pin (nut).
- l. Insert last pin in the bottom hole on the passenger's side, and secure with the spring pin (nut).

4. Completing Installation

- a. Attach front plow cylinder at the bottom, clean and attach hydraulic hoses.
- b. Clean and attach hydraulic hoses of the front wing cylinder.
- c. Plug-in light cord and in some cases a separate ground wire may be used.

Procedure for Removing Head Works

1. Preparing Equipment

- a. Clean, lubricate and rust proof parts on the truck as applicable.
- b. Unplug light cord and ground wire if applicable.
- c. Disconnect hydraulic hoses for the front wing cylinder and for the front plow cylinder.
- d. Remove the bottom pin of the front plow cylinder and disconnect it from the head works.

- e. Remove all four spring pins (nuts).
- f. Use proper lifting hardware and attachments that can handle the load.
- g. Inspect lifting hardware, attachments, TLB bucket and crane (if used) to ensure they are in good condition.

2. Removing Pins

- a. Place the truck in front of the TLB or underneath the crane.
- b. Knock the two bottom pins out using the rod and a sledge hammer from the drivers side towards the passenger's side.

Note: *If a pin is seized, report it to your supervisor for further instructions.*

- c. Knock the two top pins out the same way as the bottom ones.
- d. Attach lifting hardware to head works at the center of gravity and to the TLB bucket or crane.
- e. Adjust rigging so as to leave about 1 meter of space between the bottom of the bucket and the top of head works and step back.
- f. Place the TLB bucket so that the lifting hardware is plumb with the head works.
- g. Slowly raise lifting hardware to remove the slack in it and to remove weight on the rod.

Caution: *Do not stand under the bucket or the crane in case they accidentally come down.*

- h. Remove the rod from the side of the head works.

Caution: *Stay clear from the head works as it may shift when the rod is removed.*

- i. Slowly back up the TLB to remove the head works from the service truck.

3. Completing Removal

- a. Store head works on level ground and secure in an upright position or lay forward.
Caution: *When lowering the Head Works, grab the head works where your hands and fingers are in no danger of being trapped or crushed and stay an arms length away from the head works.*
- b. Remove lifting hardware.
- c. Report any repairs required in log book and report them to the supervisor.

References

- Occupational Health and Safety Act, Section 9.
- Canadian Center for Occupational Health & Safety, OHS Answers, Safety Hazards, Materials Handling.

CHAPTER: 4	Safe Job Procedures	HSM-SJP-2
SECTION: 4.2	Working around Tailgate of Service Trucks	Rev.1 2021

Introduction

Maintenance or repair work sometimes requires mechanics to have the tailgate open to have access to certain equipment. If not properly secured, the tailgate can close and seriously or fatally injure an employee. This procedure was developed to minimize this danger and for the safe installation and removal of tailgate supports which enable the tailgate to be locked out in the open position.

Hazards Identified

Getting struck or crushed by tailgate; caught between.

Personal Protective Equipment Required

Safety boots; work gloves; eye protection.

Preparation

Ensure adequate space around the vehicle to allow safe repair and rising of the box.

Procedure for Installing Support

1. Inspect the tailgate lower latch pin carefully to ensure it provides adequate structural integrity. Inspection should include close visual inspection and, if concerns exist, hitting the tailgate pin with a maul to verify structural integrity.
2. Use only approved supports/braces that are in good condition.
3. Release tailgate latch and lift box of the truck to open the tailgate.

Caution: *No one should be standing near the tailgate while the box is being raised.*

4. If necessary, drill a 1/4" hole through the center of the passenger side tailgate lower latch pin at a distance of 1/2" from the outside edge of the pin to accept the retaining clip.
5. Install the support brace "pin" end of the approved brace through the all-season box tailgate spreader chain lower bracket and secure it with the appropriate washer and locking pin.
6. Install the slotted end of the support brace over the tailgate pin and secure it with the appropriate washer and locking pin.
7. If human or other traffic in the work area warrants it, place an orange flag on the brace to provide increased visibility.
8. Lower the box, if necessary, to facilitate the necessary repairs.
9. When repairs are complete, raise box and remove support.

Caution: *No one should be standing between the box and the tailgate when removing the support.*

References

- Occupational Health and Safety Act Section 9.

CHAPTER: 4	Safe Job Procedures	HSM-SJP-3
SECTION: 4.3	Blade Installation	Rev.1 2021

Introduction

This procedure was developed to minimize hazards and prevent injuries when removing and installing blades.

Hazards Identified

Getting struck or crushed by equipment; caught between; high pressure air; flying pieces; overexertion; impact noise; slip, trip and falls.

Personal Protective Equipment Required

Safety boots; gloves; eye and ear protection; oxy-acetylene cutting protection when cutting.

Hazard-Specific Training

Truck, plow and wing operation; oxy-acetylene cutting.

Preparation

- Secure plows and wings to vehicle before removing or installing blades.
- Ensure there is adequate space around the vehicle and the equipment.
- Review and apply Department’s “Code of Practice” on **mobile equipment** and any **moving pieces** on mobile equipment to ensure zero energy state and apply any applicable tag & lockout procedures.
- If energy is required for a piece of equipment, take all necessary precautions (i.e. keeping a safe distance, reminding workers) to prevent contact.
- Use a jack stand with: a rated capacity 50% greater than the load (a minimum of 2 tons for each stand); with a wide base for better stability; with a sufficient height so that it is not fully extended when used; and with a screw type adjuster for easier installation (optional).
- Do a visual inspection of approved jack stands.
- Supervisors shall instruct employees on this procedure.

A. Steps for One Way and Reversible Plows

1. Shorten the lift chains attached on the front cylinder and raise front plow to its maximum height using the hydraulic system.
2. Place jack stands under the plow harness to support the plow (See Photo #1).

3. Place wooden blocks under the plow blades to prevent blades from falling on employees' feet when the bolts will be removed.
4. Remove bolts holding plow blades.
5. With a minimum of two employees, remove blades with two pinch bars and place in the scrap pile.
6. Place new blades in proper position, insert bolts and tighten. All holes should be filled.
7. Remove wooden blocks from under the plow blades.
8. Remove jack stands.
9. Lower plow to the floor or ground using the hydraulic system.

B. Steps for Wings

1. Lower the rear and front of the wing at employee's waist height with the hydraulic system.
2. Place a jack stand under the front of the wing where it is attached to the wing slide. Then, place another jack stand under the lower push arm at the rear of the wing (See photo #2).
3. Place wooden blocks under the wing blades to prevent blades from falling on employee's feet when the bolts will be removed.
4. Remove bolts from wing blades.
5. With a minimum of two employees, remove blades with two pinch bars and place in scrap pile.
6. Place new blades in proper position, insert bolts and tighten. All holes should be filled.
7. Remove wooden blocks.
8. Remove jack stands.
9. Lower the wing on the floor or ground or raise the wing to its highest position and secure (attach) the wing with the safety chain.



Photo #1



Photo #2

References

- Department's Code of Practice on "CLEANING, MAINTENANCE, ADJUSTMENT OR REPAIRS OF ANY MOBILE EQUIPMENT", at Department's Health and Safety website under Compliance.
- Occupational Health & Safety regulation 91-191, sections 229(3).

CHAPTER: 4	Safe Job Procedures	HSM-SJP-4
SECTION: 4.4	Loading and Transporting Equipment on Trucks or Floats	Rev.1 2021

Introduction

Whenever we load and transport equipment on trucks or floats there is a risk to those involved in the loading and the motoring public. This procedure is developed to minimize the danger for employees who work in and around them.

Hazards Identified

Getting struck or crushed by equipment or materials; caught between; slips and falls.

Personal Protective Equipment Required

Hard hat; Eye protection; Hearing protection; Safety boots; Hi- Visibility Apparel Work gloves.

Hazard-Specific Training

Operation of TLB, Loader, Boom Truck, Overhead Cranes, Safe Rigging.

Preparation

- Supervisors shall verify that employees are competent in the use of equipment and all required personal protective equipment is worn.
- There needs to be good communication between the employees involved on loading equipment to safely follow this procedure.
- The operator of any equipment used to load equipment must be competent with the equipment being used and very vigilant and keep other employees in view at all times, and never move a load over another employee.
- Employees must position themselves so the TLB/excavator operator can see them and use all necessary precautions to ensure onsite safety.

Practices

Before loading:

1. Ensure truck/float has capacity for equipment.
2. Ensure the truck/float is on firm level ground, or make it level by moving to another location and or levelling with gravel etc.
3. Clear the truck/float bed of any debris, gravel, especially ice.
4. Only use approved equipment like a frontend loader, forklift, boom truck or overhead crane to load equipment onto a flatbed truck/float that is rated for the load. Make sure

the lifting capacity of the equipment used to lift your load is well above the weight of the load.

5. Check all slings to make sure they are rated for the lift and in good shape.

While loading:

1. Follow safe rigging techniques; refer to the Construction Safety Association guide, "Chapter 24 Rigging Safety", located on the "R" drive at:
 - R:\Health & Safety Info & Training>Loading and Floating Machines and Equipment
2. Use a Spotter to guide loading/unloading as required, make sure you have good communication.
3. Maintain Safe Zones, where everyone must remain clear in case something goes wrong.
4. Never allow anyone to place any part of their body under a suspended load, or to stay on the float or truck bed when objects are being loaded.
5. Use tag lines or a rod to help line up objects being placed on the truck/float bed.
6. If necessary to climb onto the truck/float bed (and only when the load is on the deck) use 3-point contact to access and egress, never jump.
7. Always center your cargo on the truck/float both side to side and front to back (Placement of the load). Refer to the guide from CCMTA, "Driver Handbook on Cargo securement", located on the "R" drive (same location as in #1 above).
8. Place top heavy items on their side or back in order to keep the center of gravity low.
9. Make sure any item loaded on a float bed will not interfere with overhead lines or structures along your route.

Securing the load:

1. Place blocks of wood or other appropriate bracing around or under odd shape (round, etc.) items to prevent any movements and be well secured.
2. Make sure all tie down straps or chains are rated for the load and are protected against sharp edges.
3. Make sure the ratchet load binders are secure, and if you use lever style load binders and you need extra leverage only use a manufacturer's recommended extender, never use a piece of pipe.
4. Apply appropriate restraints for all loads, as per the national Safety Code for motor Carriers, "Standard 10", located on the "R" drive (same location as in #7 above).
5. When the load is secure perform one last check.

While transporting:

1. Depending on the complexity of the load, the distance you will be travelling and the roughness of the road, you may want to pull over every so often into a safe area and check the load to make sure it is secure, and nothing has moved. Otherwise every time you stop for fuel, a rest etc. check the load before starting out again.
2. Drive safely and defensively, checking your load often.
3. If a load has been left overnight or for a longer period of time, you should always check it before heading out.

Before unloading:

1. Always check your load to make sure nothing has moved which could create a hazard to you while unloading.
2. Follow steps 2 to 5 in the section “Before loading” above.
3. Ensure you have tag lines or rods to line up loads when unloading.

While unloading:

1. Follow steps 1 to 6 in the section “While loading” above.
2. Make sure all equipment placed on the ground is protected from damage and is stable so it will not fall over.

Before driving:

1. Store all tie down straps or chains properly so that they don't become a hazard for your or another vehicle.

Reference

- Occupational Health and Safety Act, Section 180.
- Chapter 24 Rigging Safety, Construction Safety Association of Ontario, 27 pages.
- Driver Handbook on Cargo securement, Canadian Council of Motor Transport Administrators, 143 pages, 2005.
- “Standard 10 Cargo Securement, 2013 National Safety Code for motor Carriers, 2013.

CHAPTER: 4
SECTION: 4.5Safe Job Procedures
Knuckle Boom and/or Auger OperationHSM-SJP-5
Rev 1 2021**Introduction**

Whenever we dig into the ground to place a sign, post etc there is a chance we could strike a wire, pipe, conduit etc that could harm the employee operating the drill, cause environmental damage, or cut off communications or power to many homes and businesses. This procedure is developed to minimize the danger for employees who work in and around them.

Hazards Identified

Getting struck or crushed by equipment or materials; caught between; falls; electrocution; entanglement; contact with other energy sources; struck by a vehicle (traffic).

Personal Protective Equipment Required

Hard hat; Eye protection; Hearing protection; Safety boots; Hi-Visibility Apparel; Work gloves.

Hazard-Specific Training

Operation of Cranes. Rigging.

Pre-Job Preparation

- Section 180(1) of regulation 91-191 requires all employers to determine the location of any underground utility or utility line equipment, this does not say only in the cities or towns but anywhere we are going to dig or drill below the surface, we are to
 - **Call before you dig, contact all utilities to identify and protect all underground utilities: NB Power, Enbridge, Bell Aliant, municipal water & sewer, DTI Traffic Operations (453-4027). Planning our work is vital, so when properly done we should be able to call several days prior to the work being done.**
- Supervisors shall verify that underground locates have been completed, employees are competent in the use of equipment and all required personal protective equipment is worn.

Practices**Before you head out:**

1. Do job planning and calls to utilities listed above before you go out.
2. Ensure you are aware of the area and what WATCM requirements are needed before heading to the site
3. Ensure you have a First aid kit, and, if there is more than 1 employee, that one has first aid training.

4. Do your vehicle pre-trip inspection to ensure the equipment is safe to operate.

Once on site:

1. Conduct a tailgate meeting with other crew members to make sure everyone knows their jobs, hazards identified and anything specific to ensure a safe worksite.
2. Set up the traffic controls according to the appropriate section of the WATCM.
3. Do a thorough visual inspection of the area to identify any potential hazards, such as overhead wires, hazardous road conditions, obstructions, etc, you may have to alter your location but remember to review the information from the utilities regarding underground locates.
4. Set up the truck to prepare for drilling according to the operator's manual for the knuckle boom and auger.
5. The operator has to either stand on a platform which is part of the truck keeping them off the ground or place and stand on a Ground Grid (a mat to insulate them from potential shock, this mat is connected to the frame of the truck with a cable to place the operator at the same electrical potential as the truck itself).
6. Ensure outriggers are set up as per manufacturer's specifications; your truck has to be level and stable. If the ground is soft or slanted, you may need to place extra outrigger pads under the outrigger.
7. Ensure you know and do not surpass the allowable lifting limits of the lifting device. Understand and follow the load chart information.
8. As you begin drilling, keep people away from the drill.
9. Ensure the hole is deep enough to keep the sign or structure stable.
10. If the hoist of the drill has the capacity, use it to lift and place the sign post.
11. Never hoist a load over another person.



Reference

- Occupational Health and Safety Act, Section 180.
- DTI Health and Safety Manual 2016.

CHAPTER: 4
SECTION: 4.6Safe Job Procedures
Securing Load Tarp over a boxHSM-SJP-6
Rev 1 2021**Introduction**

This procedure was developed to minimize hazards and prevent injuries when removing and installing tarps on a truck box.

Hazards Identified

Getting struck or crushed by equipment; Caught between; High pressure air; Flying pieces; Overexertion; Slip, trip & falls.

Personal Protective Equipment Required

Safety boots; Gloves; Eye protection.

Preparation

- Obtain materials needed:
 - 32 feet of ¼ inch diameter stretchable cord,
 - Flat washers for each hole where cord starts and ends.
 - “S” hooks to secure the tarp to a horizontal rod along the sides of the box.
 - Tarp pole with hook.
- Secure plows and wings on vehicle before storing or opening tarp.
- Ensure there is adequate space around the vehicle and the equipment.
- Review and apply Department’s “Code of Practice” on **mobile equipment** and any **moving pieces** on mobile equipment to ensure zero energy state and apply any applicable tag & lockout procedures.
- If energy is required for a piece of equipment, take all necessary precautions (i.e. keeping a safe distance, reminding workers) to prevent contact.
- Do a visual inspection of approved ladders.
- Supervisors shall instruct employees on this procedure.

A. Attaching cord to the tarp (Only done once)

1. Secure truck and all moving parts around it (see bullets above under “Preparation”).
2. Open tarp as instructed by your supervisor.
3. Use a secure ladder or step ladder to weave the cord through the existing holes in the tarp (See Photo #1). Always Maintain 3 points of contact.

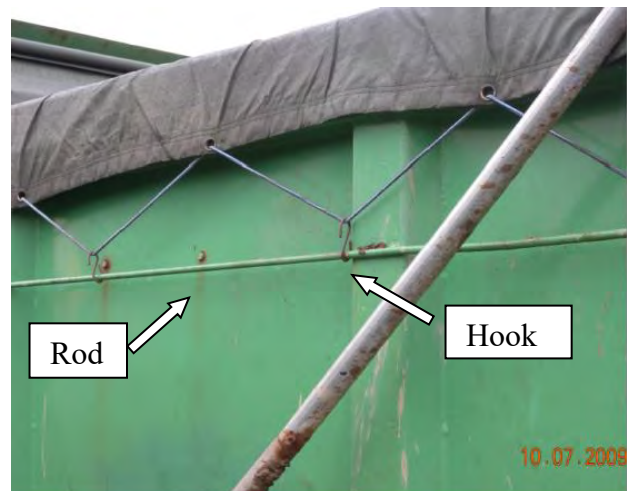
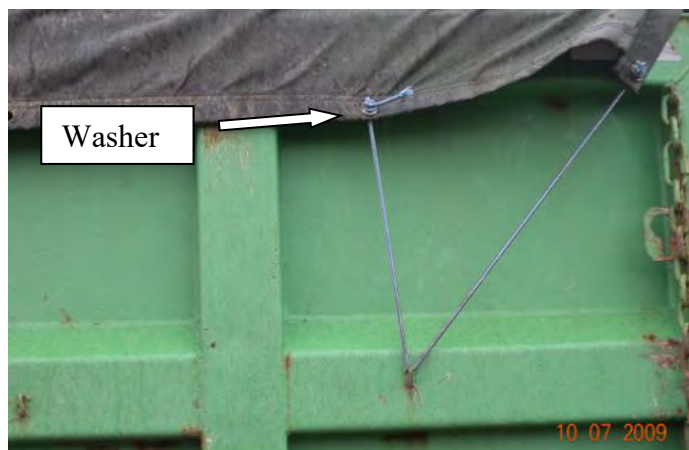
4. Insert washers through the ends of the cord. Push them close to the tarp holes and pull the cord out to be able to make several knots that will keep the cord from going through the washers.
5. Install “S” Hooks to the horizontal side rod (See figure 1) by clamping one end of the hook to the side rod. Usually, 5 hooks are installed on each side.

B. Securing the Tarp to the Box

1. Secure truck and all moving parts around it (see bullets above under “Preparation”).
2. Open tarp as instructed by your supervisor.
3. Using the tarp pole, pull the cord down into the side hooks. The tarp should be tight on the box.
4. If not, inspect the cord using a secure ladder or step ladder.
5. Tighten cord if in good condition or replace it if it is worn too much.
6. If you need to climb, always use a secure ladder or step ladder and maintain 3 points of contact.

C. Storing the Tarp

1. Secure truck and all moving parts around it (see bullets above under “Preparation”).
2. Using the tarp pole, pull the cord out of the hooks and push the tarp towards the top of the tarp.
3. Store the tarp as instructed by your supervisor.
4. If you need to climb, always use a secure ladder or step ladder and maintain 3 points of contact.



References

- Occupational Health & Safety regulation 91-191, sections 239, 240, 241, 122.

CHAPTER: 4
SECTION: 4.7Safe Job Procedures
Installing tarp over exterior winter sand stockpilesHSM-SJP-7
Rev 1 2021**Introduction**

This procedure was developed to minimize hazards and prevent injuries when tarping an exterior winter sand stockpile.

Hazards Identified

Getting struck or crushed by equipment; Cuts; Slip, trip & falls.

Personal Protective Equipment Required

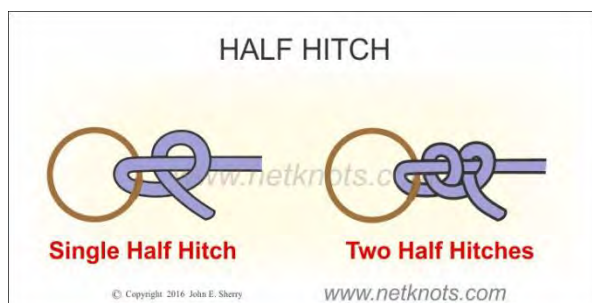
Safety boots; Gloves; Eye Protection, Hard Hat, Hi- Visibility Apparel, Traction aids as required.

Preparation

- Ensure stockpile conforms to the shape and dimensions stipulated in supplied drawings.
- Ensure there is adequate space around the stockpile to accommodate a backhoe.
- Inspect stockpile for any visible hazards (proper angle of repose, sloughing)
- Have tailgate meeting with staff to review required steps and identify roles and responsibilities.
- Prepare and inspect unroller device and tarp

Steps for covering winter sand stockpiles

1. Place unroller supporting tarp at far end of winter sand stockpile.
2. Remove plastic restraint mechanism. **Do not stand in line of fire while releasing restraint strap.**
3. Prepare tarp for rope and pulling. Unroll approx. 2 meters of tarp material.
4. Create cradle with plastic to accommodate rope using a ratchet strap.
5. Tie one end of 5/8" diameter rope (varying length to adapt to length of stockpile) to cradle.
6. From top of stockpile bring rope to far end of stockpile. Area permitting, attach the rope to front (or rear) of backhoe. Via a half hitch or double half hitch knot.



7. Using backhoe, pull rope to allow plastic to follow top of stockpile to opposite end of stockpile.
8. If area does not permit use of a backhoe, have staff bring rope to opposite end of stockpile.
9. Have one staff member on top of stockpile at tarp end of stockpile to guide tarp and minimum 2 staff members at opposite end of stockpile holding rope.
10. Slowly and carefully pull rope attached to tarp the length of the stockpile into position.
11. Once tarp is pulled to far end of stockpile, remove pulling rope and ratchet strap from tarp and prepare to unfold tarp.
12. Slowly unfold tarp evenly on both sides till you reach the far end of the stockpile, always keeping it low to avoid any wind from getting under tarp.
13. Using utility knife, and cut resistant gloves carefully cut off tarp from main roll. **Ensure to never work under a suspended load.**
14. Complete the installation of the tarp.
15. Carefully start to seal around the edges of the stockpile using a backhoe or loader to place sand working from one end of the stockpile to the other.
16. Keeping tarp tight and even along each side as sand is being placed.

Steps for Cutting and removing the tarp

1. Ensure all proper PPE is used prior to commencing
2. Remove the sand along the front bottom edge of the tarp
3. Standing at the base, carefully cut what is within reach using a utility knife starting near the ground (making the opening just large enough for the bucket of the loader/backhoe to enter the opening). See photo below
4. Continue to cut and pull the tarp away.
5. As the pile is used, more tarp must be cut following the same procedure. Continue to cut back tarp as pile is used.
6. Do not stand on the sand stockpile.
7. Discard the removed tarping material appropriately.
8. Be aware of the ends of the tarp as that can become extremely slippery, creating a slip/trip hazard.



CHAPTER: 4
SECTION: 4.8

Safe Job Procedures
Testing Flashback Arrestors.

HSM-SJP-8
Rev 1 2021

MATERIAL & EQUIPMENT REQUIRED	PERSONAL PROTECTIVE EQUIPMENT
Small water container; Compatible Leak Test solution	Safety Footwear/Hand protection/Safety Glasses
<p>JOB STEPS To Be Completed On all Shop Equipment Inspection as per manufacture for Model No. FA-10 – Torch & FA – 30 Regulator Adaptor.</p>	
<p>1. Remove flashback arrestor from apparatus using appropriate size open end wrench.</p>	
<p>2. <u>Torch type (FA-10)</u> - Disconnect the hose from regulator and attach flashback arrestor to regulator outlet in the opposite direction of normal gas flow. Tighten securely.</p> <p>3. <u>Regulator Type (FA-30)</u> – Disconnect the flashback arrestor from the regulator and reattach hose to the regulator outlet. Attach flashback arrestor at the downstream end of the hose in the opposite direction of normal gas flow. Tighten securely.</p>	
<p>4. Slowly open cylinder valve and adjust regulator to 3 to 5 psi approximately.</p>	
<p>5. Use a small container with Leak Test solution compatible to the gas being used or with clean water. Check for leakage by submerging the end of the flashback arrestor or hose in the water or the solution (depending on type of arrestor). If a leak exists bubbles will appear in the water or leak test solution. Replace the flashback arrestor if a leak is found. There should be no more than one bubble in 10 seconds.</p>	
<p>6. Reinstall flashback arrestors to apparatus. Purge the system and leak test the entire system before operating by spraying the leak test solution on all connections. Follow the manufactures instructions when purging system or hoses.</p>	
<p style="text-align: center;">Follow the same above procedure for each flashback arrestor being tested.</p>	

CHAPTER: 4
SECTION: 4.9Safe Job Procedures
Scale Pit EntryHSM-SJP-9
Rev 1 2021**Introduction**

This section describes the minimum precautions and requirements to be observed for any entry into Scale Pit Areas. The information has been compiled from sources believed to be reliable and to represent the best current opinion on the subject. Under particular or exceptional conditions or circumstances, other or additional measures may be required to assure safe entry and should be employed as required. The information presented here does not replace any provincial or federal regulation. All scale pits are potentially hazardous spaces, and under certain conditions, some may be considered confined spaces. These are a classic example of a hazardous environment made dangerous by not following safety procedures. To determine whether the space is hazardous or a confined space, a “competent person”, as defined in the regulations*, **shall** perform an assessment before any worker can enter or work in the pits.

Hazards Identified

Air quality; Electrical Contact; Slip & Falls; Obstructions (Low Ceiling, heaters, fans, etc.); Heavy Lifting (Load Cells); Foreign substances.

Personal Protective Equipment Required

Hard hat; safety boots; gloves; eye protection; class E harness.

Hazard-Specific Training

Hazardous/Confined space training; Use of gas monitoring equipment; First aid/ CPR training; Emergency procedure/equipment.

Definitions

A **hazardous space** is an enclosed or partially enclosed space, not intended for continuous human occupancy that has a restricted, limited, or impeded means of entry or exit because of its construction.

A hazardous space can be thought of as a work area in which the only hazard is the difficulty of getting into or out of the space. All other hazards are either nonexistent or have been eliminated or controlled.

A hazardous space can be considered to be a “non-permitted confined space” and is not subject to the permit, atmospheric testing, and tending worker requirements of a confined space.

A **restricted space** can become a confined space. If conditions or work practices change in a restricted space, the work must cease until a complete assessment is undertaken to determine if the change results in the area being classified as a confined space.

A **confined space** means an enclosed or partially enclosed space not designed or intended for continuous human occupancy with restricted access or egress and which is or may become hazardous to a person entering it because of its design, construction, location, atmosphere or the materials or substances in it or other conditions

Preparation:

- The employee, identified as the “Competent Person”, **shall** be trained in confined space entry & rescue, act & regulations, Department policies, and proper hazard assessment techniques.
- Ensure the instrument for atmospheric testing has appropriate sensors, is properly calibrated, and has been functionally tested.
- Ensure the Competent person has a copy of the “DTI Confined/Hazardous Space Entry Permit Form”.
- Ensure all personnel and equipment identified in the hazard assessment is readily available on site. This includes emergency extraction equipment (tripod, body harness and retractable lanyard) when required by the hazard assessment.
- Lockout/Tagout procedures **shall** be applied to any energized equipment that creates a hazard while working in the pit.
- Select equipment that does not use-up oxygen or produce any emissions (i.e. gases, fumes, particles).
- Assess potential hazards outside near openings and air intakes (i.e. no open containers to spill into pit, no vehicles running near air intakes).

A. Performing assessment: (Pre-entry)

1. Ensure scale is shut down and closed to commercial traffic. Install adequate warning signs and barricades to protect workers from any form of traffic hazard that may exist.
2. Inspect the outside of the pit for signs (i.e. stains, odor) of chemical spills or the presence of other hazards.
3. If a chemical spill or a foreign substance is discovered, report to appropriate authorities and have pit cleaned by professionals.
4. Using atmospheric testing instrument(s), conduct tests through opening(s) and record results on the “DTI Confined/Hazardous Space Entry Permit Form”. Ensure the following requirements are complied with:
 - a) The oxygen content of the atmosphere should be about 20.9% (natural outside level). If it is below or above, what is causing this? It must never be below 19.5% or above 23.5%.
 - b) Flammable or explosive dusts or gases or vapors should not be present. Besides normal instrument drifts, levels should be at 0% of the LEL.
 - c) The concentration of toxic contaminants (dusts, gases, vapors, aerosols, microbials, etc.) can be above background levels, but must not be greater than their Threshold Limit Values (TLVs) as per WorkSafeNB regulations.

5. If an atmospheric hazard is detected, try to identify the source of contamination, and try to eliminate/control it. If you are able to eliminate/control the source, ventilate the space and retest. If the atmospheric hazard is:
 - a) Eliminated or controlled, go to #6 and continue with the hazard assessment, or
 - b) Not eliminated or controlled, see part “C” below (the space will be considered a confined space).
6. Open hatches, doors, turn on fans, or install portable fan to ventilate space.
7. Complete the hazard assessment and fill out a “DTI Confined/Hazardous Space Entry Permit Form”.
8. Competent person to review results of the entry permit form with all staff and discuss work to be done.
9. Review emergency procedures to evacuate the pit in the event of an emergency (i.e. smoke, etc.).
10. If the ‘competent person’ declared the pit a “hazardous space”, **go to “B”**. Whereas, if the “competent person” declared the pit a “confined space”, **go to “C”**.

B. Entering A “Hazardous Space”

Even if a space is classified as a restricted space (not a confined space), the work is subject to a detailed Hazard Assessment before the space is entered. The Hazard Assessment must address the following:

A safe means of entry and exit must be available for all workers required to work in a restricted space.

A means of preventing unauthorized workers from accessing the restricted space must be in place.

The means to be used to rescue workers must be clearly described.

There must be a competent worker in communication with the workers inside restricted space.

1. Competent person to ensure all personnel and equipment are on site and ready to be used.
2. Ensure ventilation equipment is operating properly and verified periodically if identified as a control measure in the entry permit.
3. Ensure air being provided by the ventilation system to the space is 'clean'.
4. When using equipment that can produce contaminants, ensure no pockets of contaminants are created by properly ventilating all areas of the space.
5. Do not substitute oxygen for fresh air. Increasing the oxygen content will significantly increase the risk of fire and explosion.
6. When entering from the top with a ladder, entrants are to wear a full body class E harness. Emergency evacuation equipment should be onsite and ready to be used.
7. When entering through a restricted access that could complicate first aid or evacuation, the competent person will require an attendant ready to perform a rescue if necessary.

8. If conditions, that could create a hazardous situation, change inside or outside the pit, the pit **shall** be evacuated, and the competent person **shall** do a re-assessment before re-entering.
9. After a “competent person” declares a space with a full door or with a stairwell access as being safe, he or she may enter the pit “alone” to do low hazard task(s) of short duration. But before entering, he or she **shall** contact their supervisor and follow a “working alone procedure”.

C. Entering a “Confined Space”

1. Can work, repair, or maintenance be performed without entering the pit?
2. If entry **must** proceed, the competent person **shall** strictly follow OHS regulation 91-191 part XVII, sections 262 to 272.

Procedure for Entering A Confined Space

The confined space should be clean, free of hazardous materials/chemicals, and where necessary, purged by water or other equivalent means.

If possible, all input lines that discharge into the confined space shall be disconnected and capped or isolated.

When electrical devices (motors, switches, etc.) located within the confined space are to be repaired or worked on, the line disconnect switches supplying power must be locked in the “off” position. The lock key must be kept by the person performing the job and only this person is authorized to unlock the switch and remove the lock upon completion of the job. If more than one person is working on the line, each must place a lock on the switch and retain his own key.

All manhole and clean-out covers shall be removed and the openings maintained clear of any obstructions. When hinged doors or lids are provided, they shall be secured so that they cannot be closed while the space is occupied.

Testing Atmosphere

Confined space atmosphere shall be tested before opening the space. If testing before opening is not practicable, the space must be tested before entry is allowed.

A trained person, Job Safety Supervisor, or other person as determined by the Safety Supervisor, shall make appropriate tests of the atmosphere in the confined space to assure that all the following conditions are met:

- a) 10% of the lower explosive limit is not exceeded,
- b) the Threshold Limit Values (TLV) of toxic chemicals are not exceeded, and
- c) the oxygen content is not lower than 19.5% or above 23%.

Test results must be recorded on the Atmospheric Monitoring Test Result Log 1.7.5.5

If the nature of the work to be performed introduces, or has the potential to introduce, harmful air contaminants, continuous monitoring of the atmosphere is required.

If during monitoring, any test indicates evidence of dangerous air contaminants exceeding the maximum concentration, all personnel shall evacuate the confined space immediately.

Ventilation - All confined spaces must be ventilated by the use of a positive mechanical exhaust system that is arranged to avoid re-circulating contaminated air. The rate of exhaust should be a minimum of twelve (12) air changes per hour. NOTE: This requirement may be waived if adequate continuous monitoring is used.

Tending Worker/Monitor - At least one standby employee shall be stationed just outside the access opening of any confined space while such space is occupied. This person shall:

- a) Be trained and competent in their duties as a Monitor.
- b) Maintain continuous awareness of the activities and well-being of the occupant(s) of the confined space.
- c) Be able to maintain verbal communication at all times.
- d) Be alert and fully capable of quickly summoning help.
- e) Be PHYSICALLY ABLE, TRAINED, AND EQUIPPED to assist in the rescue of a person from a confined space under emergency conditions.

Debris, Materials, Tools - Debris, material, tools, etc., shall be kept away from the opening of the confined space whenever there is a danger that it may fall into the confined space.

Danger Signs - Each confined space shall have a sign affixed at a conspicuous point that reads, "Danger Confined Space - Do Not Enter without Proper Authorization."

References

- Occupational Health & Safety regulation 91-191, Part XVII, Sections 262-272, 111(3).
- * "Competent Person" definition, Occupational Health & Safety regulation 91-191, Section 2.
- Occupational Health & Safety regulation 92-133 for working alone.

CHAPTER: 4
SECTION: 4.10Safe Job Procedures
DTI Plow Truck RecoveryHSM-SJP-10
Rev. 2 2022

Only after all reasonable efforts to hire a vehicle recovery company have been exhausted, should consideration be given to using a DTI vehicle to recover another DTI vehicle.

Hazards: Recovering a plow truck presents the risk of energy releases. It may take considerable energy to recover a plow truck from its stuck position. The release of energy during the recovery can lead to projectiles that can cause harm or damage to people and equipment. Employees or bystanders may be struck by the plow truck being recovered, the recovery plow truck, or by recovery equipment. Execution of the task may also cause a traffic accident, employees or bystanders may be struck by traffic, employee may experience overexertion or slips and falls.

Education and training prerequisites: Possession of a Class 3E motor vehicle license with air brake endorsement, successful completion of DTI Service Truck Test, WATCM training as well as training in Vehicle Recovery as provided by the Operator Instructors and/or Highway Supervisor.

Steps to be taken to complete task safely: Recovering a plow truck that has left the road or become stuck begins by advising the operation supervisor. The next step is to pursue a company licensed and equipped to perform the required recovery.

1. Assess the situation, taking into consideration; position and condition of the stuck plow truck, ground conditions, location of recovery-points, safety hazards, potential environmental contamination and traffic control.
2. Unless certain there is no risk of electrocution, fire, vehicle accident, slip and fall, etc... remain in the plow truck until assistance arrives.
3. Advise immediate supervisor of the condition of the plow truck and the state of recovery. Work with the supervisor in identifying names of vehicle recovery companies in the area.

Having exhausted all reasonable efforts to hire a vehicle recovery company, and a DTI plow truck is required to recover another DTI plow truck, the steps below are to be used for the recovery of DTI service trucks or plow trucks with a gross vehicle weight of 68,000 lbs.

1. If the recovery takes place on or near a roadway implement the appropriate traffic control as per WATCM and as warranted by the specific site conditions and circumstances
2. As much as possible, clear away sand, mud, or snow from under the stuck plow truck and in front of the tires in the direction of pull
3. Inspect the recovery strap and shackles ensuring they are in good condition, not torn, damaged or deteriorated. The strap should be rated for a working load limit

of 25 ton or a breaking strength of 100 ton. The shackles should be rated for a working load limit of 25 ton.

4. Align the recovery plow truck so the direction of pull is as close to a straight line as possible, preferably within +/- 10 degrees of straight. The recovery plow truck should be of equal or greater weight than the stuck plow truck.
5. If possible, align the recovery plow truck so that it has an unobstructed path in the direction of the pull for at least the combined length of the recovery strap and the stuck plow truck.
6. The recovery plow truck should be equipped with traction aids, to be installed as conditions warrant.
7. Layout the recovery strap looping the strap to a shackle which is pinned to the recovery-point. Never tie the strap onto plow truck, slip it over a ball hitch or attach it to anything other than an approved recovery-point. If in doubt about the recovery-point contact the Shop Superintendent for assistance
8. Ensure all by-standers are at least 2 times the length of the recovery strap away from the vehicles.
9. The recovery plow truck accelerates first and slowly (about 10km/hr) to build tension in the strap and provide a sustained pull.
10. Once the slack is taken up, the stuck plow truck likewise applies acceleration if possible, in low gear to assist the pulling.
11. Neither plow truck should spin their tires. Steady momentum is most effective, never a jerking, or take a long run and jerk. Maintain tension throughout the pull, do not allow slack to develop in the strap at any point.
12. Do not remove straps until both plow trucks are fully stopped and secured. It is a good idea to clean and dry out a recovery strap after use as dirt and moisture weaken the strap.
13. If after three unsuccessful attempts to pull the plow truck loose the stuck plow truck remains immobile the operation must cease and only continue with a recovery company licensed and equipped to perform the recovery.

DTI assets shall not be used to recover vehicles that are not the property of DTI.

Attached please find checklist for using a recovery strap.

Checklist for Using a Recovery Strap

Answering “no” to any of the following requires the user to call a vehicle recovery company licensed and equipped to perform the task of vehicle recovery.

If using one DTI plow truck to recover another DTI plow truck:		
All reasonable efforts to hire a vehicle recovery company have been exhausted?	Yes	No
Do both parties involved have permission from their respective employers and/or supervisors to perform a plow truck recovery?	Yes	No
Have you checked and considered the gross vehicle weight (including loads) of both vehicles?	Yes	No
Is the total weight of the recovery plow truck equal or greater than the total weight of the stuck plow truck?	Yes	No
Do you have a recovery strap with a Working Load Limit (WLL) of 25 ton or a breaking strength of 100 ton?	Yes	No
Is the recovery strap in good working condition, with no visible tears, defects or signs of deterioration that may weaken its condition?	Yes	No
Do the shackles have a WLL of 25 ton and are they in good working condition, with no signs of damage?	Yes	No
Do you have an approved recovery point on both vehicles that you can attach a recovery strap?	Yes	No
Do you have a coat or heavy blanket to lay over the middle of the recovery strap?	Yes	No
Can you line up the recovery plow truck with the stuck plow truck?	Yes	No
Is the recovery route free of any obstacles or hazards (e.g., trees or boulders)?	Yes	No
Have you set up the necessary traffic control?	Yes	No
Have you established clear communication signals between the two drivers?	Yes	No
Do both drivers understand the correct procedure for the recovery attempt?	Yes	No
Have you clearly communicated the dangers and established a perimeter of 2 times the distance of the recovery strap for any bystanders?	Yes	No
Do both drivers understand that after three failed attempts, the operation must cease and shall only continue with a vehicle recovery company licensed and equipped to perform the task of vehicle recovery?	Yes	No
Do both drivers understand the hazards of a recovery attempt, especially the deadly danger of recoil should any components fail?	Yes	No
Have you taken time to consider other possible hazards presented by the particular situation?	Yes	No
Has the risk to personal safety or equipment damage been determined to be an acceptable?	Yes	No
Has a Hazard Assessment been completed and reviewed?	Yes	No

Remember, a certified recovery company is always your best option in vehicle recovery.

CHAPTER: 4
SECTION: 4.11

Safe Job Procedures
Working On, Above or In Water

HSM-SJP-11
Rev 1 2020

Overview

This interpretative guide of the Fall Protection Regulations is established to provide simplified information to our employees, who may have to perform or supervise work for employees who may have to work on, above or in the water.

The requirement applies to all DTI employees and individuals or contractors working at or on our premises, contract sites or under our direction.

What is meant by Water

Water in this instance would normally be a river, brook, lake, swamp etc. where there is a real risk of drowning



1. Assessing the Hazards

Regulation 91-191 section 51 requires the employer to ensure the safety of employees and when around water it is more towards the risk of drowning.

We will look at each of these and more specific requirements depending on your choice of protection.

When working 3m or more over water and a fall into that water is possible, the employer is to ensure there is a fall protection system in place, the hierarchy is

1. Guardrails as per section 97.
2. Travel Restraint as per section 105(8).
3. Fall arrest as per section 49

If you are in, on or less than 3m above the water the employee has the option of wearing a life jacket or PFD (personal flotation device) all specifications are listed above.

If you are working alone and or rescue is not immediately available you shall wear a life jacket, which if you are unconscious turns you face up in the water.

2. Do I need a rescue boat?

The law requires fall protection first, so if you have a strong fall protection system, in which employees have safe access to and from work areas, if they have a guard railed environment 100% tie off fall protection system or travel restraint then you should not require a rescue boat as a fall into water should not be possible.

If, however, there are employees working at lower heights in life jackets or PFD's, or from boats, or you simply feel there is a risk of falls into water and that a rescue boat is necessary then there are requirements to follow.

1. The boat has to be in an easy to access area.
2. The boat has to be stable in the water being accessed, consider, flow, depth, other boat traffic, etc.
3. The boat needs to be powered in such a way as to make rescue as quick and simple as possible. (Motorized in swift or rough water.)
4. The operator(s) of the boat have to be competent to do so. (Should have training from a recognized boat course like the Power and Sail Squadron.)
5. The boat has to be equipped with a life ring or buoy attached to 30m of rope and a boat hook.

Besides the boat, if an employee may fall into water and require rescue the employer shall write up an emergency procedures which shall be posted in the workplace.

3. The emergency procedures shall contain

- A full description of the emergency procedures including the responsibilities of all employees granted access to the workplace.
- The location of any emergency equipment and the name of the employee designated to operate the equipment.
- With regards to water or another liquid
 - (i) its temperature,
 - (ii) its depth, and
 - (iii) its flow;
 - (iv) (b) any water traffic;
 - (v) (c) the distance to the rescue boat;
 - (vi) (d) the distance to reach an employee;
 - (vii) (e) any projections or objects beneath the surface;

- (viii) (f) any visibility issues;
- (ix) (g) the time of day; and
- (x) (h) any adverse weather conditions

4. If an employee may fall into liquid and require assistance to return to a place of safety the employer and contractor shall ensure:

- Appropriate emergency equipment is ready to be used. (this could be a life ring attached to a guardrail with rope that could be thrown to the person in trouble)
- An employee who is competent in the use of the emergency equipment is readily available to provide assistance.; and
- An alarm system is provided to signal the need for a rescue. (air horn, whistle, alarm etc.)

5. If your work is to be in the water like wading or on the surface snorkeling there are other precautions that need to be taken:

- Are you alone or with others who can provide immediate assistance, if you are alone you need a work alone procedure and a life jacket, should you really be alone.
- As in #3 above, consider the flow, depth, temperature, footing, obstructions, other hazards, distance from road and vehicle and other hazards.
- For snorkeling and electro fishing there are other hazards to consider, and the environmental unit have safe work practices which you need to access.
- For inspecting culverts, etc. if the water is deep enough to drown in, you need to consider your own personal safety, how will you access the area, is there a steep incline, if yes you could attach a rope to a guardrail etc. and use it to allow yourself to climb down to the area.
- Is there other boat, vehicle traffic which could place you in danger, if yes then appropriate precautions have to be taken.

6. Work on ice

51(6) If an employee works on ice and the water under the ice is more than 1 m in depth, an employer and a contractor shall each test the ice before beginning any work and after as necessary to ensure that the ice will support any load placed on it.

Work from Ice brings a new list of safety concerns from slips and falls to falling through, etc.

Ice Testing

Work, travel, and parking on frozen bodies of water should be avoided whenever possible and be done only as a last resort. The ice **must** be tested before any workers or vehicles are allowed onto the surface. Loads that may safely travel on ice may not necessarily be left on

ice for extended periods of time. This applies especially to parked vehicles. Before testing, learn as much as possible about ice conditions from local residents. Testing requires at least two persons on foot proceeding with caution. Each person must wear an approved lifejacket or, preferably, an approved floatable survival suit that protects against hypothermia.

For ice testing, a survival suit or lifejacket is required because a person falling into frigid water may lose consciousness and the suit or lifejacket will keep the person's face out of the water.

Members of the ice-testing crew should stay about 10 metres (30 feet) apart. The lead member must wear a safety harness attached to a polypropylene rescue rope 9.5 millimetres (3/8 inch) thick, at least 20 metres (65 feet) long, and held by the trailing crew member (Figure 5). Clear blue ice is the most desirable for strength. White or opaque ice forms from wet snow and has a higher air content. It is less dense and therefore weaker than clear blue ice. Grey ice indicates the presence of water from thawing and should not be trusted as a load-bearing surface.

The lead crew member should cut test holes every 8 metres (25 feet) or so. If ice is less than 10 centimeters (4 inches) thick, the lead and trailing crew members should vacate the area immediately.

Employer and Employee Responsibilities

- Refer to the requirements of Section 14.6 of the HSM.

Reference

- Occupational Health and Safety Regulation 92-133 cited as the *Code of Practice for Working Alone Regulation- Occupational Health and Safety Act*.
- A Working Alone COP form can be found in Section 3.4.2.1 of this manual.

CHAPTER: 4
SECTION: 4.12

Safe Job Procedures
Wing Block Installation

HSM-SJP-12
Rev 1 2021

Introduction

Wing blocks in combination with the rubber block used on numerous trucks during testing over a period of years has resulted in no events of wing damage or damage to assets. The design currently released for use has rubber encased steel and a precut rubber front angle, making steel installation easy and cutting limited. **Wing block use is mandatory and must be installed and maintained as outlined below.**

WING BLOCK INSTALLATION PROCEDURE



Pictured above is a front rubber wing block installed on a Craig wing

The block is designed to be bolted on directly on a wing that has double steel installed. If installed as outlined below, the ratio of wing steel changes compared to current methods is 6 to 1, while providing what has been improved safety from wings catching objects and coming up and contacting vehicle doors, windows, mirrors and potentially causing personal injury.

The wing blades are to be installed as per each individual Division’s discretion and typical practice. Please ensure the bottom of the blade and bottom of the block are uniform with the road surface.

What you will need to install

(Craig used for example, may vary by manufacturer)

You will need, in addition to regular plow bolts, some five and six-inch to do the install as the shank of the bolt has to be long enough to get through shoes and block, double steel installed full length, 3 wing shoes.



Note 3 Wing Shoes Installed On Back Of Wing, 1 Near Front, 1 Center, 1 Rear

Longer bolts are required in locations where the rear shoe, front block and double thickness steel are required to be fastened. It is important that the front shoe be installed near the front leading edge of the wing.

CHAPTER: 4	Safe Job Procedures	HSM-SJP-13
SECTION: 4.13	Fendall Pure Flow 1000 Emergency Eye wash Station	Rev.1

All workers require instruction in the proper use and location of eyewash stations before any emergencies occur. It should never be assumed that workers are already aware of the proper procedures. Written instructions should be made available to all workers and posted beside the eyewash station. Part of the instructional process should include a "hands-on" drill on how to find equipment.

The wearing of contact lenses can be dangerous because chemicals can become trapped under a contact lens. Any delays caused by removing contact lenses in order to rinse eyes could result in injury. Training should include instruction in contact lens removal.

The Fendall Pure Flow 1000 Emergency Eyewash Station is not for outside use. Do not install the Eyewash Station in an outside location. Installation of the Eyewash Station in an outside location may prevent the unit from functioning properly in an emergency situation.

- The unit must be level for proper operation. Failure to properly mount the unit may cause the unit to function improperly at the time of an emergency.
- The area under the Fendall Pure Flow must be kept clear to allow reservoir to drop.
- Employees must be instructed in the use of Emergency Eyewash Stations.
- An individual or department must inspect this unit on a monthly basis. Records of these monthly inspections should be kept with the unit.
- Never use an expired Saline cartridge. Use of an expired cartridge may result in serious personal injury or serious illness, including blindness.

ANSI Standard Z358.1-2009 requires that:

1. The unit shall be positioned with the fluid nozzle(s) not less than 83.8 cm (33 in.) and no greater than 114.3 cm (45 in.) from the surface on which the user stands and 15.3 cm (6 in.) minimum from the wall or nearest obstruction.
2. Eyewash units shall be in accessible locations that require no more than 10 seconds to reach. The eyewash shall be located on the same level as the hazard and the path of travel shall be free of obstructions that may inhibit the immediate use of the equipment. For a strong acid or a strong caustic, the eyewash should be immediately adjacent to the hazard.
3. Each eyewash location shall be identified with a highly visible sign positioned so the sign shall be visible within the area served by the eyewash. The area around the eyewash shall be well lighted.

Maintenance and Inspection

Emergency Eyewash station must be inspected on a Annual basis by a competent persons
Emergency Eyewash station must be inspected on a monthly basis. Records of these monthly inspections must be kept with the unit.

- Do not lift activating door during inspection, as it will start fluid flow. Once fluid flow has started, it cannot be stopped.
- Inspect all eyewash stations monthly to ensure proper operating conditions.

- Inspection records must be kept with the unit.
The cartridge fluid expiration date is printed on each black strap and on the front face of each cartridge. Cartridges must be replaced on or before expiration date.
- Install new cartridges as described in "Cartridge Installation." Bellow
- If "Warning Service Immediately" notice is visible or if the activating door is open, replace cartridges immediately.
- Remove cover or look through the window and ensure that platens are unlatched and down on the bags. Replace cover.
- Drain must be in closed position, with handle turned straight back.
- Keep area around and under Fendall Pure Flow 1000 clear of obstruction and debris.

Operation

The unit is for emergency use only.

- Tampering with the eyewash station may result in unit malfunctioning in an emergency situation.
- In cases of severe eye contamination, the victim may need assistance to flush their eyes.
- Instruct employees in the proper use of the Eyewash Station.
- Regular training will keep employees aware of the location and proper use of eyewash devices.
- The sooner eyes are flushed, the less likelihood of damage.

Pull handle on the activating door. This action will expose basin and initiate flow.

2. The injured person lowers head into flow.

3. Using thumb and forefingers, fully open eyelids and flush eyes for 15 minutes.

4. **After flushing, seek medical attention immediately.**

5. Notify safety and supervisory personnel that unit has been used and new cartridges must be installed.

Replacing Cartridges

Place suitable container under the drain.

2. Open drain spigot by turning handle forward.

3. When empty, close drain spigot by turning handle back.

4. Dispose of fluid down a regular waste drain.

5. Remove cover.

6. Raise reservoir by lifting from below until it locks in position with two latching tabs.

7. Push down gently on lock release tab at tube end of nozzle and pull nozzle straight out of plate.

8. Remove used cartridges.

9. Remove activating straps by unscrewing center pin of fastener and pulling fastener body out of door.

10. Wipe down basin and door with a damp cloth.

11. Replace cartridges

Replacing Cartridges when Expired

1. The cartridge fluid expiration date is printed on each black strap and on the front face of each cartridge. Cartridges must be replaced on or before expiration date.

2. Cut activating straps.
3. Remove cover.
4. Follow directions as detailed in “Replacing Cartridges after Use” and “Cartridge Installation”.
5. Cartridges are full and weigh 33 lbs. (15 kg) each.
6. Dispose of properly. Cartridges may be drained and disposed of as regular waste.

References

- ANSI Z358.1-2009
- Fendall Pure Flow 1000 Manufacture Specification
- DTI HSM 3.6 Emergency Eyewash and Shower
- CSA

CHAPTER: 4

Safe Job Procedures

HSM-SJP-14

SECTION: 4.14

Forax Mulching Head

Rev.1Draft

Forax Grader Implement Boom
Forax Extreme Duty Brush Cutter
Forax Heavy Duty Mulcher

Equipment Requirements

- Grader
- Forax Grader Implement Boom
- Forax Heavy Duty Mulcher
- Overhead crane (set up and removal) Done by VMA.

Operator Competency/Training

- DTI Grader training
- Forax overview of equipment, installation, use and maintenance
- NB Power Green Card
- WATCM Awareness
- First Aid Training
- Lock Out Tag Out Training

Reference Material

- Prior to operation the workers are to review the Supplied owner's manual

Tool requirements

- Rubber maul
- Battery-operated hand-held grinder (for teeth maintenance)
- 5/8 wrench
- Torque wrench

PPE

- Cut resistant gloves (minimum A4)
- Face shield (using grinder)

Installation of Boom and Mulcher Attachment

- This task requires 2-3 employees
- Ensure that equipment is stored on pallet when not in use for ease of movement
- Employees are to conduct an inspection of all equipment to identify any issues . Issues are to be resolved prior to connection
- With the use of an overhead crane have a person competent in rigging rig the boom and move it into position by the grader. Operator will connect boom to grader ensuring that they are not in the line of fire. Tag lines may be required if there is any chance that the boom may move.
- Installation is with quick connects and hook attachment which allows an easy set up of hydraulic hoses and the attachments
- Ensure that the hydraulic valves are turned in the off position
- Line the boom up with the attachment

- Operator using the control will articulate the boom out over the attachment
- Employee will guide using hand signals or verbal communication
- Ensure hooks are fully engaged and install retaining wedge while tapping on either side of the wedge during tightening to ensure a tight fit. Attach hoses from motor to the connection on the boom assembly and open all three valves. Be sure that your implement is rotating in the cutting direction. {Energy sources include Hydraulic (3 isolation valves), power (main battery), stored Kinetic/residual, hydraulic in hoses and in the boom and the cutting heads}
- Employee will move out of the way and the grader operator will start unit by engaging an on/off switch located in the cab. Simply turning this switch on and off will activate and deactivate the cutting or mulching attachment.

Pre-use inspection

- Check cutting heads, with the wrench rotate 1/5 if there is any wear
- Check hydraulic hoses and fittings for any signs of cracking, wear or leaks
- Verify that equipment is functioning properly

Operation

Warning: Always use articulation locks when operating the Forax Grader Implement Boom. Failure to do so may cause serious damage.

When boom is in park position for travel, a good practice is to secure the assembly to the park location. Warning: do not try to maneuver the boom while secured.

Boom Swing (forward-back) function is equipped with a relief system that will allow the boom assembly to give away when the traveling speed of the grader is too great for material being cut. Should this occur simply slow down and reposition the boom to your preferred location for the task at hand.

- Operator is to drive the grader to the location. Some locations may require the grader to be floated to the location. Workers are to follow proper floating and securing procedures
- Ensure that a field level hazard assessment is completed with the on-site team. No work is to commence unless the hazard assessment is completed and signed off.
- If there is a jam, first attempt to run the heads in the opposite direction
- If that does not work, ensure that the unit head is locked out, hydraulics off and disconnected, grader off, and a tool (long piece of wood) is used to move the material out
- Every 1-2 hours stop the equipment and visually check the cutting heads. These heads are 5 sided and if a tooth is worn down the operator will need to put the equipment at a zero state of energy (they are to wear cut resistant gloves) and with the wrench rotate the head 1/5 to the next position
- The heads can be sharpened using the handheld grinder as per the Forex training

Removal and Maintenance

1. It is suggested that with the implement be removed and that the boom assembly be folded tight to the grader which will produce a compact arrangement.
2. The assembly can then be rigged as to lift near the high point with an over head hoist or crane.
3. Disconnect the ½" hydraulic lines from the grader while plugging and capping the connections to keep dirt out of the system.
4. Disconnect the ¾" main pressure and return lines to and from the implement and plug the hoses on the boom assembly. The pressure line from the priority control valve can be short circuited to the system return.
5. Be sure to secure the boom assembly safely via blocking or stands as well as by means of an overhead hoist or crane. The main mount can then be carefully unbolted from the grader.
6. Once the boom assembly is fully unbolted it can then be laid on its side if preferred on a pallet with softeners to mitigate cosmetic damage. Please note that the side facing the ground should be the side without hoses

Lock Out Procedure

Energy Sources

- Power (Battery of Grader)
- Hydraulic (to cutting head)
- Mechanical (cutting tips)
- Stored Energy (Cutters, especially if jammed)

Other hazards

- Nip and cut points on blades

Any cleaning, greasing, maintenance and removal of debris is to be performed when the Mulching head is at a ZERO STATE of Energy and is LOCKED OUT and TAGGED OUT

LOTO

- lower the attachment with the boom
- shut off the power switch to the head
- verify that hydraulic fluid in main reserve reads full
- turn off ignition of the grader, remove and place key in ones pocket
- close the three hydraulic valves on the attachment
- Disconnect the three hydraulic valves as the final verification

Note:

Always use a tool to remove debris, NEVER put you hands near the mulching head if there is any material jammed as there is STORED ENERGY

If material is long use rope to tie and secure it. Stand out of the line of fire so material cannot make contact. Use a long piece of wood to remove the jammed material

CHAPTER: 4	Safe Job Procedures	HSM-SJP-15
SECTION: 4.15	Blocking Raised Truck Boxes	Rev.2021

Introduction

This procedure was developed to minimize hazards and prevent injuries when installing and removing truck box braces. Equally important, a properly installed brace will allow workers to work under the box safely.

Hazards Identified

Getting struck or crushed by equipment; Caught between; Exposure to diesel fumes; Falling debris; Overexertion; Slip, trip & falls.

Personal Protective Equipment Required

Safety boots; Gloves; Eye Protection, Hard Hat, Hi- Visibility Apparel, Traction aids as required.

Preparation:

- Ensure truck box is emptied of materials.
- When in the shop, install the ventilation system hoses to the engine exhaust pipe, if those are available.
- If a wing or a plow is attached, it should be lowered to the floor or secured with safety chains as per DTI's "Plowing suspension Bulletin".
- Ensure there is adequate space around the vehicle and the equipment.
- Supervisors shall instruct employees on this procedure and ensure it is followed.

A. Steps for Installing and removing the fixed brace

1. Visually inspect the brace from top to bottom to ensure it is in good condition.
2. Remove the safety pin and locking pin and push the brace towards the box (see photo #1).
3. Walk around the truck to ensure there is enough overhead space to avoid contacting wires, pipes, ceiling, etc.
4. Start the truck and while looking through the back window, raise the box slowly until the brace moves under the box. Then, lower it slowly until the box is supported by the brace.
5. Stop the truck and inspect the brace. The channel of the main box frame must sit inside the brace channel. If not, repeat the steps above until the channels sit one inside the other (see photo #2).
6. Workers can now complete the work on the vehicle safely.
7. Before removing the brace, ensure tools, supplies, etc...are removed.
8. Raise the box 5 to 6 inches (12 to 14 cm).
9. Return to the brace, pull it straight, insert locking pin and safety pin, and verify they are securely in place.
10. As you return to the cab, tell others to stay back while you are lowering the box.
11. Lower the box slowly.



Photo #1



Photo #2

B. Steps for installing and removing the portable brace:

1. For this brace, an operator and a person handling the brace is needed. The handler should have good upper body strength.
2. Discuss how you will communicate and ensure eye contact during the procedure.
3. Visually inspect the brace from top to bottom to ensure it is in good condition.
4. Walk around the truck to ensure there is enough overhead space to avoid contacting wires, pipes, ceiling, etc.
5. Start the truck and while looking through the back window, raise the box slowly as directed by the brace handler.
6. While installing the brace, position yourself so that you are not under the box.
7. Grab the brace with both hands, and insert the bottom on the dump cylinder support saddle channel (see photo #3). Align the top of the brace with the channel on the box main frame. The brace should be in line with the box cylinder or slightly to the passenger's side.
8. Direct the operator to slowly lower the box until the main box frame channel sits inside the brace channel as per photo #4.
9. Once lowered, inspect the brace. The channel of the main box frame must sit inside the brace channel. If not, repeat steps above until the channels sit one inside the other.
10. Workers can now complete the work on the vehicle safely.
11. Before removing the brace, ensure tools and supplies are removed, and ensure workers have backed away from the vehicle.
12. Hold the brace with both hands without being under the box, and signal the operator to raise the box 5 to 6 inches (12 to 14 cm).
13. Pull the top of the brace towards you and raise the bottom out of the saddle.
14. Move the brace to a safe place and signal the operator to lower the box down while maintaining eye contact until fully lowered.



Photo #3



Photo #4

C. Steps for installing and removing the manufacturer's brace:

1. Visually inspect the brace and supports (resting points on the frame) from top to bottom to ensure they are in good condition.
2. Remove the safety pins. (see photo #5)
3. Look overhead to ensure there is enough space to avoid contacting wires, pipes, etc.
4. Start the truck and while looking back, raise the box slowly until the brace hang straight down and is slightly above supports. If necessary, have a co-worker align the brace with a long handle object over supports then lower it slowly until the brace support the box.
5. Stop the truck and inspect the brace. Bases of the brace should be sitting snug onto supports on each side of the frame. (see photo #6)
6. Workers can now complete the work on the vehicle safely.
7. Before removing the brace, ensure tools, supplies, etc...are removed.
8. Raise the box 5 to 6 inches (12 to 14 cm).
9. Return to the brace, have a co-worker using a long handle object hold the brace slightly toward the stowed position, while you slowly let the box down, don't allow anyone to work under the box while it is unsecured. Once the box is sitting on the frame, you can then position the brace so it can be pinned into position on each side. (see photo #5)



References:

- Occupational Health & Safety regulation 91-191, sections 230.3(3), 239 & 240.

5.1. Overview

General Health & Safety rules are established to prevent or minimize personal injury or illness through the adherence to the department's health and safety program. Following rules and regulations help protect employees from recognized hazards and create consistency and uniformity in controlling or eliminating hazards.

All employees are required to adhere to departmental rules, policies, procedures as well as the requirements of the OHS Act and Regulations.

Contractors and other personnel hired to work on a Department work site/location, or on behalf of the Department as its representative are required to ensure workplace health and safety through compliance to the Occupational Health and Safety Act and Regulations, applicable departmental standards as well as their own health and safety program where applicable.

5.2. Understanding Safety Rules

Every employee must be made aware of the following general rules about health and safety in the workplace. The list in this section does cover all the safety requirements that workers are expected to follow but are intended as a reminder of the more obvious conditions. It is the individual responsibility of the worker to practice safe working habits.

If you have any questions regarding safety, ask your Supervisor.

Safety rules help to protect workers and are important because:

- a. There is substantial evidence that compliance with safety rules reduces injury.
- b. Failure to follow safety rules can lead to serious injury or death.

A successful Safety Program requires the total involvement of all concerned. Therefore:

- a. The following safety rules are mandatory for all workers at all times.
- b. These rules and all Occupational Health and Safety regulations are policy on all sites.
- c. Workers are required to understand and recognize these rules and comply even if they do not perceive a risk.

5.3. Safety Rules

1. No worker may commence work without completing a Health and Safety orientation

2. Working safely is a mandatory requirement
3. All workers are required to report fit for duty each day. Any employee whose ability to perform the job safely is deemed to be impaired will not be allowed to remain at work. Arrangements will be made to get the employee safely home.
4. All injuries, incidents, and near misses (no matter how slight) must be reported to your immediate Supervisor.
5. Any worker involved in an incident must Freeze the Scene and immediately report to the Supervisor
6. All Supervisors, Managers shall be responsible for enforcing the safety rules
7. No worker shall engage in any work without first conducting a Hazard Assessment
8. All workers must intervene when they see others at risk
9. The use, sale, distribution, production of, or impairment due to: alcohol, illicit drugs, recreational cannabis, or medications that have not been legally obtained or properly prescribed to the employee is prohibited in the workplace.
10. No worker is permitted to modify or remove safety accessories or guards from any piece of equipment
11. Seat belts must always be used in all mobile equipment and vehicles
12. Adhere to all applicable rules, regulations and standards at all times as per training, instruction and / or information provided.
13. Follow the Right to Refuse Dangerous Work Process
14. Immediately report any hazardous or unsafe acts & conditions, accidents, incidents, injuries and near misses, to your immediate supervisor without delay
15. Cooperate in all accident/incident investigations as well as with JHSC representatives and anyone responsible to enforce the Act and Regulations.
16. All assigned personal protective equipment (PPE) must be worn properly, maintained in good condition, and inspected regularly for defects.
17. Always wear the appropriate clothing for the task to be performed and for the environment.
18. Only use tools that have been inspected and are in good working order, that are equipped with the proper safety devices, and that you have the necessary training and qualifications to use.
19. Always operate vehicles and equipment in accordance with manufacturer's specifications, workplace rules and highway regulations.
20. Never perform a task which diverts attention from your job and which could have a negative impact on the health and safety of yourself or of others.

IMPORTANT: Failure to comply with an established rule, regulation, code of practice or policy, could result in disciplinary measures as outlined in Department's Progressive Discipline System.

CHAPTER: 6

Personal Protective Equipment

Rev.1 2021

6.1 Overview

All employees must meet the basic requirements for personal protective equipment (PPE) described in this document.

At work locations where employees are required to use personal protective equipment, each Supervisor and Manager must ensure employees are

- a) Instructed in proper use and maintenance of the PPE
- b) Instructed when to use the PPE.
- c) Informed of its benefits.
- d) Instructed on its limitations.
- e) Instructed on when and how the PPE is to be replaced.
- f) Checked to ensure that they are medically and physically (e.g. clean shaven) capable of wearing the equipment.
- g) Checked for proper fit.

6.2 Purchasing Equipment

PPE can only be effective if it fits properly and provides adequate protection. All purchases must be made with this in mind. It may be necessary to purchase more than one style of personal protective device.

6.3 General Requirements

All safety equipment must meet CSA standards and shall carry markings, numbers, or certificates of approval.

- Clothing that impedes the fit of any personal protective equipment must not be worn.
- Workers must inspect their PPE before using it. If damage is noted, replacement equipment will be made immediately available.
- Old or defective equipment must be returned clearly marked “Do Not Use”.
- No worker is permitted to modify or tamper with any PPE.
- PPE shall in itself not cause a hazard to the worker. If this is found to be the case, an alternative means of protection must be identified and used.
- PPE must be worn at all times while the worker is on the worksite, unless otherwise posted.

6.4 Responsibilities

Supervisor Responsibilities

- Provide employees with appropriate safety apparel appropriate to the identified hazards
- Ensure PPE is used at all times and properly worn.
- Observe work practices and site operations and correct when necessary.

Employee Responsibilities

- Comply with regulations and department's standards and wear safety apparel properly.
- Ensure the equipment is inspected, maintained & used according to the manufacturer's recommendations.
- Report any defects and replace as required.

6.5 Head Protection

Employees are to wear the Department issued head protection. Head protection is available through department's regional stockrooms. When Department issued safety hats cannot meet specific needs, other head protection may be purchased and used if they meet or exceed the standards set out in Regulation 91-191 and are approved by the Health and Safety Unit.

- Hard hats will be worn in accordance with legislated safety standards.
- Hard hats will have high visibility markers affixed.
- Hard hats will be worn with the peak forward, unless doing so creates a risk to the worker.
- Only approved hard hat liners will be used. Any clothing that impairs the fit of the hard hat must not be worn under the hard hat.

It is mandatory that all employees wear head protection for both day & night time activities at work sites which include: department yards; project and construction sites; along highway & roadways and any other location while performing work activities, whether inside or outside R.O.W. limits; and where heavy equipment is operating (including ferry decks).

Currently the only exemptions are

- Inside administrative offices
- Inside repair bays & shop facilities
- Public auctions
- Stockrooms
- Public parking areas
- Inside the completely enclosed cab of a vehicle

- On the open deck of a provincial ferry during normal operations (hard hats must be worn below deck)
- Fueling stations
- Direct travel between two exempt locations as stated above, where no overhead hazards are identified.

Issue and Use

The following Type 2 Class E color code for safety hats will be observed:

- White – Engineers, Officers-in-charge and Management
- Blue – Superintendents and Technical staff
- Yellow – Supervisors
- Orange – All other employees

Those with authority over visitors attending a work or project site will identify and issue safety hats to be worn by the visitors as well as provide the visitors instruction on their use.

All employees shall ensure that

- Shells and suspensions are maintained in excellent condition at all times.
- Any head protection hat that has received a severe blow shall not be used and will be replaced.
- Head protection is not painted or sprayed with chemicals as this may have a detrimental effect on the protections offered by the hat.
- Welders will be provided with CSA approved head protection and welding safety hats.
- Only approved liners shall be worn beneath the safety hat.
- Safety hats are to be worn as issued with no modifications allowed to the shell or harness. (Exception: If employees must identify their hats, a small sticker can be used which can be installed in a manner that does not interfere with the reflective stripes and still allows for a thorough inspection of the shell).

Inspection

Inspections of shells and suspensions must be performed daily for signs of damage or deterioration. Signs of defects such as cracks, nicks, gouges, dents or brittleness are looked for during an inspection of a shell. Similarly, an inspection of a suspension would consist of looking for signs of defects such as cracks or tears in the plastics, cuts or fraying of straps or loose connections with the shell.

Replacement of Defective Hats

Replace safety hats when

- A defect is identified whether it is during an inspection or not, **or**

- It has suffered an impact or been involved in an incident whether it shows signs of damage to any component of the hat, **or**
- The suspension is showing signs of damage to the clips, suspension harness, etc., **or**
- It has been exposed to chemicals such as paints, gasoline, solvents, degreasers or any other type of petroleum-based materials, **or**
- It has been over exposed to heat or any other factor that result in the hat showing damage and/or premature wear (i.e. fading, dull color, brittle).

Replacement of Non-Defective Hats

For hats used regularly:

- It is recommended that the shell be replaced **5 years** after its first day into service. Manufacture date will be stamped on the inside of the hat.
- The **suspension** may need to be replaced annually due to wear and tear.

For hats used infrequently and stored properly:

- It is recommended that the shell be replaced **7 years** after its manufacturing date.

Installing Reflective Stripes

To install reflective stripes on hats

1. Leave your hat indoors for several hours to ensure it's at room temperature.
2. Clean the hat surface with a mild detergent and rinse it with clean water to remove any particles.
3. Let the surface dry and look for any signs of damage which could stop the stripe from adhering properly to the hat surface. (Replace the hat if needed).
4. When applying, securely hold the hat and press on the stripe for 10 to 15 seconds from the center towards the ends.

Placement of stripes:

- **Side stripes:** Install horizontally approximately one inch above the brim or lip.
- **Front stripe:** Install vertically approximately 1 to 2 inches above the visor.
- **Back stripe:** Install vertically half an inch above the brim.

Important: Keep stripes clean for best reflection and do not cover side stripes with the ears of a winter liner. Ears can be tucked-in between the shell and the suspension.



References

- Occupational Health and Safety Regulation 91-191, section 38 – 42.
- CSA Standard CSA Z94.1-15
- Occupational Health and Safety Act, definition of construction and project site.
- WATCM – Section 2.6 for night work and section 5 for work area personnel.

6.6 Eye/Face Protection

Employees are required to wear safety eyewear while performing activities which present a hazard to the eyes, regardless of the work location.

Situations can vary from grinding in a shop, or mixing chemicals in a lab, to working on a construction or project site. For these reasons it is important that supervisors and employees work to identify potential work areas or tasks that present eye hazards and ensure that the appropriate eye or face shield protection is worn.

Employee purchased safety eyewear must be suitable for the occupation activities that are being performed and must meet or exceed the requirements under the Occupational Health & Safety Act & Regulations 91-191.

All safety eyewear must meet or exceed the requirements under the Occupational Health & Safety Regulations 91-191 section 39 which states the CAN/CSA-Z94.3-15 standard, "Industrial Eye & Face Protectors". Only eyeglasses that meet the CSA standard or a standard offering equivalent or better protection may be used. Side shields are required to be worn for all Department activities requiring the safety eyewear. Glasses bought since 2007 should have permanent side shields.

It is not recommended that contact lenses be worn in an environment where eye protection is required. It is the responsibility of an employee to discuss their job tasks and eye hazards with their eye doctor to ensure the employee is well informed of the occupational risks of wearing contacts at work and ensure they take appropriate protective measures to guard against injury.

Those with authority over visitors attending a work or project site will identify and issue the appropriate safety eyewear to be worn by the visitors as well as provide instruction on their use.

- All eye and face protection will be CSA approved.
- All eye and face protection shall be purchased to be worn with appropriate head protection.
- Safety glasses shall fit high enough on the nose to adequately protect the eyes.

- Prescription Safety Glasses must be CSA approved. If prescription glasses are not CSA approved, the worker is required to wear CSA approved safety glasses over the prescription glasses.
- Contact lenses are not permitted in cases where it is reasonable and probable to believe that the worker's eye(s) could be injured or damaged as a result of work activities.
- Face shields will be worn where work activities create airborne material that could injure the worker.

Reimbursement for Approved Safety Eyewear

After employees have purchased their required safety eyewear, they are reimbursed according to their employment agreements (collective agreements or non-bargaining). Reimbursements will be granted only if both the eyewear frames & lenses meet the CSA standard or a standard offering equivalent or better protection. Students and casuals are not covered by the reimbursement agreements.

Prescription Safety Glasses - Instructions for Selection

- ✓ Inform your supplier, prior to selecting materials, that you require safety glasses.
- ✓ To meet CSA standards, prescription safety glasses must consist of a complete package of approved frames, lenses and side shields.
- ✓ Frames must bear the stamp "Z87" on the front, as well as on both temples, and on both side shields.
- ✓ Frames manufactured for everyday use are not suitable for an industrial setting.
- ✓ Side shields must be permanently attached to the glasses. Glasses with detachable side shields do not meet standards and are not acceptable.
- ✓ Lenses must meet CAN/CSA-Z94.3-15 and be either CR39 plastic or polycarbonate
- ✓ Lenses must be 3.0mm minimum thickness with CR39 plastic and should be 3.0mm minimum thickness with polycarbonate.
- ✓ Both lenses must bear the manufacturer's identifying mark.
- ✓ Scratch resistant coatings should be applied to both sides of the lenses to prolong the life of the lenses. A two-year warranty is recommended.
- ✓ Polycarbonate is recommended for individuals at high risk of impact injury (e.g. using pneumatic nail drivers), but scratch resistance is less than that of CR39 plastic.
- ✓ **Glass** lenses either clear or photochromic lenses do not meet the CSA standard and are not allowed.
- ✓ Please have your Optometrist or Optician complete and sign the "Prescription Safety Glasses Verification Form" from the Health & Safety website.

References

- Collective Agreements
- Occupational Health and Safety Regulation 91-191 Part VII; section 38 - 44
- CAN/CSA-Z94.3-15, “Industrial Eye & Face Protectors”
- Provincial Government Administration Manuals – Policy No. AD-2702 – Protective Clothing and Equipment

6.7 Hand Protection

- Gloves must always be worn during work activities. This includes any time the worker is lifting or handling material.
- Rings or other jewellery must not be worn where there is risk of the hands being crushed, caught in equipment, exposed to energized equipment or hot work, hooked on a structure or equipment, or when the worker is using power tools.
- If there is a risk of a worker’s hand becoming caught in a pinch point, the worker(s), or the worker(s) together with the Supervisor, must find a different way to perform the work to minimize the risk created by the pinch point.

Additional special requirements are as follows:

NATURE OF RISK/ACTIVITY	SPECIAL REQUIREMENT
Risk of cuts or abrasions due to rough or sharp edges:	Cut resistant gloves and protective sleeves will be used. A minimum of Class 4 Cut Resistant glove must be used.
Risk of burns to the hands:	Welder gloves or other heat resistant gloves must be used. Gloves must provide adequate protection to the wrist and forearm.
Grinding Activities:	General purpose gloves must not be used for grinding activities, as they do not provide adequate protection to the worker’s hands. The gauntlet glove with suitable protection for the palm wrist and forearm must be used.
Handling chemicals, solvents, and some types of cement/grout:	Chemical Resistant gloves must be worn. Gloves must be of the type identified in the MSDS.
All electrical work on energized systems:	Gloves providing the appropriate dielectric rated protection must be used
Using knives:	Cut resistant gloves A minimum of Class 4 Cut Resistant glove must be used.

6.8 High-Visibility Safety Apparel

Employees are to wear high visibility apparel meeting departmental colors and CSA Standard Z 96-15 Class two over all other clothing. Employees can choose to wear the vest issued by the Department or other apparel they have purchased that meets DTI’s requirements listed in this section. Vests are available through the department’s regional stockrooms. When specific needs

cannot be met with a Department vest, other vests may be purchased locally with the senior management approval but must meet CSA Standard Z-96-15

WHAT IS HIGH-VISIBILITY SAFETY APPAREL (HVSA)?

High-visibility safety apparel (HVSA) is clothing (e.g. vests, bibs or coveralls) that workers can wear to improve how well other people "see" them (their visibility). Most often, high-visibility clothing is worn to alert drivers and other vehicle operators of a worker's presence, especially in low light and dark conditions. High-visibility headwear can also be worn to increase the visibility of the wearer in situations where part or all of the wearer's body could be obscured (e.g., leaves/trees, traffic barriers, construction materials, etc.).

It is mandatory that all employees wear safety vests and/or high visibility apparel over all other clothing for both day and night time activities at work sites which include: Department yards; project and construction sites; along highway & roadways and any other location while performing work activities, whether inside or outside R.O.W. limits; and any location where there are moving vehicles and/or heavy equipment.

Currently the only exemptions are

- Inside administrative offices
- Inside repair bays & shop facilities
- Public auctions & public parking areas
- Stockrooms & fueling stations
- Inside the completely enclosed cab of a vehicle

Visitors shall be provided with a safety vest, for the duration of their visit, when they have been allowed onto department sites where vests are required.

Classes

- **Class 1** – Apparel consists of a basic harness or stripes / bands over the shoulder(s) and encircling the waist. The center portion of the front torso band between the two vertical bands is optional.
- **Class 2** – Apparel has full coverage of the upper torso (front, back, sides and over the shoulders). Stripes/bands shall be composed of retro-reflective or combined performance materials.
- **Class 3** – Apparel that meets the same requirements as Class 2 with the addition of bands encircling both arms and both legs. These bands shall be composed of combined performance stripes/bands or a combination of retro-reflective and background material.

Supervisor Responsibilities

Ensure that

- All employees are provided with or have approved high visibility apparel.
- High visibility apparel purchased by employees meets the standards listed in this section.
- High visibility apparel is being properly worn and used at all times.

- Employees, work practices and site operations are observed regularly and corrected when necessary.

Employee Responsibilities

- Comply with regulations and departments standards.
- Have their high visibility apparel with them at all times and wear over all other clothing.
- Provide proof to their supervisor that their high visibility apparel meets requirements in this section and maintain a legible apparel tag.
- Inspect and maintain in good condition any high visibility apparel they use.
- Report any defects and replace apparel as required. If the apparel was purchased by the employee, they have the option to either replace it at their cost or get a vest supplied by DTI.
- Ensure the vest is used according to the manufacturer's recommendations.
- Clean by wiping off all dirt with mild solution and rinsing with clean water.
- Store away from direct sunlight as UV radiation breaks down plastics.

Departmental Colors and CSA Specifications

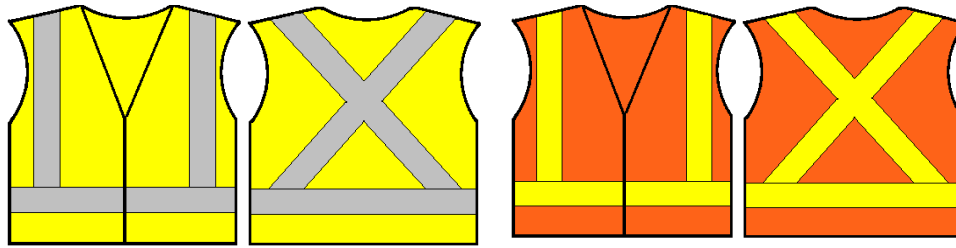
- *Fluorescent/Bright orange apparel must be worn by DTI workers on all DTI worksites except for ferry worksites and other exempt worksites, listed under "General Requirements".*
- *Florescent/Bright yellow/green vests or apparel must be worn by DTI workers on ferry worksites.*

All vests or apparel must meet CSA standard Z 96-15 Class two—(must be stated on the label). For all garment classes, the minimum total width of stripes/bands shall be no less than 50 mm throughout.

They may be composed entirely of combined-performance material or retroreflective material. The following specifications are part of the standard:

- Stripes/bands shall be laid out in the following distinctive standardized pattern:
 - (a) a symmetric "X" on the back extending from the shoulders to the waist;
 - (b) two vertical stripes on the front extending over the shoulders and down to the waist; and
 - (c) a waist-level horizontal stripe extending entirely around the back to the bottom of the vertical stripes on the front. Optionally, this horizontal stripe may continue between the front vertical stripes.

- For Class 3 apparel, stripes/bands encircling both arms and both legs are added.



Yellow/Green Safety Vests

Orange Safety Vests

Training and Maintenance

As with any personal protective equipment, workers should be given appropriate training in the use and care of the equipment. The following minimum information should be provided to workers wearing high-visibility apparel:

- a) when to use the high-visibility apparel
- b) fitting instructions, including how to put on and take off the apparel, if relevant
- c) the importance of using the apparel only in the specified way
- d) limitations of use
- e) how to store and maintain the apparel correctly
- f) how to check for wear and tear
- g) how to clean or decontaminate the apparel correctly with complete washing and/or dry-cleaning instructions.

Keep your high-visibility apparel clean and well-maintained. Contaminated or dirty retroreflective materials provide lower visibility.

Replace garments that show signs of wear and tear, soiling, or contamination as it will no longer be able to provide acceptable levels of visibility.

Inspection and Replacement

The standard does not specify a “useful life” of safety vests due to the variety of materials used by suppliers, but should be replaced when one or more of the following conditions apply:

- Cannot be fastened around the body, or
- Parts of the reflective stripes are missing or damaged, or
- High visibility material is faded, discolored, ripped, etc.
- Label must be on apparel, legible, and state apparel meets CSA standards.

References

- Occupational Health & Safety Act & Regulations 91-191, Section 91 & 38 to 42.
- CSA “High Visibility Safety Apparel” Standard Z 96-15.
- Vest color – Section 5 of Regulation 89-101 under the Motor Vehicle act.
- WATCM – Section 2.6 for night work and Section 5 for work area personnel.

6.9 Hearing Protection

The best method of preventing occupational hearing loss is to reduce noise at the source by engineering methods. This means to “engineer” out the problem during the equipment or process design. However, in certain work conditions, there is very little or nothing one can do to reduce noise at the source. In such workplaces, employees wear hearing protection to reduce the amount of noise reaching the ears.

Employees must wear hearing protection when noise or sound levels at the workplace exceeds 85 decibels for specific periods of time (refer to the OHS General Regulations 91-191). A few of these sites include repair facilities, project & work sites, and in or around heavy equipment. When effective hearing protectors are worn properly, they reduce or eliminate the risk of hearing loss. Those with authority over visitors attending a work or project site will identify and issue the appropriate hearing protection to be worn by the visitors as well as provide instruction on their use.

Select hearing protection that is

- Correct for the job
- Capable of providing adequate protection (check the manufacturer's literature).
- Comfortable enough to be accepted and worn during all exposure to noise

The selected hearing protection must be suitable for the occupation activities that are being performed and must meet or exceed the requirements under the Occupational Health & Safety Act & Regulations 91-191.

Types of Protection

Different types of hearing protection are available:

- **Earplugs** are inserted to block the ear canal.
- **Semi-insert earplugs**, which consist of two earplugs, held over the ends of the ear canal by a rigid headband.
- **Earmuffs** consist of sound-attenuating material and soft ear cushions that fit around the ear and hard outer cups. A headband holds them together.

The effectiveness of hearing protection is reduced greatly if the hearing protectors do not fit properly or if they are worn only part time during periods of noise exposure.

COMPARISON OF HEARING PROTECTION

Ear Plugs	Ear Muffs
<p>Advantages:</p> <ul style="list-style-type: none"> • small and easily carried • convenient to use with other personal protection equipment (can be worn with ear muffs) • more comfortable for long-term wear in hot, humid work areas • convenient for use in confined work areas 	<p>Advantages:</p> <ul style="list-style-type: none"> • less attenuation variability among users • designed so that one size fits most head sizes • easily seen at a distance to assist in the monitoring of their use • not easily misplaced or lost • may be worn with minor ear infections
<p>Disadvantages:</p> <ul style="list-style-type: none"> • requires more time to fit • more difficult to insert and remove • require good hygiene practices • may irritate the ear canal • easily misplaced • more difficult to see and monitor usage 	<p>Disadvantages:</p> <ul style="list-style-type: none"> • less portable and heavier • more inconvenient for use with other personal protective equipment. • more uncomfortable in hot, humid work area • more inconvenient for use in confined work areas • may interfere with the wearing of safety or prescription glasses: wearing glasses results in breaking the seal between the ear muff and the skin and results in decreased hearing protection.

Employer Responsibility

Ensure

- Noise levels are measured in all work areas where it is suspected that the noise level exceeds 80 dBA.
- All areas where noise levels exceed 85dBA are posted at the entrance with the range of noise levels.

Supervisor Responsibilities

Ensure

- All employees are using the appropriate hearing protection for the activity
- Hearing protection is being used and properly worn
- Adequate signs are posted, identifying activities & equipment requiring hearing protection

- Employees, work practices and site operations are observed regularly; coached and corrected when necessary

Employee Responsibilities

- Comply with regulations and departments standards
- Wear the appropriate hearing protection for the activity
- Inspect equipment regularly for damage and maintain in good condition
- Repair or replace worn or defective parts
- Report hazards to your supervisor immediately

The following are examples of noises levels that may be encountered in a workplace.

Location	Decibel Reading	Distance From Source
Welding shop		
Hand Grinder	108 to 110 dBA	1 meter
Hand Grinder	86 to 89 dBA	6 meters
Impact wrench	110 dBA	1 meter
Cutting with torch	80 dBA	1 meter
Horizontal metal ban saw	78 dBA	1 meter
Gouging (just the air)	110 to 115 dBA	1 meter
Chop Saw (Carbide Blade)	Max. 130 dBA	1 meter
Chop Saw (Abrasive Wheel)	Max. 102 dBA	1 meter
Hitting on metal plate	Peak 128dBA	1 meter
Hitting on metal plate	Peak 101dBA	7 meters
Repair shop		
Installing a blade on a plow	Max. 118 dBA	1 meter
Installing a blade on a plow	Max. 101 dBA	5 meters
Impact gun	104 to 106	1 meter
Large Impact wrench	Max. 117 dBA	1 meter
Pencil grinder (Air)	89 to 95 dBA	1meter
Pressure Washer (washing floor)	Max. 90.0 dBA	2 meter
School Bus (Diesel engine) idling	85 dBA	1 meter from engine
Tire Shop		
Sudden release of air from tank.	122.4 dBA	1 meter
Outside		
International truck - Engine revving	88 dBA	Driver's position with window down

Note:

- dBA means noise measured in Decibels on the A scale which is closest to human hearing
- Noise over 140 dB will cause pain
- Long exposure to noises over 85 dB may eventually lead to hearing loss
- The decibel scale is **logarithmic**. For instance, 93 decibels is twice as much noise as 90, and 100 decibels is **ten times** more noise than 90.

References

- Occupational Health and Safety Regulation 91-191 Part VII; section 29
- Canadian Standards Association (CSA) Standard Z94.2-14 "Hearing Protection Devices - Performance, Selection, Care and Use"
- Provincial Government Administration Manuals – Policy No. AD-2702 – Protective Clothing and Equipment

6.10 Foot Protection

The purpose of safety footwear is to protect the feet against cuts, spills, crushing, puncture, and the ankle against sprains, breaks and rollovers.

It is mandatory that all employees wear safety footwear at work sites which include: Department yards; project and construction sites; along highway & roadways and any other location while performing work activities, whether inside or outside Right Of Way (ROW) limits; and any location where there are moving vehicles and/or heavy equipment.

Currently the only exemptions are

- Inside administrative offices
- Public parking areas
- Fueling stations
- Direct travel between two exempt locations as stated above, where no hazards are identified

Within designated "safe" areas of stockroom and repair facilities at a minimum closed toe footwear must be worn

All safety footwear must be suitable for the occupation activities that are being performed and must meet or exceed the requirements under the Occupational Health & Safety Act & Regulations 91-191. Also, when purchasing safety footwear, consider your work environment. There is footwear available with anti-slip soles. And/or, you may also need supplemental traction aids which attach to the footwear.

- All safety footwear must meet CSA Z195-14 Grade 1 - Green Triangle Patch.
- All steel toe work boots must be CSA approved and display the appropriate markings. **NOTE:** Safety Footwear with protective toe caps manufactured from metal, Kevlar or composite materials, etc. are permitted if CSA Z195 Grade 1 standards are met.
- Boots must have an appropriate tread/grip that minimizes the risk of slips and falls.
- Except where exempted, boots must always have laces and be laced fully to the top to provide adequate ankle support.
- Boots must be in good repair and steel must not be exposed. Boots must be maintained so they are free of tears and have a functioning tread/grip.

- Rubber boots meeting the standards outlined in this policy may be worn for work in standing water/flooded areas.

Important: For safety footwear to be effective, they must fit snugly around the heel and ankle, and cannot display excessive wear or damage (rips, cuts, and exposed sections). Safety boots that only have elastic bands to attach at ankles do not meet the first criteria.

Height of Safety Footwear

Footwear with a minimum height of 150mm - 200mm (6" - 8") is required for all outside work activities and inside repair facilities. Safety boots are required when safety shoes do not provide proper ankle support & protection for the tasks or activity.

Lower heights (without ankle protection) are allowed when there is no exposure to hazards related to ankle rollover (i.e. uneven ground, slopes).



The following safety footwear standards will be observed:


- Employees performing outside/field or inside shop activities (includes Students & Casuals) - 150mm - 200mm high (6" - 8") Safety work boots
- Stockroom & Central Laboratory personnel - Safety shoes or boots (no height requirement)*
- Welders - 200mm high (8" high) Safety work boots
- Chainsaw operators - CSA approved logger's boots with the "tree" symbol
- Rubber Boots must be CSA approved Grade 1 boots
- All safety footwear must bear the "green triangle" and "omega" symbols.

***Important:** In situations where employees routinely move between locations with different footwear standards and it is not operationally practical to change footwear, the highest level of protection is required to be worn.

Safety Footwear Markings

The following symbols must be displayed on all safety footwear except for the "Tree" symbol which is only for chainsaw boots:

Marking	Criteria	Use
	"Green triangle" footwear has sole puncture protection with a Grade 1 protective toe (withstand impact up to 125 joules).	Any industrial or heavy work environment, including construction, where sharp objects are present (such as nails).
	White rectangle with orange Greek letter "omega" footwear has soles	Any industrial environment where accidental contact with live electrical conductors can

	that provide electric shock resistance.	occur. (REMEMBER: Electric shock resistance is greatly reduced by wet conditions and with wear)
	White label with green fir “tree” symbol footwear provides protection when using chainsaws.	For forestry workers and others who work with or around hand-held chainsaws and other cutting tools.

Reimbursement for Approved Safety Footwear

Class of Footwear – All safety footwear must meet or exceed the requirements under the Occupational Health & Safety Act & Regulations 91-191 section 41 CAN/CSA-Z195-M92, “Protective Footwear”.

Seasonal and regular employees purchase their required safety footwear and are reimbursed according to their employment agreements (collective agreements or non-bargaining).

- It is important to note that American standards (ANSI) and other national standards do not always meet Canadian standards (CSA).
- For re-imburement of non-CSA approved safety footwear or footwear that does not display the required symbols, the employee will be responsible to provide a letter, with their reimbursement forms, from the manufacturer or distributor stating the footwear meets or exceeds New Brunswick’s Occupational Health & Safety Regulations.
- Re-imburement will not be made for non-compliant safety footwear.

6.11 Traction Devices

Where workers are at risk of slips or falls because of icy, winter conditions, traction device footwear must be used. This is intended to be a last line of defence control and should never be the sole means of protecting a worker from slips and falls during winter conditions.

In cases where it is impracticable to use a traction device, the methods for protecting the worker from slips and falls must be identified.

Below are some recommendations for employees who have to work on icy surfaces:

1. Start with good footwear; always have footwear that has a soft sole and lots of tread left.
2. Always test the surface, walk slowly and in short steps. If you can’t stand, return to your starting location until the condition is safer.
3. 3. If you know the surface is icy and you don’t have traction aids try to walk where you have the best opportunity, near other items to hold, on rougher icy areas, in deeper snow etc.
4. If you purchase traction aids place them in your vehicle so you have them when you get out. There are many varieties on the market and we feel they all provide better traction; it really comes down to ease of use in placing them over your boots. For

more information, please refer to the guide on Footwear Traction Aids in Appendix D.


To determine which type of traction aid is required, the supervisor and employee must do a hazard assessment prior to purchasing this type of PPE. The following questions can be used to assess this hazard:





1. Does the employee have to walk on surfaces where the ice conditions cannot be controlled?
2. Will this employee be the one clearing sidewalks, work surfaces etc. to make it safe for others?
3. Will traction aids be readily accessible when employees need them?

There are many more brands and styles available on the market. All have qualities that should help increase traction on icy surfaces. The ones chosen should provide the best traction possible by considering the employee’s type of work and hazards identified.

Some qualities that should be considered before purchasing:

1. Ease of use- Consider where they will be put on & taken off. For example, in the cab of a truck, in an office, etc.
2. Size – Are the traction aids suitable for one specific footwear size or do they accommodate several sizes.
3. Comfort - Will it be worn all day or for short periods throughout the day? The longer you wear them, the more comfortable they should be.
4. Types of surfaces – Will they be used on flat surfaces and /or sloped surfaces? Will it be on a roadway, parking lot or a steep bank?

Brand name	Advantages	Disadvantages
<p>Due North Heel Traction Aid (One Size)</p> 	<ul style="list-style-type: none"> •Convenient hook and strap with adjustment system •Secure fit on variety of footwear •Stays strong, retains elasticity in subzero temperatures •4 tungsten carbide due north ice diamond spikes •Compact easy to store and Turns over or flips up on heel when moving inside •One Size fits Most 	<p>May not provide the same high level of traction as full foot type.</p>
<p>Icer’s (multiple sizes)</p>	<ul style="list-style-type: none"> • Lightweight and flexible, provide exceptional traction on slick surfaces. • Easily slip over regular footwear (shoes or boots) and secure with Velcro® fasteners. • Ideal for winter use when walking, shoveling, 	<p>There are many sizes and ordering may become an issue</p>

	<p>wherever traction is a concern. <u>They are particularly useful when roads or walkways are covered with freezing rain.</u></p> <ul style="list-style-type: none"> • Cleat wear is not a problem unless regularly used on gravel, asphalt or sidewalks. 	
<p>Yak Trax (multiple sizes)</p> 	<ul style="list-style-type: none"> • YakTrax Walker Spike less Over Shoe Traction Device • Pull over footwear • No Spikes to hurt other floor surfaces • Gives outstanding traction in every direction on snow and ice 	<p>May be more difficult to pull on in a truck cab. There are a variety of sizes when ordering.</p>
<p>Traction Straps (One Size)</p> 	<ul style="list-style-type: none"> • Simply Velcro's over the footwear • Small , Medium and Large • Easy to put on and take off • Inexpensive • Should be ok for most applications. 	<p>Smaller and may be lost easier Not certain of the traction qualities</p>
	<ul style="list-style-type: none"> • One Size fits all • Easy to put on and keep on Flip to side when entering a vehicle or building 	<p>May not provide the same high level of traction as full foot type. Smaller and may be lost easier Not resistant to hot products, open flame, sparks</p>

When to wear them

- When weather or work conditions create icy and/or slippery surfaces.
- When snow hides icy work surfaces.
- When working on slippery sloped surfaces.

When to remove them

- Before operating a vehicle or equipment.
- Before entering a building.
- Before climbing scaffolds and ladders.
- In other situations where an aid creates another hazard.

References

- Occupational Health and Safety Regulation 91-191,.

- CAN/CSA-Z195-M92,
- Provincial Government Administration Manuals – Policy No. AD-2702 – Occupational Health & Safety

6.12 Protective Clothing

All employees are required to wear, and the employer is required to ensure the use of adequate body covering (per Regulation 91-191 section 42) to protect against potential hazards such as skin absorption of harmful substances, abrasions, cuts, punctures, chemical burns or thermal burns.

The standards are established to prevent or minimize personal injuries and illnesses. The following are provided for occupational activities and locations, the only exemption is administrative offices.

- High visibility clothing/vests must be worn in in all areas where there is mobile equipment and vehicular traffic areas.
- Where any worker may be exposed to a flash fire or electrical equipment flashover, the worker will be provided flame resistant outerwear and must use it and other PPE appropriate to the hazard.
- Clothing worn beneath flame resistant outerwear and against the skin must be made of flame resistant fabrics or natural fibres that will not melt when exposed to heat.
- Where any worker is at risk of skin contact with harmful substances, protective clothing, gloves, or other protection must be in place before work can be started.
 - Long pants are required for all occupational work activities. Shorts are not permitted for any DTI operations.
 - Shirts must be worn. Long sleeve shirts are required in an occupational setting to provide protection against occupational hazards.
 - Short sleeve shirts are permitted **only** in situations where employees would not have their arms exposed to a hazard (see Overview above). The minimum sleeve length is 75mm (3 inches) **sleeveless or muscle shirts are not permitted**
 - Adequate protective gloves must be worn to protect against potential hazards which includes handling objects that may injure the hands.
 - Adequate protection from specific hazards may require wearing appropriate coveralls or shop coats over regular clothes such as when exposed to bird or bat waste, sparks, etc.
 - Where the only potential hazard to employees is exposure to the sun, short-sleeves shirts may be allowed provided that
 - Sunscreen is used by the employee
 - The employee applies the sunscreen as directed by the manufacturer and

- The sunscreen has a Sun Protection Factor (SPF) of 30 and provides protection from both UVA and UVB type ultraviolet radiation (Broad-spectrum).

***NOTE: Sleeveless or muscle shirts are not permitted**

- For more specific information and protective body covering requirements refer to the web site, Material Safety Data Sheet, Regulations and Manufacturers recommendations.
- For instances when employees are expected to work in extreme cold which is not part of their normal routine, the employer would provide extra outer wear to protect the employee from the elements. Items like insulated coveralls and jackets and pants special winter insulated safety footwear, gloves and balaclavas should all be available. There are special cover boots that can be shared by employees, which fit right over the normal work boot. If the work to be performed is in traffic areas and or around moving equipment the outerwear has to be high visibility

References

- Occupational Health & Safety Act & Regulations 91-191, Part VII section 38 - 44
- NB Vehicle Management Agency - Policy & Procedure Manual, section 4300.
- Province of New Brunswick Administration Manual – Policy No. AD-2702 – Protective Clothing and Equipment.

6.13 Respiratory Protection

Respiratory equipment must fit properly and be used within its limitations. Manufacturer's guidelines will be followed.

For equipment that requires an airtight seal, employees must be clean-shaven.

For further information see Chapter 14 Codes of Practice 14.7

CHAPTER: 6	Personal Protective Equipment Équipement De Protection Individuelle Prescription Safety Glasses Verification Form Vérification Des Lunettes Correctrices De Sécurité	HSM-F-6--1 Rev.1 2021
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NOTE: NBDTI employees purchasing prescription safety glasses are to have this form completed and signed by the optometrist or optician, and to include the form with claim for reimbursement.

NOTA: Les membres du personnel du MTINB, qui s'achètent des lunettes correctrices de sécurité doivent faire remplir et signer le présent formulaire par un optométriste ou un opticien et l'annexer à leur demande de remboursement.

<u>SAFETY FRAMES / MONTURES DE SÉCURITÉ</u>	
Conforms to ANSI Z87 / Conforment à ANSI Z87 : Yes / Oui	<input type="checkbox"/> * No / Non <input type="checkbox"/>

<u>SAFETY LENSES / LENTILLES DE SÉCURITÉ</u>	
Conforms to CSA Z94.3-15 / Conforment à ACNOR Z94.3-15	Yes / Oui <input type="checkbox"/> * No / Non <input type="checkbox"/>
Lens Type/ Type de lentille: CR39 Plastic/ Plastique CR39	<input type="checkbox"/> Polycarbonate <input type="checkbox"/>
<i>Note: Glass lenses, are not acceptable. / Les lentilles de vitre ne sont pas acceptables.</i>	
<u>Scratch Resistant Coating / Couches résistantes aux égratignures</u>	
Coating Type/ Type de couches: _____	
Application: Front side only / Devant seulement	<input type="checkbox"/> Two sides / Deux côtés <input type="checkbox"/>

<u>SIDE SHIELDS/ ÉCRANS LATÉRAUX</u>	
Permanently fixed side shields provided / Écrans latéraux fixé en permanence sont fournis:	
Yes / Oui	<input type="checkbox"/> * No / Non <input type="checkbox"/>

** Will not be eligible for a reimbursement / Ne seront pas admissible à un remboursement*

Signed/ Signature: _____ Date: _____
(employee/ employé(e))

District: _____ Blue Cross Coverage/ Yes / Oui No / Non
Branch / Division Protection de la Croix Bleue

Optometrist / Optométriste Optician / Opticien

Name/ Nom: _____ Signed / Signature: _____
(please print / écrire en caractères d'imprimerie)

Address/ Adresse: _____

7.1 Overview

Preventive maintenance comprises the care and servicing of organizational assets to maintain them in satisfactory operational conditions through systematic inspections, observations to detect and correct defaults before a total breakdown occurs.

Preventive maintenance (PM) is a pre-determined maintenance work program performed to a set schedule.

Preventive maintenance of equipment is required to ensure the safe use and functioning of equipment. Records must be kept of each inspection and the work performed, together with any other relevant findings.

The PM program must be systematically planned. When planning, refer to the Manufacturer's specifications, historical information relating to failures, critical evaluations, and regulatory requirements.

For each equipment item requiring routine PM, develop a maintenance record that includes

- a) Equipment description
- b) Serial number
- c) Tests to be performed
- d) Inspection or maintenance required
- e) Inspection/maintenance frequency and dates
- f) A historical record of maintenance completed
- g) Condition of equipment
- h) Work and date completed
- i) Name of mechanic or shop responsible for completing the work

All equipment, tools, and machinery must be maintained in a condition that will ensure the health and safety of workers and public.

7.2 Responsibilities:

Employer

- Ensure that all equipment is maintained at intervals that are sufficient to ensure the safe functioning of the equipment.
- Arrange for regular operational maintenance and preventive maintenance to be performed in accordance with the manufacturer's recommendations.
- Ensure that steps are immediately taken when a defect is found in equipment to protect the health and safety of any worker who may be at risk.

- Assign qualified personnel to correct defective equipment as soon as is practicable.
- Monitor the preventive maintenance program and make revisions when required.
- Maintain detailed maintenance records.

Supervisor

- Maintain a written inventory of all tools, equipment, or machinery that are used in his or her work area, including documentation of maintenance and/or safety checks performed on the equipment.
- Maintain equipment in safe working order in accordance with the manufacturer's instructions.
- Ensure that all tools, equipment, and machinery are monitored and checked for safety on a regular basis.
- Ensure that all tools and equipment are in good repair before assigning them to a worker.
- Ensure that repair requisitions are completed describing the work done, when, and by whom.
- Ensure that all tools and equipment that are in need of repair are taken out of service until they have been repaired or replaced.
- Ensure that workers receive appropriate training to use tools, equipment, or machinery required as part of his or her job.
- Ensure that all workers use the appropriate tools, equipment, or machinery in a safe manner and as intended.

Employee

- Use all tools, vehicles, equipment, and/or machinery assigned or designed to prevent or minimize injuries to workers as required.
- Prior to using, inspect all tools, equipment, and/or machinery required to complete the task(s).
- Follow operating and maintenance procedures for specific equipment.
- Stay alert when using equipment and/or tools.
- Do not use equipment, power tools, or hand tools for other than their specific purpose.
- Follow the manufacturer's operating instructions for use.
- Do not create hazards by
 - Careless use of extension cords;
 - Causing excessive noise or dust; or
 - Moving equipment without first making sure the way is clear.
- Keep tools, vehicles, and equipment well maintained.

- Store equipment and tools in a designated storage when not in use in order to eliminate accidents, guard against abuse, and prevent deterioration.

7.3 Defective Equipment

Immediately report any tool, equipment, or machinery that is not in good working order, not functioning properly, or poses a hazard to his or her health or safety.

- Immediately remove from service tools that are worn, malfunction, or require replacement or repair.
- Repair the equipment if authorized and competent to do so or contact a qualified person in accordance with his or her level of authority. Send a repair requisition to repair the equipment. Keep a copy of the request form in the work area.

7.4 Training on Use of Equipment

All Employees must participate in the training of proper use of tools, equipment, and/or machinery when required. There must be signed documentation as evidence of training.

Training on the use of equipment requires a return demonstration by the worker indicating his or her understanding/competence.

7.5 Certification of Equipment

The following equipment must be inspected annually, and certificates kept on file:

- Cranes (Overhead, Mobile)
- Aerial Work Platforms
- Man baskets
- Forklifts and other lifting equipment
- Concrete pump trucks
- Swing stage scaffolds
- Spreader bars
- Boom Trucks
- Vehicle Hoists
- Fall Protection
- Rescue Equipment
- Lifting devices with capacity of 1815kg
- Breathing air supply systems

Certificates will include the following:

- a) Serial number
- b) Manufacturer's name
- c) Date of manufacture
- d) Capacity
- e) Last inspection date/test date
- f) Next inspection date/test date
- g) Special instructions

On the date that a piece of equipment is to be inspected, the equipment certification checklists will be completed and filed in the unit maintenance file.

7.6 Maintenance Schedule

Type of Equipment	Type of Inspection	Schedule
Cranes-Crawler, Truck, Hydraulic, etc.	complete inspection and certification	before first time use or repeated use
	critical items, controls, overall functioning	daily
	safety devices, hooks, reeling, electrical	monthly
	complete inspection	every 3 months
	preventative maintenance	manufacturer's recommendation
Heavy Equipment	complete inspection	before first time use or repeated use
Dozers, Backhoes	complete inspection	before first time use or repeated use
Compactors, Trucks	complete inspection	every 3 months
	preventative maintenance	manufacturer's recommendation
Company Vehicles	operator's checklist	daily
Compressors, Welding Machines, Generators	complete inspection	Annually
	preventative maintenance	manufacturer's recommendation
Slings, Shackles, Chokers, Lifting Devices	deformation, cracks, corrosion, etc.	daily or before each use
	regular inspections of all devices	Annually

CHAPTER: 8

Training and Communication

Rev.1 2021

8.1 General

DTI recognizes that ongoing training and communication are a vital part of the Safety Program.

DTI will ensure that

- Supervisory and field staff have the knowledge and skills to safely execute their tasks.
- Information on risk and risk management strategies is communicated throughout the organization.

The purpose of training and effective communication is to

- Obtain a “Loss Free” workplace through education.
- Exchange information regarding specific safety matters.
- Diffuse potential job disruptions by providing a forum for discussion of critical safety issues.
- Provide a written record of the actions taken.
- Establish an effective communications link between management and employees.
- Grow the culture and reinforce commitment to the Health and Safety of our team.

This training and communication policy includes information on

- a) Company safety orientations for employees, subcontractors, visitors, vendors, and clients.
- b) Onboarding of new workers.
- c) Documenting and tracking safety training.
- d) Conducting and documenting effective safety meetings.
- e) Promoting active communication strategies to make safety visible in the workplace and to educate through visual information.

8.2 Communication Methods

The Department uses various methods to communicate health and safety information on workplace hazards and issues. The following table summarizes the general responsibilities and communication tools used.

Responsibility	Type of Communication	Information Communicated
Supervisor	Orientation and training (informal and formal)	Used to transmit basic, general or specific information and skills when starting to work or prior to performing specific tasks.
	Safety talk	Planned talk that can cover a variety of topics to continue H&S education and awareness, plus creates discussion on H & S Issues from the employees
	Tailgate meeting	Used to discuss a topic (e.g. SWPD, hazard, new equipment) generally specific to a job or task used to heighten awareness of a crew or work group towards specific hazards.
	On the job training	Instructions and demonstration on how to perform a specific task (e.g. use a tool, use a chemical) specific to a task or to a worksite.
Management	Policy, Procedures, Rules, Regulations	Used to direct an employee in a prescribed sequence of steps. Have written documents accessible to employees (bulletin boards, manuals, website, etc.).
	Staff meetings	Health and safety is on the agenda of meetings where a topic is introduced, issues are discussed and/or an open forum is held between management and staff.
HSU/JHSC/ Management	Risk Alert	Used to quickly notify or warn employees about exposure to a specific and significant hazard
	H&S Bulletin	Provides awareness & education on a topic
	Departmental H&S website	Used to remind, promote, and have written documents accessible to employees electronically.
	JHSC minutes	Used to forward recommendations and other H & S information to both employees and management

8.3 Health and Safety Orientation

Health and safety orientations provide employees with necessary safety information about their job and tasks and informs them of specific details about workplace hazards before they begin work.

DTI utilizes three types of H&S Orientations all employees must participate in

1. A half day *New Hire H&S Orientation- Provided by H & S Unit*
2. A one-hour *Refresher H&S Orientation- Through e Learn or in groups by Supervisors*
3. A Job Specific Orientation- *From your Supervisor*

All DTI employees, new and returning to a position, must receive a health and safety-specific orientation prior to the commencement of work and "Health and Safety Orientation Checklist". Completed, signed off and submitted to Human Resources, #3 above.

All new employees will receive a New Hire orientation facilitated by the Health and Safety Unit, #1 above.

All returning employees will receive an annual refresher Orientation, #2 above.

The orientation applies to an employee who is

- New Employee or Returning Employee to an original position after a leave of more than 6 months (includes students and casuals).
- New to a position or place of employment.
- Returning to a position or place of employment in which the hazards have changed during the employee's absence.
- Under 25 years of age and returning to a position or place of employment after an absence of more than six months.
- Affected by a change in the hazards of a position or place of employment.

The health and safety orientation must be completed on the first day of employment and must be completed prior to the commencement of work.

The employee with the assistance of their manager/supervisor will complete the checklist completes thought the Orientation process.

The checklist must be retained in the employee's personnel file for at least three years.

The orientation will include the following:

- (a) Worker familiarization with company policy, general rules, and absolutes.
- (b) A review of Hazard Assessment and methods of identifying existing and potential hazards at the site.
- (c) Information on inspections and audits conducted on-site.
- (d) A review of safety procedures as outlined in the Safety Manual, and an overview of the Safe Work Practices.
- (e) Provision of written procedures for reporting accidents, incidents, and hazards.
- (f) Explanation of disciplinary action for failure to comply with Health and Safety Program requirements.
- (g) Any information or training necessary for specific job requirements.
- (h) An opportunity for the worker to ask questions.
- (i) In situations where a language barrier is perceived, procedures must be taken to overcome any potential difficulties that the employee may have in understanding instructions, and those procedures shall be documented.

8.4 Safety Talks

Safety Talks are the backbone of DTI's Health and Safety Program. It has been proven that work locations conducting good meetings achieve better records than locations with unstructured/unplanned or no safety meetings.

Meetings are one of the most effective ways to demonstrate the company's commitment to safety and emphasize individual participation.

Safety talks must be given at a minimum monthly for office personnel and by-weekly for field personnel. Safety talks are a hands-on way to remind workers of the importance of health and safety on the job. They deal with specific job site issues, but they do not replace formal training. Through safety talks, employees are informed and / or reminded of health and safety requirements for the tools, equipment, materials and procedures they use every day or for specific jobs. Safety talks are primarily given by supervisors however can be given by others as delegated (i.e. lead hand or other management personnel). A record of the meeting and attendees must be documented.

These meetings give workers an opportunity to discuss weekly activities, such as inspections and corrective measures taken to address issues arising from incidents that have occurred.

The following should be included in the meeting report, for review with the crew:

- a) Review of Weekly Inspection Report.
- b) Review of all incidents.
- c) Review of upcoming work.
- d) Meeting sign in, safety meeting sign in.
- e) Bulletins and notices.

Supervisors are responsible for conducting safety meetings.

Subcontractors are encouraged to attend meetings and will be provided a copy of the agenda and meeting topics.

Guidelines for Conducting Meetings

Start on time; you may lose participant interest if there are unnecessary delays.

Stick to time frames and the meeting agenda. However, if you get a good discussion going, use discretion about cutting it off too soon.

Start the meeting by complimenting the employees on some recent good work.

Give the talk in your own words and when you deliver your talk

- Relate to the audience's attitudes, abilities, and interests.

- Make sure your audience hears and sees you talk. Use brief demonstrations, simple graphs, displays, OH&S posters, or news articles.
- Involve your audience by encouraging questions and discussions.
- Keep your message clear and understandable.
- Answer spoken and unspoken questions. Your workers will always have the following questions in mind: What does it mean to me? What do you want me to do? What's in it for me?
- If a question arises that cannot be answered immediately, inform the crew when an answer can be expected, and give assurance that a follow up will be performed. Note this and any action required on the meeting minutes, then move on to the next question or topic.
- Maintain control. Do not allow the meeting to develop into a wasteful, time-consuming "bull session". If necessary, make a statement at the beginning that only safety issues will be discussed. This will give a "rule" to reference if the meeting should become disorganized and will also help to focus the group and dispel any misconceptions about the purpose of the meeting.

Other items to cover, if applicable:

- Review any incidents. Discuss what the incident was, how it happened, and how it could have been prevented.
- Review safety violations noted during the past week. Without naming anyone in particular, discuss the nature of the violation, the danger involved, and offer constructive criticism.
- Review the Work Planned. Discuss hazards to avoid or control, safety equipment to be used, and safe procedures to be followed.
- Discuss company safety topics and topics suggested by job supervisors as they bring to light issues of general concern.
- Conduct PPE inspections.

8.5 Tailgate Meetings

Similar to safety talks, tailgate meetings are a hands-on way to remind workers of the importance of health and safety on the job. Tailgate meetings are generally given by the immediate supervisor prior to the start of the work day and / or prior to any hazardous work activity. They are used to discuss a topic (i.e. SWPD, hazard, new equipment) generally specific to a job or task and used to heighten awareness of a crew or work group. A record of the meeting and attendees must be documented

A Daily Tailgate Meeting will be conducted once at the beginning of each work shift.

The following applies to all Daily Tool Box Meetings:

- Meetings must be held daily (typically at the beginning of the work day).

- All workers must attend and sign in.
- Meetings should be approximately 10 minutes' duration.

The Daily Tailgate Meeting Minutes must be documented including the topic discussed, the workers attending, any suggestions and/or unanswered questions for later comment, and any corrective action recommended or taken.

The following additional information should be included in daily Tailgate meetings:

- Daily tailgate Meeting Sign In.
- Review of previous day's incidents.
- Any other relevant bulletins or notices.

Keys to a Successful Tailgate Talk

- Keep it short. Toolbox talks should be around 5 – 10 minutes.
- Focus on one topic relevant to the work being done that day.
- Get workers involved by asking questions or having them demonstrate safe work practices.
- Be sure to cover changes to the site or working conditions.
- Have employees inspect tools, equipment and PPE.
- Allow for questions and answers at the end of the tailgate talk.

Supervisors are expected to address issues within their authority. Any issues arising that require additional corrective action must be brought to the next level of supervision or the Health and Safety Unit.

8.6 Safety Bulletins/Risk Alerts

Safety Bulletins are used to communicate safety information across the department. General Safety Bulletins communicate information relating to general hazards and unsafe acts or conditions.

These bulletins may include information on some specific product or equipment that has a hazard associated with it, or as a communication tool following an incident.

8.7 Training

The objective of training is to ensure employees receive the necessary instructions and information to perform their assigned responsibilities in a safe manner. A training catalogue of available health & safety training courses is found on the Departmental intranet website under "Health & Safety Training" (<http://internal.dot.gnb.ca/hr/Safety/training-e.asp>).

Supervisors are responsible for

- Identifying the required training course(s) based on the duties to be performed by the employee and the timeline for completion of training for each employee under his responsibility.
- Reviewing crew/work unit training requirements annually ensuring employees are trained for the duties they are performing.
- Scheduling expired training renewals proactively and in a timely manner so as not to create a breach in the ability to perform work operations or maintain compliance requirements.
- Requesting an individual training report for each employee and review annually, preferable at Performance Review time, for expired training, new procedures or work activities, etc.

Employees are responsible for

- Identifying their training needs with their supervisor.
- Attending and actively participating in training.
- Applying the skills they have learned to ensure their health and safety.

All mandatory and recommended training will be described in a training matrix that includes each position within the company. Each manager will ensure that workers have the mandatory training required by the matrix.

8.8 Technical Training

Supervisory Training-Mangers and Front-Line Supervisors are responsible for day-to-day enforcement of the Safety Program. It is critical that they are given the tools to enable them to execute this role confidently and diligently. DTI will ensure that all Supervisors receive training in the following:

- DTI Health and Safety Manual
- Leadership for Safety Excellence (2 days)

At the time of hire or promotion, a training requisition will be completed to book Supervisors into the required training.

The training will occur within 90 working days of the individual becoming a Supervisor.

8.9 Training Record

The Department is required by law to keep training records for each individual training session, identifying specific information such as; course name, HRIS identification number, location, date, duration, expiry date, instructors name, and if the involvement of an outside agency, their information. Upon course completion, the record of training (class list with the

details of the course) is given to the District or Branch who are responsible to enter the data into the HRIS system.

8.10 On the job training

This method is used for employees requiring specific skills for a specific task (i.e. use of a tool, manipulation of a chemical, a new procedure, etc.). Employees get to practice the task after receiving instructions and after watching demonstrations performed by a competent instructor; they are then observed by a competent person to make sure they are performing the task correctly (a record of the training should be kept in the supervisor's daily log).

8.11 Training Evaluation

In response to the various occupations and the related safety training associated with Department activities, the Course Evaluation Form been developed to assess the effectiveness of both in-house and outside agency training opportunities:

These tools provide guidance to management, supervisors and employees in determining training effectiveness as well as allowing the Health & Safety Unit to monitor and improve service delivery and effectiveness.

8.12 Training Expiry and Recertification

Although the expiration date on a Certification Card may seem arbitrary to some, it does provide proof that a student was able to successfully demonstrate skills to a qualified evaluator.

All technical training will be deemed valid for a period of years from the date of instruction (Issue) unless otherwise specified. A 30-day calendar extension will be given to recertify any expired technical training. After the 30-day extension employees must not perform tasks where specific skills training has expired.

8.13 Worker Information and Communications

Bulletin boards will be erected at each faculty in a hi traffic location for the purpose of communicating health and safety information.

Typical information may include

- General Safety Bulletins
- Milestones/Achievements/Safety Award recipients
- Safety-related industry news
- Company safety rules
- Tool and equipment safety.
- Incident reporting.
- Fit for Duty.
- Hand safety.

- PPE requirements.
- Emergency response information.

8.14 Posting Requirements

NB OHS Regulation requires a minimum number of items to be posted in a prominent place and communicated to employees and visitors.

The table below indicates the employer's responsibilities for communicating / posting health and safety information in the workplace. *(List below is not all inclusive.)*

The list below generally applies to buildings where employees work, if the location is not at a building the required information must be in a location known and readily accessible to everyone on site.

What	Where / Why	Legislation	Format
OHS Act & Regulations 91-191, 2004-130, 2016-6, 92-106, 92-133, plus any newly added regulations under this Act	In each Workplace (does not apply to a vehicle)	OHS Act Section 44(1)	This can be in a binder format, and must be readily accessible to all employees
DTI's Health and Safety Policy	Available online and made available to employees	OHS Act section 8(1) and 8(2)	Paper copy must be posted in the workplace.
DTI's Health and Safety Manual	Available online and copies in most workplaces.	OHS Act, Section 8.1(1) and 8.1(3)	Binder form and located in a place accessible by employees.
Emergency Communication	In each Workplace	Regulation 2004-130 section 5(2)	Visibly on a wall, on the FLHA or JHA Form
JHSC Member names	In each workplace	OHS Act Section 14(9)	Posted in prominent manner
JHSC Minutes	In each workplace	OHS Act Section 14(9)	Posted in prominent location
Copy of Orders	In the workplace or a copy to the JHSC or employee representative	OHS Act Section 35(1)	Posted in a prominent location or provided to JHSC or employee representative, where posting is not possible
Code of Practice	In the	OHS Act	Posted in a prominent location

	workplace	Section 50(4)	
Names of First Aiders	In the workplace	Regulation 2004-130 Section 7(2)	Posted near first aid kit, emergency communication etc.
Signs Indicating location of First Aid Kits	In a conspicuous location	Regulation 2004-130 Section 13(2)	Nonspecific, could simply be a sign over the kit pointing to it.
SDS Sheets (not posted)	In each work location with Controlled products	Regulation Section 2016-6	Binder, On a computer terminal etc.
Asbestos Management Program	In all workplace where asbestos materials remain	Regulation 92-106	Binder form and located in a place accessible by employees.
Sketches for Permanent Fall Protection Anchors	Any location where we have permanent anchor points	Regulation 91-191 Section 49.3(2)(c) and 145.2(2)(c)	Provide a copy to employees who will use the anchors and post a copy near entrance to the roof.
Water Rescue Emergency Procedures	Where ever we are working around water and an employee may require rescue	Regulation 91-191 Section 51(8)	Posted on a wall or bulletin board at the place of employment, or in a location known to all for remote locations.
Compressed Gas Container Storage, name of gases and no smoking sign	Where ever we have storage compartments for these cylinders	Regulation 91-191 section 76(3)	Placard at the storage area.
Traffic warning signs	Work where we interfere in normal flow of traffic	Regulation 91-191 Section 93(2)	Posted in the traffic areas for the travelling public.
“Blasting Operations - Turn Off Radio Transmitters” & “End of Blasting”	Where we are Blasting by means of electronic initiation	Regulation 91-191 Section 176(1)(2)	Posted approximately 100m prior to and at the end of the blast area.

Statement of the safe working load of a hoisting apparatus or if altered	On the Hoisting Apparatus (Jacks, hoists of all types, knuckle boom, boom truck)	Regulation 91-191 Section 208(3) & (5)	On the hoisting apparatus so it can easily be seen by the operator
Lift truck's manufacturers rated lift capacity	On the lift truck	Regulation 91-191 Section 216(1)(i)	A conspicuous location on the truck, a plaque, placard etc.
Woods bridge safe load limit	30 m from both ends of the bridge	Regulation 91-191 Section 361(1)(b)	30 m from both ends of the bridge

Note: The information above is excerpts from the OHS Act and regulations. For full and updated information always refer to the Department of Justice website.

CHAPTER: 8	Training and Communication Daily Tailgate Meeting	HSM-F-8-1 Rev.1 2021
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The purpose of the Tailgate meetings is to discuss previous day’s and today’s activities Incidents, problems, action plans, assignments for the day and to discuss Hazards controls for the days work activities.

Meeting Date:	Supervisor/Meeting Leader:
Concerns from last meeting:	
Topic Discussed:	
Today’s Activities/Plans:	
Hazards Identified:	
Today’s Issue/Concerns:	
Incident Alert Reviewed:	

Risk Alert

GENERAL INFORMATION

Subject:	Date issued:
Issued by:	Phone:
Issued to:	

HAZARD DETAILS

<u>Description of hazard:</u>
<u>Type of incident, injury or illness it can cause:</u>

CONTROL MEASURES/ ACTIONS

* <u>Specify measures or actions to implement:</u>
* Please list if more than one
<u>Application (When, where, by whom, for whom, etc.):</u>

Note: Can be copied and pasted in an e-mail for distribution.

Title: *Topic*

Background: *May include hazards, history, statistics, related incident, health or injury significance or severity,*

<i>Insert picture or text.....</i>	<i>Insert picture or text.....</i>	<i>Insert picture or text.....</i>
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Preventative Measures or Recommendations

- *One or several list*

Insert text or picture...

TEMPLATE

TEMPLATE

TEMPLATE

CHAPTER: 8	Training and Communication Health and Safety Orientation Checklist	HSM-F-8-5 Rev.1 2022
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EMPLOYEE NAME	DATE HIRED	ORIENTATION DATE
POSITION/ JOB ASSIGNMENT & LOCATION		
New Employee <input type="checkbox"/> Transfer Employee <input type="checkbox"/> Temp or Casual Employee <input type="checkbox"/> Student <input type="checkbox"/>		

Check items discussed:

Unless specified otherwise, references in this document refer to DTI's Health & Safety Manual.

Health and Safety Orientation

Topic
<input type="checkbox"/> Employer & employee responsibilities under the NB OHS Act
<input type="checkbox"/> NBDTI Safety Policy
<input type="checkbox"/> NB DTI Safety Rules
<input type="checkbox"/> Personal Protective equipment Use and Inspection
<input type="checkbox"/> Overview of OHS regulations pertaining to the work
<input type="checkbox"/> Procedures, Practices Codes of Practice location
<input type="checkbox"/> Reporting of Incidents (manager notification of all incidents, accidents and near misses)
<input type="checkbox"/> Reporting of Violence or Harassment
<input type="checkbox"/> Reporting workplace hazards & overview of inspection process
<input type="checkbox"/> DTI Hazard and Risk Management Program
<input type="checkbox"/> 3 Rights of all Employees Right to Refuse, Right to know and Right to participate
<input type="checkbox"/> JHSC committee roles

Are there any limitations or restrictions which may prevent you from safely completing any of your assigned duties? *If yes, please describe*

I have instructed this employee on the items checked and listed.

Wellness Health and Safety _____

Date: _____

Supervisor (to be Completed by Supervisor)

- GNB Health & Safety policy
- Respectful Workplace
- Prevention of Workplace Violence
- Substance Use in the Workplace
- WHIMIS
- Exit locations and evacuation routes emergency meeting Points (if applicable).
- Information on types of alarms and the location and activation of fire alarms and fire extinguishers
- Location and operation of emergency equipment (e.g. AED first aid kits; eye wash stations).
- Process for seeking medical aid: contacts; notifying manager; WorkSafe NB form 67, etc.
- First Aid Procedures (Names & location of first-aiders, injury reporting procedures).
- JHSC Committee Members, First Aid Providers
- Identification of Workplace Hazards and Applicable Measures to Protect Employees
- Task specific hazards, Safe Work Practices and Safe Job Procedures

Personal Protective Equipment required

- Safety Boots
- Hard Hat
- CSA Safety Vest
- Hearing protection
- Eye protection
- Fall protection
- Respiratory Protection
- Hand Protection (i.e. gloves)

Employee Responsibilities

- Conduct yourself in a safe manner
- Follow Substance Use in the Workplace Policy
- Practice good housekeeping
- Follow the DTI Health & Safety policy
- Follow GNB Violence and Respectful Work Place Policy
- Follow the non-smoking policy

I have instructed this employee on the items checked and listed.

Supervisor _____

Date: _____

Superintendent/Manager _____

Date _____

I have received orientation on the above items checked and listed.

Employee: _____

Date: _____

*Note: Record must be kept on file – forward to District/Branch HR Consultant for Personnel File.

9.1 Overview

Section 9(2) (a.1) of the *Occupational Health and Safety Act* requires an employer to conduct monthly workplace inspections to identify risks to the health and safety of employees. Section 9(3) requires the employer to develop a program for the workplace inspections, with the JHSC, and ensure the results of workplace inspections are shared with the JHSC or safety representative.

An effective risk management process includes regularly scheduled workplace inspections to identify and correct potential health and safety hazards. Preventing workplace injuries before they can occur is the most important objective of workplace inspections. By correcting potentially dangerous situations, the health and safety of all employees is safeguarded.

Regular inspections can cover general items in the workplace or only cover specific items part of a machine, of equipment, of a system, or of a process. Types of regular inspections include

- **Monthly workplace inspections** – Planned and formal. Report produced.
- **Daily inspections** – Done before using equipment, tools or vehicles.
- **Manufacturer’s** – Inspections recommended by Manufacturer’s.
- **Informal inspections** – Unplanned. Done as needed. No formal report.
- **Chemical inventory inspections (WHMIS)**– Done as necessary.
- **Pre-operation inspections** – Done on new or modified equipment or processes.
- **Targeted Inspections** – Done to identify specific hazards or monitor specific control measures.

The main purposes of workplace inspections are to

- Identify the safety concerns of fellow employees and supervisors
- Identify existing and potential hazards
- Determine underlying (root causes) causes of hazards
- Monitor existing hazard controls (personal protective equipment, engineering controls, policies, procedures)
- Implement corrective and preventive actions.

The *Occupational Health and Safety Act of New Brunswick* and Regulations identify compliance requirements. The DTI Employee Safety Management Manual policy 02-0130 further describes our responsibilities and duties.

9.2 Inspection Process

The process for conducting workplace inspections usually includes 5 main elements or stages:

1. Planning and preparing
2. Conducting the inspection
3. Recommending corrective actions and/or control measures
4. Report findings to supervisor
5. Follow-up by inspector and supervisor

During the first stage, basic elements are determined such as who will do it, when and where. Also, inspection checklists and information on hazards should be gathered. Reviewing previous inspection reports is also an important part of preparing. If a hazard (s) was identified the previous month, bring a copy of the report with you to verify that the hazard/deficiency is controlled /corrected. And, if it is not controlled or corrected, then the hazard must be copied over on the current inspection form with its status.

When conducting inspections, wear personal protective equipment (PPE) as required, for the area. Do not enter an area when the required PPE is not available. Inspect the area once PPE is available, and do not attempt to operate any tools or equipment that you have not been trained and authorized to operate.

The second stage helps prevent injuries and illnesses by looking carefully at conditions and activities from different visual perspectives and by asking questions to employees. The inspector identifies, and records hazards as well as initiate corrective actions. These stages do not have to follow any certain order.

After conducting an inspection, checklists are completed and reviewed with supervisors to determine recommended actions and or control measures. When complete, the checklists/reports are distributed as per employer responsibilities below and posted.

If hazards identified during the inspection have medium to high hazard levels, these deficiencies should be addressed immediately or as soon as possible and monitored as per employer responsibilities below. Other low hazard deficiencies can be followed up by reviewing checklists/reports, and verifying, while conducting the next scheduled inspection, if they were corrected or are controlled.

The individual responsible for performing inspections should be competent in what they are inspecting, for most workplace inspections that would simply mean completing the NBDTI "Workplace Inspection" training or another acceptable course like WSNB's e learn **Workplace Inspections** course. The DTI course information can be found on the Employee Health & Safety Intranet website; in the course catalogue HRIS course #103. The half day course prepares individuals by outlining the DTI worksite inspection program, including legislated requirements and procedures to reduce hazards and risks in their workplace.

For inspections like Fall arrest equipment, Hoists etc. the person inspecting may be required to attend and show certification in that area of expertise.

Types of hazards to look for include

- Biological hazards caused by organisms such as viruses, bacteria, fungi and parasites; e.g., rotting garbage or materials, mold, mildew, strange smells, etc.
- Chemical hazards caused by a solid, liquid, vapor, gas, dust, fume or mist; e.g., acetylene gas, cleaning products.
- Ergonomic hazards caused by:
 - Anatomical, physiological, and psychological demands on the employee, such as repetitive and forceful movements, vibration, temperature extremes, lighting.
 - Awkward postures arising from improper work methods and improperly designed workstations, tools, and equipment (e.g., using jackhammer, keyboarding).
- Physical hazards caused by noise, vibration, energy, weather, heat, and cold.
- Electricity, radiation and pressure
- Storage areas (improper stockpiling of materials in yard, improper use of storage shelving).
- Mechanical hazards from machines, equipment, unguarded belts, pulleys, chains that employees can become caught in.

Some common poor work practices can include

- Using machinery or tools without authority.
- Operating at unsafe speeds or in other violation of safe work practice.
- Removing guards or other safety devices or rendering them ineffective.
- Using defective tools or equipment or using tools or equipment in unsafe ways.
- Using hands or body instead of tools or push sticks.
- Overloading, crowding, or failing to balance materials or handling materials in other unsafe ways, including improper lifting.
- Repairing or adjusting equipment that is in motion, under pressure, or electrically charged.
- Failing to use or maintain, or improperly using, personal protective equipment or safety devices.
- Creating unsafe, unsanitary, or unhealthy conditions by improper personal hygiene, by poor housekeeping, etc.
- Standing or working under suspended loads, scaffolds, shafts, or open hatches.
- Not following standard operating practices or procedures.

9.3 Responsibilities

Supervisor or Delegate

- Understand relevant sections of the *Occupational Health and Safety Act*.
- Understand the DTI safety policy 02-0130 and understand sections in the DTI Health and Safety Manual that are applicable to the work area.
- Prepare adequately for inspections (e.g. PPE; checklists; plan enough time).
- For checklists:
 - Also include measures that have a frequency other than monthly (e.g. daily, weekly).
 - Have a meeting on hazards for each work area, at least yearly or more often if needed, with the supervisor and employee representative, to see if changes are needed on the checklist (e.g. include new hazards), and then update the checklist.
- Observe in general from different positions (Entrance, center, etc.).
- Observe carefully from station to station and/or from machine to machine.
- Involve employees as much as possible by asking them questions, or by letting them provide facts and/or share their knowledge on potential hazards.
- Report all hazards and unsafe acts.
- Listen to the safety concerns of other employees.
- Complete inspections with the checklist in a timely and professional manner.
- Keep an open mind and look for things that are less obvious.
- Report the results of the inspection to your supervisor.
- Recommend or suggest actions and control measures.
- Complete the checklist after discussing items to correct with the supervisor.
- Follow-up on “actions to take” several days after established “target dates for correction” and complete the checklist.

Supervisors' Responsibilities

- Ensure every worksite is inspected to identify hazards on a monthly basis as a minimum.
- May delegate the inspection to another member of the work unit.
- Participate in updating inspection checklists.
- Do informal inspections every time they visit the worksite. A check can verify that all tasks are being performed safely and that any hazards are not being overlooked.
- Understand relevant sections of the Occupational Health and Safety Act.
- Understand D.T.I. safety policy 02-0130.
- Review and understand Safe Work Practices, Procedures and Codes of Practice for each work area.

- Ensure inspection frequencies are indicated in the inspection checklist(s) for applicable items, and that frequencies correspond to applicable legislations or to manufacturer's recommendations.
- Review completed checklists with inspector and next level of supervision.
- Mitigate or minimize any safety concern expressed by employees or indicated by the inspector.
- Forward checklist to superintendent (or Senior Resident Eng., Financial Manager, etc.).
- Determine, for each hazard identified, the priority (high, medium, or low hazard), the person responsible, the action(s) to take, and the target date(s) for correction.
- Follow-up to ensure adequate control measures have been implemented and monitor for effectiveness.
- Ensure workplace inspections are done during the first week on any project or site that is used for a minimum of one workweek.

After completing the inspection, the inspector and the supervisor will review the completed inspection checklist and discuss each concern.

The Supervisor will receive and sign the completed checklist. They may consult with the Joint Health and Safety Committee or the DTI Health and Safety Unit (or other appropriate staff) regarding corrective action and/or preventive measures.

Supervisors should not interpret reporting as a criticism. In order to comply with the Occupational Health and Safety Act, an inspector cannot fail to report hazards. Workplace Safety Inspections are objective fact-finding, not fault finding.

Supervisors will then forward the checklist to their next level of supervision for review. After reviewing all current monthly checklists for their area of concern, the **superintendent** will then forward these to the Joint Health and Safety Sub- Committee on Inspections.

Joint Health and Safety Committee Responsibilities (Sub Committee)

- Review, on a monthly basis, inspection reports.
- Review the status of corrected hazards; identify trends and monitor the effectiveness of the inspection process.
- Notify the Health and Safety Unit of hazards having potential departmental impact.
- Perform random inspections to review overall program effectiveness.
- Request a summary report of meeting(s) on hazards for each workplace.
- Review inspection checklist changes annually.
- Recommend or suggest actions and control measures.

9.4 Analysis of Inspection Reports

Identifying trends is part of the overall monitoring of the health and safety program's effectiveness. Analysis of inspection reports may indicate the following:

- Priorities for corrective action
- Need for improving safe work practices
- Insight as to why incidents are occurring in particular areas
- Need for training in certain areas
- Areas and equipment which require more in-depth hazard analysis

Inspections Reports (Checklists)

- Should be kept locally for a total of 7 years. These need to be available to officers if they ask for them.

References

- NBDTI Worksite Inspection Manual (Under "Reference Material/Policies/Index of Manuals" on DTI Intranet site)
- *Occupational Health and Safety Act & Regulations*
- DTI Management Manual Policy No. 02-0130 – Employee Safety

10.1 Introduction

This document provides Department of Transportation & Infrastructure personnel with details of the notification requirements when incidents occur. This document is a compilation of notification requirements based on several DTI and GNB policies and manuals such as the Policy and Procedure Manual of the Vehicle Management Agency, the Incident Investigation policy, etc., as well as the N.B. Motor Vehicle Act section 130(1). All GNB Employees, supervisors and management must familiarize themselves with the expected process, appropriate actions to undertake when an incident occurs, and what actions are expected to prevent this type of incident from happening again.

Under the NB Occupational Health and Safety (OHS) Act and Regulations, timely notification of key individuals is required to ensure corrective action of any risks to worker safety. Senior leaders must be notified to enable their support of these actions. This document describes the incident notification, investigation, reporting and corrective action processes and responsibilities.

10.2 What Is an Incident?

An incident is any event, in the course of work, or arising from the work, that could or does result in injury or illness. It is an unplanned and unwanted event that has caused or may have caused injury, occupational exposure, property damage or a loss of process (work stoppage, evacuation, etc.).

10.3 TYPES AND CLASSIFICATIONS OF INCIDENTS

In this document, incidents (accidents or near-misses) are grouped according to the type of Injury or damage:

- **Medical Aid (Loss or No Loss Time)** – An incident is considered a ‘Medical Aid incident’ when a worker is injured or becomes ill at work and is seen by a physician.
- **Loss Time** – When the injured employee is unable for their next scheduled shift.
- **First Aid** – An incident is considered a “First Aid incident” when a worker is injured or becomes ill because of work and is able to continue working with or without first aid treatments.
- **Near- miss / Close-call** – A n incident is considered a ‘Near-miss incident’ when, under different circumstances, the incident could have resulted in unintended harm to people, damage to property or loss to process.
- **Property Damage** – Unplanned Damage to (tool, material, building, building site infrastructure, equipment)
- **Vehicle Damage** – Summary of section 2400 from the Vehicle Management Agency *Policy and Procedure Manual*: “An ‘Accident or Vehicle Damage Report’ (form # 40-1106) is required when a government vehicle (or multiple vehicles incidents including those involving a third party) is/are damaged, accidentally or intentionally, in any manner while traveling on or off the road. Section 130(1) of the N.B. Motor Vehicle Act states: The driver of a vehicle involved in

an accident resulting in injury or death of any person or total property damage to an apparent extent of one thousand dollars or more shall... give notice... to the local police department...or RCMP.”

If the incident results in more than one of the types listed above, (i.e. medical aid and vehicle damage) then the reporting requirements of these types of incident must be followed. Supervisors must keep good notes on all incidents.

Classification of Incidents

- **Level 3** – Incidents including “near misses,” from no injuries to minor injuries (first aid), and/or property damage only, estimated under \$5,000, and/or minor loss of process.
- **Level 2** – Incidents causing injuries requiring medical treatment beyond first aid and where there is a likelihood of lost time, occupational exposure to a hazardous substance and/or property damage estimated greater than \$5,000 but less than \$50,000 and/or a moderate loss of process.
- **Level 1** – Incidents causing significant injuries and/or loss of life, and/or multiple level 2 injuries or occupational exposures to hazardous substances and/or major property damage estimated to be greater than \$50,000 and/or a significant loss of process.

Always refer to section 43(4) of the OHS Act to see if other reporting requirements exist.

10.4 Incident Investigations

Incident investigations are a tool to mitigate the reoccurrence of incidents. A properly conducted investigation, when communicated to the organization, can lead to process change and awareness of risk. The prevention of injuries and development of a positive safety culture require many different initiatives, such as educating employees about hazards, procedures, practices, responsibilities, emergency preparedness, etc., and the use of controls. Despite these many initiatives, incidents may still occur. The employer is obligated to determine the causes of incidents and to take proactive steps to prevent them from reoccurring.

DTI will investigate all incidents and injuries that it deems necessary, including the following:

Incidents considered recordable are

- Fatality
- Lost time
- Medical treatment
- Restricted work cases

Incidents considered non-recordable are

- First Aid (FA)
- Occupational illness
- Incidents involving property and equipment damage

- Near-Miss Events
- Non-recordable - high potential (can include any of the above)

10.5 Reporting and Notification Requirements

Vehicle (Mobile Equipment) VMA Policy 2400

Under \$1000 (level 3)

1. Initial Notification
2. Enter in SharePoint for tracking with cost

Greater than \$1000 (level 2)

1. Initial Notification
2. Vehicle damage Report VMA
3. Incident Alert
4. Incident investigation-SharePoint (Tracking)

Property Asset Damage

1. Initial Notification
2. Incident Alert over \$1000k damage
3. Incident investigation SharePoint

First aid

1. Initial Notification
2. Incident Investigation Share point

Medical/LT (WorkSafe NB Reportable)

1. Initial Notification
2. Form 67
3. Incident Alert
4. Incident Investigation SharePoint

Near-Miss – High potential

1. Initial Notification
2. Incident Alert
3. Incident Investigation SharePoint

Near-Miss – Low Potential

1. Initial Notification
2. Investigation Share Point (Tracking)

All WorkSafeNB Reportable Events

1. WSNB Notification (Immediately)
2. Initial Notification (within 1 hour by supervisor)
3. Incident Alert (Sent out after initial findings and recommendations are available =< 24hrs)
4. Incident Investigation Share point

10.6 Reporting Time Frames And Documentation

When an incident occurs, contact your supervisor immediately when an incident occurs. This starts a sequence of events pulling in resources to support you and your team to ensure the best possible outcome.

If you believe you are the first person at an incident scene or are involved in the incident, don't assume that someone else has called for help. Remember incident reporting, response and investigations are in place to assist those involved and are focused on prevention of reoccurrences.

Incidents must be reported immediately and the scene frozen.

All investigations will be initiated within 24 hours. Investigation teams will include a trained and qualified staff person and, where practicable, a Health and Safety Consultant.

10.7 Legislated Reporting of Serious Injuries And Accidents

- The following incidents will be reported to Occupational Health and Safety as defined by the legislation **immediately after the occurrence**:
- A loss of consciousness
- Amputations
- Fractures (other than fingers or toes)
- Burns requiring medical attention beyond first aid treatment
- Loss of vision in one or both eyes

- Deep lacerations requiring medical attention beyond first aid treatment
- Worker admission to a hospital as an in-patient
- Fatalities
- Any accidental explosion or exposure to a biological, chemical or physical agent, whether a person is injured
- Any catastrophic event or equipment failure that results, or could have resulted in an injury

NEAR-MISS REPORTS

A “near-miss” is defined as an unplanned event that did not result in injury, illness, or damage, but had the potential to do so. Only a fortunate break in the chain of events prevented an injury, fatality, or damage.

Near-Miss Reports shall be used as follows:

- Any unsafe act or condition identified by any person not already performing a safety inspection shall be reported immediately on a Near-Miss Report to the foreman or a supervisor.
- If possible, the person reporting the hazard shall take immediate action to control the hazard. Examples of immediate action that can be taken to limit hazards include blocking off the area, posting “Keep Out” signs, etc.
- The job supervisor shall be responsible for ensuring that corrective action is taken to remove workers from danger.
- All high potential near-miss incidents shall be investigated.
- Near-miss events will be ranked and investigated using the SPF (Severity, Probability, Frequency).

10.8 Responsibilities

The following actions must be undertaken within the **FIRST HOUR** of the incident.

Employees are required to do the following:

- if someone is seriously hurt, needs immediate assistance (i.e. extreme blood loss) and employee is qualified and willing to perform first aid, then it would be a priority to provide first aid or find someone close that can.
- if others are in imminent danger of also being hurt, then a first action might be to warn them and do whatever is necessary to prevent further injury.
- Call 911 for emergency response is a high priority if there is a serious injury.
- Call the supervisor, it will start a sequence of events that will result in getting additional help.

- Provide details of the scene to the supervisor to enable him/her to take appropriate actions and get others involved for the best possible results.
- Prevent disturbance of the incident scene (while ensuring the safety of any injured people) so that evidence may be preserved for the investigator(s).
- Following any event, Workers and Supervisors must FREEZE THE SCENE to preserve conditions and evidence. Any alteration of the incident scene is strictly prohibited.
- Ensure WorkSafeNB's *Application for Workers' Compensation Benefits* (Form 67) is completed by your supervisor and or HR and submitted if required.

Supervisors who have been alerted of an incident are required to

- Immediately confirm that emergency services have been called when required and that appropriate interim actions have been taken to prevent further injury.
- Determine if it is appropriate to call local law enforcement, for instance if the incident occurs on a public highway or if there is suspicion of any criminal act.
- Quickly determine the basic facts surrounding the incident including names, location, and if there are any injuries, and reassure employees that help is on the way.
- Immediately provide or dispatch assistance to the site of the incident if required.
- Immediately contact the branch or division Incident investigator and Health and Safety Consultant and provide preliminary details.
- **Complete an Initial Incident Notification Form** and relay the information by phone or email to their supervisor/ manager, the branch/division investigator and Health and Safety consultant. If notifying by email, send completed form and put **INCIDENT** in subject line.
- Call **WorkSafeNB (1-800-999-9775)** if required *See 10.7 above*.
- Ensure that there is minimal disturbance of the scene of the incident to preserve evidence for investigators, other than to attend to the injured and secure safety of the scene. If something needs to be moved, (road needs to be opened, etc.) take photos of different views of the scene for investigators.
- Follow up injured employees as soon as possible and the reporting employee (if different), to provide support and reassurance.

Post incident:

- Complete and submit an WSNB Employer Report of Injury or Illness, WorkSafe NB Form 67 (within 3 days) as directed by the Human Resource Consultant.
- Conduct a Post Incident Meeting with injured employee(s) to review the investigation recommendations and ensure all causes, hazards and controls are understood. Reinforce

with the employee(s) that this is a preventative process focused on improving the safety of the DTI workplace.

- Ensure that the Joint Health and Safety Committee (JHSC) is initially notified of the event, and that later, the investigation report recommendations are submitted to the JHSC for review, comments and support.

Manager's Responsibility

When an incident is reported, the manager must ensure that the available details are sent by email **without delay** to a predetermined list of recipients determined upon the level of incident. Recipients could include but are not limited to

- Branch/Division investigator begins investigation appropriate for the incident and submits report to Division Manager and the Wellness, Health and Safety (WHSS) Consultant, within 30 days if possible.
- WHSS Consultant - may participate, assist investigator and submit an interim summary to Senior Leader(s) where appropriate for a Level 1 Incident. Ensure that appropriate interim actions are taken to prevent secondary incidents and injuries and liaise with WorkSafeNB or other authorities.
- Division Manager/Director will ensure emergency contact is notified if appropriate and determine if Division Assistant Deputy Minister (ADM) is to be notified
- Human Resources Consultant will follow up, collect and submit Form 67 if needed and document event in file

Division Manager/Director Responsibility

The Division Manager/Director will

- Ensure that appropriate notifications have been made to the injured employee's emergency contact (if injured employee is unable to contact them).
- Provide support, direction and resources to front-line supervisors and employees.
- Actively review the investigation report when available including recommendations and corrective actions, providing approvals and initiating appropriate actions to prevent re-occurrences.
- Determine if ADM is to be notified.

Assistant Deputy Minister Responsibility

- Determines if the Deputy Minister (DM) is to be notified.
- Provides support, strategic direction and resources to all stakeholders, especially for Level 1 incidents where serious injuries or fatalities are involved. Provide guidance on the flow of

information, appropriate next steps that may be required and ensure that appropriate crisis management principals are applied.

Investigators

- Lead investigations with the support of their department and guidance of the WHSS Consultant when undertaking higher level investigations.
- Respond to the incident scene as quickly as possible when appropriate to do so.
- Follow the incident investigation process including determination of root cause and underlying causes.
- Work collaboratively with the involvement of the JHSC, and other stakeholders as required.
- Submit an investigation report to the Division Manager and the WHSS Consultant within 30 days (sooner where possible) of the incident. The report is to include recommended corrective actions to prevent reoccurrences.

All incidents are preventable; therefore, all incidents must be investigated. The degree to which an incident is investigated will depend on its severity and the potential for reoccurrence. Investigations maybe as effortless as making a single phone call to a supervisor, or as complex as multiple days involving an investigation team.

When an operator instructor and a DTI Investigator are both assigned to investigate an incident, they will work collaboratively on the investigation; however, the DTI Investigator will take the lead on the injury side of the investigation.

WHS Responsibility

Regional Consultants

- Review Initial investigation notifications for completeness for their area
- Assist/coach investigators and people leaders as needed to ensure a thorough investigation
- Advise all parties on appropriate recommendation referring to the DTI Policy and H & S Manual, maintenance manuals and NB OHS Act and Legislation
- Advise and consult with the DTI H & S Team lead and Manager for issues which have provincial implications
- Take charge of and lead high potential investigations, multiple injuries fatalities, major loss as requested by the regional senior manager and or H & S Manager.

Health and Safety Team Lead

- Direct/advise the regional consultants, investigators and managers on serious high potential incidents
- Assist/coach regional consultants and DTI Personnel on the incident investigation process
- Review and coach investigators and managers on use/impute of the FTB Incident

Investigation Share Point Site

- Review incident trends and make recommendations to Manager H & S
- Develop regular DTI incident statistics reports for
- In consultation with the HR Team initiate crisis intervention teams and EFAP services where required.

Manager of Health and Safety

- Ensure training is identified for all investigators, H & S team
- In consultation with the DTI H & S Unit team review incident stats, trends, areas for improvement, trends issues etc.
- Provide periodic updates to senior management on investigation trends, areas of concern, areas for improvement etc.
- Initiate the DTI serious incident guide as required

10.9 Care and Transportation of Injured Persons

Where it is necessary to move an injured or ill employee from an isolated work site to another location to transfer to an ambulance they must be transported by a means that is suitable, considering the distance to be travelled and the type or types of serious injuries or illnesses that may occur. It must provide protection against the weather and be equipped with a means of two-way voice communicate and sufficient size and suitability to accommodate a stretcher and accompanying persons where required.

An employer shall provide a means of communication to summon the transportation in the event of a medical emergency and shall ensure that transportation is readily available in the event of a medical emergency when work is carried out at an isolated site.

Where an employee is seriously injured or needs to be accompanied during transport the employee must be accompanied by at least one first aid provider who **is not** the operator of the transportation.

10.10 Investigation Report

The purpose of the report (Appendix IV) is to provide managers and senior leaders with accurate information and recommendations regarding the incident that will prevent reoccurrences. The report will be submitted within 30 days of the incident (sooner where possible).

The report should contain

- Particulars of the incident – who, when, where, injuries, property damage, loss of process, response, etc.
- A description of the incident - what happened in detail.
- Evidence – physical evidence, photos, sketches, witnesses interviewed, etc.

- Incident Causation – Direct, Root and underlying causes and root cause analysis tool.
- Corrective Actions – Recommended immediate and long-term corrective actions and target completion dates.
- Who was involved in the investigation and distribution list.

For serious (level 1) investigations, it is recommended that the report be presented to senior management/leaders by the investigator allowing them the opportunity to ask questions without delay. It is possible that not all the recommendations will be approved by management; however, those recommendations that are approved will be assigned as action items to individuals who will be responsible for their completion by a target date.

10.11 Communication of Findings

In order for the investigation to be meaningful and prevent a reoccurrence of the incident, summary of findings will be effectively communicated to all supervisors and managers, through an incident alert.

10.12 Tracking of Action Items

Approved action items resulting from the investigation will be placed on a tracking system to monitor the progress and determine when it has been completed. The tracking system will identify and escalate items that have not been completed by their target completion date.

10.13 Evaluation and Monitoring

After corrective actions have been implemented, the management team and WHSS Consultant will monitor for effectiveness of actions through observations of actions and other incidents. If corrective actions are not effective, a re-evaluation of actions must be completed, and alternative measures employed.

10.14 Incident Alerts

Incident alerts will be sent out via email to all District Supervisors, Managers, Executive and Joint Health and Safety Committee members. The purpose of the alert is to increase awareness of the number and type of injuries occurring. The expectation is for Supervisors to utilize the information in the alert to identify the potential for similar incidents to occur in their own team and engage in conversation with their team members around preventative measures.

The following section lists major responsibilities and roles of employees involved in this process.

Responsibilities

Supervisor/Manager of injured person

- Upon notification completion of the Form 67, the owning Supervisor will notify the WHS Consultant HR Consultant and Lead DTI Investigator of the incident within 1 hour.

WHS Consultant or Designate Investigator

- Completes alert form and submits alert within 48 hours

All Supervisors, Superintendents, Managers and Executive

- Reviews alert and cascades relevant information to team members with the purpose of preventing similar incidents in the workplace.

Note: Only immediate actions need to be reported at this time as the investigation may not have taken place. Include items such as equipment being locked out or called 911. Avoid any descriptors that could identify the injured employee.

10.15 Post Incident Review Meetings

If an employee injures themselves in the workplace, the immediate supervisor will be requested to review the incident in person with the District Engineer. The purpose of the meeting is to review the incident details as they are understood and determine action plans, support required and communication plans with the employee and the district at large. The expectation is for Supervisors to come prepared to discuss the details and identify where there may be a need for support or resources if required. It is not expected the full investigation to be complete before meeting.

A post-Incident review is mandatory for all recordable incidents/workplace injuries resulting in a Work Safe NB Form 67 (an incident involving medical cost, wage loss, or the injured worker is unable to perform their regular work duties beyond the incident date).

The following section lists major responsibilities and roles of employees involved in this process.

Responsibilities

Supervisor of injured person

- Book meeting with District Engineer and Manager

Manager

- Available to help with open action items and support

District Engineer

- Shares post-incident review meeting notes with WH&S Lead
- Review meeting notes with WHS Consultant and Lead Investigator

Questions to consider before meeting with District Engineer:

1. How is the employee? What is the latest update on the employee's injury?
2. Was the investigation completed?
3. Employee sought medical attention?
4. Was the DTI Alert sent?
5. What exactly happened? Who was present? Where did the incident take place? Where was the Supervisor?
6. Were hazards identified at the beginning of the shift? Was the employee(s) following safe work procedures?
7. What corrective actions have you already put in place or do you recommend preventing recurrence?
8. Have you spoken with the employee? What is the plan for communicating with the injured employee (if not back to work)? Does the employee need any support or resources while recovering from their injury? Is there a possibility to offer light duties?
9. What is the plan for communicating with the immediate team? Do you or your team need any additional support? How will this injury impact your team's workload?
10. What is the plan for communicating with other teams? Is there new/additional information that should be shared, or will there be more to share after the investigation?
11. Is there a history of incidents like this in your area of work? With this employee?

10.16 Disability Management

The goal of this program is to achieve a safe and timely return to work for employees following a disability and improve communication between all parties.

The program is available to WHSCC claimants, injured employees, LTD claimants or employees suffering from a chronic illness. All parties jointly recognize and respect the importance of confidentiality. The employer has a legal obligation under the human rights legislation to make every reasonable effort, short of undue hardship, to accommodate an employee who becomes disabled. The success of the Disability Management Program is dependent upon the participation and accountability of all parties, which normally includes the employee, supervisor / manager, HR Consultant and Union, as required.

10.17 Workers' Compensation Coverage

When an employee suffers an injury or an occupational disease at work, he or she or his dependents have the right to apply for compensation. As per the *Workers' Compensation Act*, the employer shall advise employees about this important right. The employer shall provide notice to WCB within 3 days of the date of the injury or diagnosis of the occupational disease that may entitle the employee or their dependents to compensation for loss of wages and medical expenses. Application shall be made within one year after the date of the accident or in the case of death within 6 months after the accident.

For more information, please see the following on the DTI Intranet:

- GNB Responding to Workplace Incidents

- GNB Incident Notification Form
- GNB Incident Investigation Form
- GNB SharePoint Site Instruction

Incident Notification

NOTE: This is an initial report only – to be sent within first hour of an incident if possible

Supervisor to report whatever initial details of incident are available, do not delay submission to Ed Macfarlane, Brent Lyons, Jennifer Hope, regional HRC, regional Safety Consultant, Superintendent, Manager/District Engineer and regional Investigators.

Incident Date: _____ Time: _____ Incident Location: _____

(check all that apply):

First Aid

Vehicle Damage

Near-miss / Close-call

Medical Aid

Property damage

Harassment / Violence

Lost Time

Process Stop or Evacuation

Illness or Exposure

Check one Level: (Note that Level 2 & 1 may require to be reported to WorkSafeNB 1 800 222-9775)

Level 3 Incident: Incidents including “near misses”, from no injuries to minor injuries (first aids), and/or property damage only, estimated at under \$5,000, and/or loss of process/evacuation.

Level 2 Incident: Incidents causing injuries requiring medical treatment beyond first aid, likelihood of lost time, exposure to a hazardous substance and/or property damage estimated < \$5,000 but > \$50,000

Level 1 Incident: – Incidents causing significant injuries and/or loss of life, and/or multiple level 2 injuries or exposures to a hazardous substance, and/or major property damage estimated >\$50,000 in value

Incident Description/Details (known at this time)

Name of Injured Person: _____ Contact Information: _____

Occupation/Position/Division: _____

Nature of injuries (*known at this time*): _____

Treatment provided: _____

Transported to Hospital? Location? _____

If more than one person injured provide details here:

WorkSafeNB Reportable: Yes: No: If yes, reported to: _____ Date/Time: _____

Name of First Aid Provider if applicable: _____

Witness Name: _____ Contact # _____

Witness Name: _____ Contact # _____

Immediate actions taken by employee/supervisor to prevent further injuries: _____

Supervisor's initial recommendation for actions to prevent a reoccurrence:

Supervisor Name: _____ Report Date: _____ Time: _____

Supervisor Signature: _____ Phone/Cell number: _____

11.1 Overview

Although emergencies don't occur often in most workplaces, an emergency can occur at any time or when it is least expected. Knowing how to respond can make the difference between a minor impact and a devastating impact.

Employers have the duty to protect the health & safety of employees during emergencies. This requirement is implied in section 9(1)(a) of the *New Brunswick's Occupational Health and Safety (OHS) Act*. The section states that "Employers are to take every reasonable precaution to ensure their employee's health and safety. Being prepared for emergencies should be part of control measures present in workplaces.

A wide range of control measures can be used to prevent or minimize effects of an emergency. These could include removing combustible materials from an area; installing fire resistant panels; having an effective evacuation procedure; knowing how to respond to a violent situation; knowing what to do for a spill of a hazardous product; etc.

An emergency can be defined as "any situation or occurrence of a serious nature which arises suddenly and unexpectedly and demands immediate action."

11.2 Emergency Planning

There are many potential emergencies to prepare for. Your workplace might be more at risk from emergencies caused by human or technological activities than naturally-occurring events. Consider situations that could occur in your workplace. Examples of types of emergencies include:

- Naturally-occurring events – Floods, landslides, lightning strikes, pandemics.
- Human-caused events - Medical emergencies; fires; chemical spills; explosions; ruptures of gas, water or fuel lines; violence.
- Technology-caused events – Power or computer failures.

Emergency planning should always be done by more than one person and in conjunction with Joint Health & Safety Committees. After identifying possible emergencies that could occur at your workplace, you should determine which ones could have the most impact. This can be done by considering the probability of occurrence and the severity of consequences for each possible emergency.

When work has to be done in **isolated locations**, extra supplies of essential items (food, water, warm clothes, first aid, etc.) should be brought along with employees.

11.3 GNB-Owned or Leased Workspaces

Building owners are responsible to develop and establish emergency procedures for **GNB leased** work spaces, whereas for buildings **owned by GNB**, DTI's Buildings Division is responsible to develop and establish emergency procedures.

Please read the following section on "Emergency Procedures" prior to contacting DTI's Building Group. For leased work spaces, contact the "Leasing Services" manager, whereas for owned buildings contact the Director of "Facilities Management Operations".

11.4 Emergency Procedures

Once a list of potential emergencies with the most impact is established, try to find existing procedures for the same or for similar emergencies. Most often, these can be found on websites of reputable organizations. Also, Health and Safety professionals or other professionals from different organizations can be consulted.

If no safety professionals are available to help, but a procedure is required without delay, bring as many people as possible from the worksite together and write a temporary procedure as a group. Once more information becomes available, edit the procedure accordingly.

The goal of an emergency procedure is to provide clear instructions to employees, to a reasonable point, so they will know how to respond to emergencies.

Evacuations are one of the most common emergency measures, especially for buildings. However, an evacuation could also occur while working outdoors. For example, during a lightning storm, outdoor workers could be asked to take shelter in a building or a vehicle.

Fires are among the most common emergencies in the workplace. Consequently, most buildings have a **fire evacuation procedure**. The same procedure can be used for other similar hazards such as a gas leak. Other potential hazards, such as a flood, may justify an evacuation. Fire evacuation procedures are required by the *National Fire Code* which is enforced by local fire departments or fire marshals.

A fire evacuation procedure must be accompanied with a fire evacuation diagram on which exits are shown with paths of travel to the exits. Also, locations of fire extinguishers, first aid kits, and other emergency kits should be on the diagrams.

To have an orderly evacuation of a building, a **warden system** must be in place. The responsibilities of Wardens are to notify occupants of the evacuation and report any problems to emergency officials. See appendix A for examples of warden responsibilities.

To avoid confusion during an evacuation, a **procedure for wardens** is strongly recommended. The procedure can provide consistency and be used to facilitate warden training. The procedure must be as simple as possible to ensure wardens understand what to do during an evacuation

11.5 Training on Emergency Procedures

For emergency measures to be effective, employees with roles and responsibilities need to be adequately trained. Besides understanding their roles and responsibilities, employees need to be trained on emergency procedures and equipment.

Some of the training that may be required includes

- Fire evacuation procedures and drills.
- First aid training for First aiders.
- Emergency procedures for hazardous products.
- Fire extinguisher inspection.
- Workplace inspections.
- Procedures for dealing with crimes in progress.
- Fall arrest rescue.
- Confined space rescue.

Part of a Workplace Hazardous Materials Information System (WHMIS) program is to instruct and train employees on procedures to be followed in case of an emergency involving a **hazardous product**. This requirement can be found under section 7(1)(f) of the WHMIS regulation 2016-6.

All hazardous products regulated under WHMIS regulations should have emergency procedures in their “Safety Data Sheets” Please refer to them when giving instructions or training to an employee on a specific product.

11.6 Conditions of the Workplace

During unplanned events, physical conditions of the workplace can deteriorate quickly or gradually, to such an extent that conditions could lead to accidents and/or affect the health and safety of employees.

Occupational Health and Safety regulations 91-191 requires the maintenance of the following workplace conditions:

- Sufficient lighting for the type of work (section 26);
- An air temperature of 20°C for light work in an office (section 21);
- Sufficient ventilation to provide an adequate supply of fresh air (section 20);
- No obvious indication of air quality issues (section 24);
- Sanitary facilities available (includes eyewash & shower if required) (sections 4, 5, 6,10,11);
- Workplace clean, sanitary, and not in a poor physical state (section 15);
- Means of access, egress or emergency means of escape are not affected (section 113);
- Storage conditions for hazardous products are not affected (section 62).

If an unplanned event causes workplace conditions to deteriorate, the employer must take immediate actions to prevent injuries or exposures. If conditions cannot be restored in a reasonable time, a decision should be made to relocate employees or send them home. Every situation should be assessed according to their potential risks after obtaining available information.

11.7 First Aid Requirements

As required by the First Aid regulation 2004-130, employers must provide and maintain the following (see appendix C & D) for all worksites:

- A certain number of first aid kits. *CSA Z1220-17 Guidelines for contents of kits.*
- A certain number of trained first aiders.
- An emergency communication procedure.
- A transportation procedure.

Under the same regulation, employees are required to report any injury or illness to their supervisors. In addition, first aiders must record general details about the incident which must be kept for 5 years. If first aid care is refused, this must also be recorded.

To show and remind employees of their existence, the following items must be posted:

- List of first aiders
- Signs indicating the location of first aid kit
- Communication procedures
- List of emergency contacts (As a separate document or within communication procedures)

11.8 Inspecting Emergency Measures

The Occupational Health and Safety (OHS) Act requires employers to conduct a monthly workplace inspection to identify any hazards. During those inspections, employers have the opportunity to check if essential emergency measures are in place, available, ready, or operational.

Inspection items that could be included on inspection checklists are

- Alarm is working (indicator light(s) are on or off).
- Exit paths kept clear of any obstructions.
- Exit doors operate freely and are clear of obstructions.
- Fire escapes are clear of obstructions.
- Emergency lighting is working (may need to push a button to test).
- Exit signs are clearly visible and illuminated (may need to test backup power).
- Fire extinguishers available, accessible and inspected monthly (quick check) by a licensed person.
- First Aid Kits available & fully stocked. (*CSA Z1220-17*)

- First aiders available & posted.
- First aid Communication & transportation procedure current & posted.
- Communication device is available and working.
- Rescue equipment is available and in good condition.
- Hazardous products response equipment is available.
- Other equipment is available (Flashlight, spill kit, personal protection device, etc.).

11.9 Emergencies Related to Violence

Protecting employees from violent situations is considered a duty under the OHS Act. Knowing how to respond to a violent situation can prevent or minimize its effects or consequences. Workplaces that are more at risk of violence are expected to develop and **establish procedures for potential situations** that could negatively affect an employee or lead to injuries.

Procedures could provide steps on how to deal with

- an armed robbery;
- a client making threats;
- a worker destroying property;
- a physical attack between a client and a worker or between workers;
- bombs threats;
- active shooter; and
- other violent situations.

In addition to emergency procedures, other types of **control measures** may be required for some potential situations. These would be determined following the identification and assessment of factors related to situations.

Factors that should be considered include, but are not limited to

- Type of activities (working with the public; handling cash; doing inspections or enforcement duties; etc.).
- Type of clients (stable; un stable; volatile; etc.)
- Working alone or in small numbers or travelling.
- Geographical location of work activities.
- Frequency of violent situations or incidents that occurred in the past at the work location.
- Level of violence that occurred in the past at the work location.
- Times of the day, night or year (late or early hours; during the holidays; etc.)

Once assessed, potential situations should be ranked or **prioritized** according to their level of hazard and risk, and measures implemented.

When an employee becomes a victim or a witness of a violent situation at work, he or she must **report it immediately** to his or her supervisor. To further support efforts at protecting employees from violent situations, employees should be encouraged and reminded to **report acts or behaviors** that could eventually lead to a violent situation. This could be included in a policy or a work practice.

After an incident involving a violent situation, a **debriefing** should be considered. Employees can also be encouraged to reach out to their **employee assistance program**.

Typical Responsibilities in a Warden System

Responsibilities of Managers

- Appoint employees as deputy and floor wardens. Warden has to agree to the appointment and be comfortable with his or her role.
- Provide resources (time for training, equipment, etc.).

Common responsibilities of Wardens and Monitors

- Thoroughly understand and know how to execute the emergency procedures and the fire order.
- When at work, report fire hazards or other hazards to the Building emergency officer.
- Participate in training.
- Wear the designated apparel during an emergency.
- Ensure an alternate is available to replace them when they are away from work.

Specific responsibilities of Floor Wardens

- Be the lead person for Deputy Wardens and monitors on their floor.
- Provide clear answers to Deputy when questions are asked.
- During an evacuation, report on the status of their floor to the building emergency officer.
- Ensure Deputy Wardens and monitors are instructed on the fire order and the procedures.

Specific responsibilities for Deputy Wardens

- Report the status of their area to their floor warden.
- Be ready to step up as a floor warden when necessary.

Specific responsibilities for Deputy Wardens

- Consult employees with a disability and ensure appropriate assistance is assigned
- If employees needing assistance cannot evacuate, wardens will move employees to a safe location and report locations to the building emergency officer.
- If two monitors are assigned to the same person, one monitor may stay with the employee until emergency personnel arrive.

**First Aid Requirements
Regulation 2004-130**

Number of employees per shift	Place of employment with no high hazard work	Place of employment with high hazard work
1		Personal (Type P) first aid kit
2 - 19	1 first aid kit 1 first aid provider	1 first aid kit 1 first aid provider
20 – 49	1 first aid kit 1 first aid provider	2 first aid kits 2 first aid providers
50 - 99	2 first aid kits 2 first aid providers	2 first aid kits 2 first aid providers
100- 199	3 first aid kits 2 first aid providers, one of whom must have access to the first aid room 1 first aid room	3 first aid kits 3 first aid providers, one of whom must have access to the first aid room 1 first aid room
200 or more	3 first aid kits 3 first aid providers, one of whom must have access to the first aid room 1 additional first aid provider and 1 additional first aid kit for each additional increment of 1-100 employees 1 first aid room	4 first aid kits 4 first aid providers, one of whom must have access to the first aid room 1 additional first aid provider and 1 additional first aid kit for each additional increment of 1-100 employees 1 first aid room

11.10 Emergency Preparedness Kits

- Workplace
 - You may want to have some basic supplies at work, such as water and food that won't spoil, in case you need to stay put for a while.

- <https://www.getprepared.gc.ca/cnt/rsrscs/pblctns/yprprdnssgd/index-en.aspx>
- Vehicle (Source: Government of Canada)
 - <https://www.getprepared.gc.ca/cnt/kts/index-eng.aspx>
 - Blanket ; Candle in a deep can and matches; Extra clothing and shoes; First aid kit with seatbelt cutter; Flashlight (crank or battery-powered), replace batteries once a year; Food that won't spoil (such as energy bars); List of contact numbers; Radio (crank or battery-powered), replace batteries once a year; Small shovel, scraper and snowbrush; Warning light or road flares; Water; Whistle; Any other item you think is essential for your situation.

11.11 Emergency Preparedness Plans

DTI will assist supervisory personnel in developing a written emergency plan for each location. Some areas may require a minimal plan, while more complex areas may require a more detailed plan. The plan will include procedures for the care, reporting, and corrective follow-up of all injuries and serious accidents. Procedures will be thoroughly outlined, communicated to all Supervisory staff, and enforced.

Responsibilities

Employer/Supervisor Responsibilities

- Ensure that an appropriate Emergency Preparedness Plan is created and in place before the start of a project.
- Ensure that all personnel are aware of the plan and that it is followed.

Employee Responsibilities

- Follow all control measures as directed by their supervisor.

Emergency Response Plans

All work areas require an Emergency Response Plan. The magnitude and complexity of the plan will depend on the location. A template for preparing the Emergency Plan is available <http://internal.dot.gnb.ca/hr/Safety/firstaid-e.asp>

All areas require the following elements to be present in the Emergency Response Plan:

- A method of reporting the emergency. Generally, telephone is the most effective. However, an alternative should exist (perhaps notification with the plant, or police notification from the nearest available phone if the emergency disables the site's office phone lines). cell phones/radios
- A list of personnel responsible in emergency situations, and how to contact them. This should be plainly posted and available.

- A list of phone numbers for emergency and support services. This should be posted at all telephones on the project site.
- A plan for incident investigation and correction of hazards.
- A routine for notifying next of kin. This is very important and should be in place so that notification does not occur randomly or haphazardly.

Requirements for More Complex Plans

In addition to the basics outlined above, more complex areas may also require:

- A description of potential emergencies. This is extremely important from an educational standpoint. Emergency preparedness is based on anticipating and preparing for all possible crises.
- A method for sounding the alarm.
- A map of the workplace that shows:
 - Evacuation routes
 - Head-count location(s)
 - Locations of emergency equipment, first aid station, fire sprinklers, alarm pulls, and extinguishers

The map should be posted in the office, lunch areas, and first aid stations.

- A system for communications, both internal (e.g. alarms), and external (e.g. completing forms). Emergency alarms are also considered communications devices and must be established.

An evacuation, head-count, and rescue plan

Rescues should only be attempted by trained persons, and only if the attempt can be made with no risk of injury to the rescuer.

Head-count systems may vary, but generally each supervisor should count his workers and report to the Fire Warden.

Plan Testing

Emergency Response Plans Rehearsals require

- Prior notification of emergency services, all supervisory personnel, and possibly all employees.
- A pre-determined all-clear signal to allow rapid return to work.
- An evaluation system, to determine the effectiveness of the emergency plan.

11.12 Fire Prevention and Control

The Department of Transportation and Infrastructure considers fire prevention to be an important function of the Safety Program.

DTI views fire protection and prevention as every employee's concern. Therefore, it is policy to train and educate all employees to understand the importance of the rules and procedures that prevent fires, and ultimately protect their jobs, their income, and their lives.

The objectives of the fire protection program are to

- Prevent fires.
- Prevent loss of life and/or personal injury.
- Protect property.
- Ensure uninterrupted operations.
- Satisfy all fire code requirements.

Fires and fire-related injuries normally arise from one or more of the following conditions:

- Poor housekeeping.
- Poor control of heat sources.
- Inadequate fire-fighting equipment (quantity and/or type of equipment).
- Lack of adequate protection.
- Improper storage and handling of combustible materials and flammable liquids.
- Lack of /inadequate employee indoctrination in fire prevention and firefighting.
- Faulty electrical installations.

This program shall be reviewed by all supervisory and management personnel as soon as practical. The program shall also be reviewed periodically thereafter, for the purpose of updating the existing program. All applicable federal, provincial and municipal Fire Codes must be complied with.

- The supervisor will be responsible for ensuring the implementation and maintenance of the on-site fire prevention and control program. If the location already has an established fire department and fire program, the Job Supervisor is responsible for implementing and maintaining any additional measures necessary to meet the requirements of this program.
- Local emergency and fire department phone numbers shall be posted or 911
- A monthly (or more frequent, if needed) inventory of fire hazards and existing controls will be made of the entire work site. *(See Inspections Ch #9)*
- Trash and other debris or material must be controlled and removed as needed to prevent development of a fire hazard.
- Fire watch shall be implemented in high-risk areas. Fire watch personnel shall wear high visibility vests and have appropriate fire-fighting equipment (extinguishers and/or charged hoses, etc.) readily available at the workplace.

- The program may be expanded as needed to reflect the fire exposure conditions at each location.

Ignition Sources of Fires

To eliminate the causes of fire, it is necessary to know how and where fires start. The following summary is based on an analysis of more than 25,000 fires. The causes are arranged in order of frequency throughout the industry, but this arrangement is not necessarily a measure of the relative importance of any cause to any location or operation.

Electrical	Improper wiring in motors and/or improper maintenance.
Smoking	Careless smoking habits. Smoking in hazardous areas; for example, near flammable liquids, combustible dusts, trash, or combustible storage areas.
Friction	Hot bearings, misaligned machine parts, choking or jamming of material, poor adjustment of power drives and conveyors. The problem is often poor or improper maintenance.
Overheated Materials	Abnormal process temperatures involving flammable or combustible liquids.
Hot Surfaces	Heat from boilers, furnaces, hot ducts and flues, or heaters, igniting flammable liquids or ordinary combustibles.
Burner Flames	Improper use of portable torches, boilers, dryers, ovens, furnaces, portable heating units, and gas or oil burner flames.
Combustion Sparks	Sparks and embers released from incinerators, foundry cupolas, furnaces, fireboxes, and industrial trucks.
Spontaneous Ignition	Oily waste and rubbish, deposits in dryers, ducts and flues, materials susceptible to heating, and industrial wastes. The underlying cause is poor housekeeping practices. This is an especially common problem in Sodium Chlorate (NaClO ₃) environments.
Cutting and Welding	Sparks, arcs, and hot metal from improperly controlled cutting and welding operations.
Direct Exposure	Fires emanating from nearby properties. The problem is a lack of proper fire control systems.
Arson	Fires set by vandals or others in absence of proper security measures.
Mechanical Sparks	Sparks from foreign metals in machines, grinders, and crushing operations.
Molten Substances	Examples: molten metal escaping from ruptured furnaces or spilled during handling; escape of molten glass or tempering salts.
Chemical Action	Chemicals reacting with other materials and/or decomposition of unstable chemicals as a result of improper controls or improper handling/storage.
Static Sparks	Ignition of flammable vapours, dusts, and fibres by a discharge of accumulated static electricity on equipment, materials, or the human body. Improper bonding and grounding of static producing equipment or facilities is a contributing cause.

Lightning	Direct lightning strikes, sparks from one object to another, induced surges in circuits and electrical equipment.
Miscellaneous	Rare and unusual causes.

11.13 Classification of Work Sites

“Hazardous Location” is defined by the Canadian Electrical Code (CEC) as premises, buildings or parts thereof in which there exists the hazard of fire or explosion due to highly flammable gases and/or flammable, volatile liquid mixtures that are manufactured, used, or stored in other than the original containers. **NOTE:** This definition can be extended to include combustible dust and easily ignitable fibres that are likely to be present in sufficient quantities to produce an explosive mixture.

The CEC, Part I, Section 18 - Hazardous Locations identifies three classes of hazardous locations:

Class I - Gas and Vapour Environments	<ul style="list-style-type: none"> • Locations deemed hazardous due to the presence of gases or vapours that are present in the air in sufficient quantity to produce explosive or ignitable mixtures. • Locations identified as Class I require explosion-proof enclosures and connectors.
Class II - Dust Environments	<ul style="list-style-type: none"> • Locations deemed hazardous due to the presence of combustible or electrically conducting dusts. • Class II locations require that enclosures and connectors be dust tight.
Class III - Fibers and Flying Environments	<ul style="list-style-type: none"> • Locations deemed hazardous due to the presence of easily ignitable fibers or flyings, but in which such fibers or flyings are not likely to be in suspension in the air in sufficient quantities to produce ignitable mixtures. • Class III locations normally require that enclosures and connectors be constructed to minimize the entry of fibers or flyings.

Whenever a risk/hazard assessment, in consultation with Section 18 of the CEC, determines that the worksite shall be classified as a Hazardous Location (whether Class I, II, or III) , a Professional Engineer will be consulted to provide instructions on how to eliminate or reduce fire and explosion risk.

The assessment will include all of the following:

- Ventilation requirements
- Storage of flammable materials
- Enclosure and restriction of airborne material conveyances
- Reductions of static charge
 - Approved tools, materials, containers
 - Personal protective equipment
 - Air quality and LEL monitoring
 - Sources of combustion (tools/equipment)

- Temperature conditions (ambient and equipment)
- Safe working distances and traffic control

11.14 Office Structures/ Lunch Rooms

- All offices are designated “Non Smoking”.
- Fire Extinguishers will be mounted at each exit and marked with high visibility signage.
- Excess waste and combustibles will not be stored in areas where they could be exposed to an ignition source (appliances, computer equipment, mechanical rooms, etc.).
- Propane tanks and lines feeding such tanks must be adequately protected from inadvertent contact with equipment. “Adequate protection” shall consist of concrete barricades or some other equally effective device.
- A Spotter must be in place when equipment is operated around these structures and lines.
- Tanks will be located in accordance with the directions of a licensed supplier or Professional Engineer.

11.15 Flammable and Combustible Liquids

- Storage of flammable and combustible liquids shall be in accordance with the WHMIS, OH&S and provincial codes.
- Areas where flammable or combustible liquids are stored shall be marked with signs that read: “Flammable - No Smoking or Open Flame within 50 Feet”.
- Storage areas shall be kept free of trash, weeds, debris, or other combustible material.
- Flammable or combustible liquids shall not be stored in areas used for the safe passage of people.
- Indoor storage of flammable and combustible liquids shall meet the following criteria:
 - At least one portable fire extinguisher with a rating of not less than 20-B units shall be located outside of, but not more than 3.05 metre (10 feet) from, the door to any room used for storage of more than 270 litres (60 gallons) of flammable or combustible liquids.
 - No more than 110 litres (25 gallons) of flammable or combustible liquids shall be stored in a room outside of an approved storage cabinet. Quantities of flammable or combustible liquids in excess of 25 gallons shall be stored in an acceptable or approved cabinet.
- Outdoor storage of flammable and combustible liquids shall meet the following criteria:
 - Storage areas outside buildings shall be graded or otherwise provide some means of preventing spills from entering buildings.
 - Outdoor portable tanks shall not be located nearer than 6.1 metres (20 feet) from any building.

- As least one portable fire extinguisher having a rating of not less than 20-lb units shall be located not less than 7.62 metres (25 feet) or more than 22.86 metres (75 feet) from any flammable liquid storage area located outside.
- Flammable liquids shall be kept in closed containers when not actually in use.
- Transfer of flammable liquids from one container to another shall be done only when the containers are electrically interconnected (bonded).
- Dispensing devices and nozzles for flammable liquids shall be of an approved type. The dispensing nozzle shall be an approved automatic-closing type and may NOT have a latch-open device.
- The motors of all equipment being fuelled shall be shut off during fuelling operations.

11.16 Propane and Natural Gas

- Each propane and natural gas system shall have containers, valves, connectors, manifold valve assemblies, and regulators of an approved type.
- Containers and equipment used inside buildings or structures shall be in accordance with OH&S regulations or local regulations.
- When damage to gas systems from vehicular traffic is a possibility, precautions shall be taken against such damage.
- Propane or natural gas containers that are being transported must be properly secured to prevent tipping or rattling. Never transport more than five 20 lb. (kilo?) bottles at any time.

11.17 Temporary Heating Devices

- Temporary heating devices shall be installed to provide clearance to combustible material as required by regulations or local governing authorities. (Some temporary heating devices provide directions for installation with clearance less than specified instructions.)
- Heaters used near combustible tarps, canvas, or similar coverings shall be located at least 3.05 metres (10 feet) from such coverings.
- Indirect fire heaters shall be used in areas where flammable gases may be present. Heated air will be blown in through ducts.
- Flammable-liquid fired heaters shall be equipped with a primary safety control to stop the flow of fuel in the event of flame failure. Barometric or gravity oil feed shall not be considered a primary safety control.

11.18 Electrical Equipment

- All electrical equipment and wiring shall be installed and maintained in accordance with the Canadian Electrical Code and local building codes.
- Electrical cords passing through work areas shall be covered or elevated to protect them from damage.
- Worn or frayed electrical cords shall not be used.

- Electrical wiring and equipment located inside storage rooms for flammables shall be approved for such use.

11.19 Housekeeping

- Access ways, exits, and hallways shall be kept free from any accumulation of trash, combustible materials, or flammable liquids.
- Combustible scrap and debris shall be removed from buildings at regular intervals
- Covered containers shall be provided for the collection and separation of oily rags, waste, and other materials that could experience spontaneous combustion.

11.20 Fire Protection Equipment

- Fire-fighting equipment shall be installed in accordance with local regulations.
- All fire-fighting equipment shall be conspicuously located.
- In multi-story buildings, at least one fire extinguisher shall be located adjacent to all stairways.
- Access to all fire-fighting equipment shall be maintained at all times.
- Fire extinguishers shall be of the appropriate class for the types of fires considered possible in the area.
- All fire-fighting equipment shall be inspected monthly and maintained in operating condition.

11.21 Fire Extinguisher Procurement and Inspections

An inventory of all DTI fire extinguishers must be maintained using the Fire Extinguisher Master Inventory.

- Fire extinguishers shall be inspected when initially placed in service and thereafter at approximately 30-day intervals. Fire extinguishers shall be inspected at more frequent intervals when circumstances require.
- At least monthly, the date the inspection was performed and the initials of the person performing the inspection shall be recorded.
- Inspections shall be recorded on the Fire Extinguisher Inspection form
- Periodic inspection of fire extinguishers shall include a check of at least the following items:
 - Located in designated place.
 - No obstruction to access or visibility.
 - Operating instructions on nameplate legible and facing outward.
 - Safety seals and tamper indicators not broken or missing.
 - Fullness determined by weighing or "hefting".
 - Examine for obvious physical damage, corrosion, leakage, or clogged
 - nozzle.

- Pressure gage reading or indicator in the operable range or position.
- Condition of tires, wheels, carriage, hose, and nozzle checked (for wheeled units)
- Fire extinguishers shall be inspected and serviced annually or when specifically indicated by an inspection by a qualified, competent service provider.
- A Fire Extinguisher Annual Inspection label, indicating the annual inspection date, shall be affixed to each extinguisher.
- The label will be affixed directly to the extinguisher or inspection tag and will be checked during monthly inspections.

Personnel completing inspections shall keep records of fire extinguishers inspected, including those found to require corrective action.

11.22 Hot Work

Hot Work requirements are applicable to any temporary operation that involves open flames or producing heat and / or sparks. Such operations include, but are not limited to: brazing, cutting, grinding, soldering, thawing pipe, torch applied and welding.

- The foremen or supervisor shall ensure that all safety requirements outlined on the “Hot Work Requirements” are followed.
- Hot Work is not allowed to commence until the completed permit has been received and the area is properly posted for Hot Work.
- All Hot Work equipment **must** be in good working condition.
- While performing **Hot Work** there **must be** on site, a minimum of one 10 lb ABC fire extinguisher that is operable and properly serviced. Existing extinguishers in the area cannot be used for this purpose and **must not** be removed from their assigned locations. Where practical, a charged fire hose on site.
- All personnel must be trained in the proper use of fire extinguishers
- All fire-resistant tarpaulins may be required to be secured above or below work and all floor and wall openings **must** be covered.
- All flammable and combustible material within a 35-foot radius distance from the hot work such as flammable liquids, oily rags, dust lint, etc., shall be protected against ignition or removed from the area.
- Combustible floors **must** be wetted down and covered with damp sand or fire resistive sheeting or tarpaulins. Combustibles on other side of walls moved away.
- Before working on enclosed equipment, the equipment must be cleaned of all combustibles. Containers purge of flammable liquids / vapors. Pressurized vessels, piping and equipment removed from service, isolated and vented.
- Explosive atmospheres **must** be eliminated prior to starting work, for example, by the use of supply air and exhaust air fans.

Under certain conditions, it may be advisable to establish more effective control over operations involving the use of open flame, welding, and burning, in order to prevent damage to equipment or the facility. The use of Hot Work will generally provide the type of control needed.

The type and extent of control will depend on the complexity of the operations and the degree of hazard to equipment and the work site. Principal features of the program are:

- Control unauthorized use of flame or hot metal producing equipment.
- Inspect the area where work is to be done.
- Set up Fire Watch.
- Provide fire extinguishing equipment.
- Communicate with and coordinate Contractor personnel.
- Isolate combustibles from sources of ignition.

Hot Work Permits are required when

- Combustible materials closer than 35 feet to the point of operation
- Combustibles more than 35 feet away but would be easily ignited by sparks
- Wall or floor openings within a 35-foot radius exposing combustible material in adjacent areas, including concealed spaces in floors or walls
- There are combustible materials adjacent to the other side of metal partitions, walls, ceilings, or roofs, which could be ignited by conduction or radiation
- The work necessitates disabling a fire detection, suppression, or alarm system component including concealed duct detectors

Fire Watch must be continually provided during the work, and for 60 minutes after work, including any coffee or lunch breaks. Fire Watch may also be required for adjoining areas. Periodic monitoring for an additional 1 hour at the completion of the work may be required if the area is not equipped with automatic detection tied into the fire alarm system, the Fire Watch must continue to monitor the area for a total of 1 hour after the work is complete. A final inspection of the hot work area shall be conducted and signed off after 2 hours of the completed work

11.23 Welding and Cutting

- When practical, objects to be welded, cut, or heated shall be moved to a designate safe location or, if these objects cannot be moved, all fire hazards in the area shall be taken to a safe place or otherwise protected.
- If the object to be welded, cut, or heated cannot be removed, positive means shall be taken to confine heat, sparks, and slag and to protect the immovable fire hazards from them. Standard practices include wetting down the area and/or using fire blankets.
- No welding, cutting or heating shall be done where the application of flammable paints or presence of other flammable compounds or heavy dust concentrations creates a hazard.

- Suitable fire extinguishing equipment shall be immediately available in the work area and shall be maintained in a state of readiness for instant use.
- When the welding, cutting, or heating operation is such that normal fire prevention precautions are not sufficient, fire watch will be initiated. "Fire watch" is the assignment of specific personnel to guard against fire while welding, cutting, or heating is being performed, and for a sufficient time after completion of the operation to ensure that no possibility of fire exists. In extreme fire hazard areas.
- Flashback arrestors will be used on the hoses of all welding and cutting units and will be connected to the regulators.
- A cutting torch used in confined spaces shall have the gas supply positively shut off at some point outside the enclosed space whenever the torch is left unattached for a substantial period of time, such as during lunch break. Overnight and at the change of shifts, the torch and hoses shall be removed.

11.24 Audits

Planned audits will be conducted to determine:

- Whether Fire Protection controls are effective, and
- Whether the controls are being used to best suit the needs of DTI Safety Program

11.25 References

- Workplace Hazardous Materials Information System regulation 2016-6 under the OHS Act.
- Occupational Health & Safety Act (OHS).
- Emergency backup lighting, OHS regulation 91-191, section 27.
- First Aid regulation 2004-130 under the OHS Act.
- National Fire Code.
- http://www.legal-info-legale.nb.ca/en/violence_and_the_workplace
- <http://www.toolkitnb.ca/emain.asp?46>

EMERGENCY COMMUNICATION PROCEDURE

Occupational Health and Safety Act & Regulation 2004-130

Site Name: (Can include Region, Place, Building)	
Complete physical address: (Should include civic #, street, city, distance from landmark if any)	
On site communication: <input type="checkbox"/> Phone <input type="checkbox"/> Cellular <input type="checkbox"/> Radio <input type="checkbox"/> Satellite <input type="checkbox"/> Spot <input type="checkbox"/> Other _____ • Location (s) of device (s): _____	
Transportation of injured person to medical facility: • Location of nearest medical facility: _____ • Means of transportation to Medical facility: <input type="checkbox"/> Ambulance <input type="checkbox"/> Other _____ • Can an ambulance access the site? <input type="checkbox"/> Yes <input type="checkbox"/> No, complete next section.	
On site transportation: (Consider distance; Protection from the weather; Size of vehicle) • Means of transportation to designated transfer site to ambulance: <input type="checkbox"/> Stretcher <input type="checkbox"/> Vehicle <input type="checkbox"/> Other: _____ • Location of transfer site to ambulance: _____	
On site First Aider(s):	
First-Aider(s) Name	Contact Information
Location(s) of first aid kit(s) : _____	
Location of MSDS sheet(s): _____	
Emergency Response during an incident: <ol style="list-style-type: none">1. Secure the area and ensure safety for yourself and others.2. Administer first aid as needed.3. Contact emergency services if required (see above for locations).4. Number to dial: __911__ or _____5. Notify authorities as required (see below).6. Record notes for future reference.	

PLEASE POST IN BOTH LANGUAGES WHERE REQUIRED

Reporting Responsibilities

Provide immediate notification to WSNB **(1-800-222-9775)** and to DTI's Manager of Safety and Employee Development, and ensure the scene is left undisturbed, for the following injuries or incidents:

- a. Loss of consciousness.
- b. Amputation.
- c. Fracture other than fingers or toes.
- d. Burn that requires medical attention.
- e. Loss of vision in one or both eyes.
- f. Deep laceration.
- g. Admission to hospital as in patient.
- h. Death.
- i. Accidental explosion or an accidental exposure to a biological, chemical or physical agent.
- j. Catastrophic event or a catastrophic equipment failure.

Supervisor name (print): _____

Date: _____

CHAPTER: 11

Company Health and Safety Policy
Evacuation/Emergency Drill Record

HSM-F-11-2
Rev.1 2021

Emergency Simulated: _____

Date and Time of Drill: _____

Weather Conditions: _____

Drill Conducted By: _____

Description of Drill: _____

Event/Elements Performed Well: _____

Events/Elements that need Improvement: _____

Areas/Departments in Attendance: _____

**Number of attendees:
Recommended
Follow-Up:** _____

Date and time of next Drill: **MM / DD / YYYY** **:** **AM/PM**

Reviewed By: _____

Supervisor Name

Supervisor Name Signature

Manager Name

Manager Signature

HOT WORK PERMIT

Name (print) _____ Phone: _____

Company Name _____

Location of Hot Work _____

Nature of Hot Work _____

Special Precautions _____

Date and time of Hot Work _____

I have read the procedures and requirements for hot work and understand all requirements

Worker Signature _____

HOT WORK CHECKLIST

Fire Watch required	YES []	N/A []	Extinguisher on site	YES []	N/A []
Combustibles removed	[]	[]	all wall, floor and sewer openings covered	[]	[]

Time hot work began _____ Time hot work ended _____

Fire Watch

I have been informed of and trained in my duties and understand my responsibilities.

Name of Fire Watch Signature Date / Time

The area is safe for entry and work as outlined above and I authorize this work.

Name Supervisor Signature Date / Time

Monitored for 60 min after completion of work. Time/signature

Final check of area 2 hours after completion of work. Time/signature _____

First Aid Kit Selection Table

Schedule A of Regulation 2004-130 provides direction on the number of first aid kits, first aid providers and first aid rooms. These requirements are based on the number of employees per shift and the level of hazard. CSA Z1220-17 standard provides information with respect to the type and size of first aid kits. To help clarify which and how many CSA kit(s) are appropriate for a workplace, WorkSafeNB has prepared the following selection table which lists the number of kits per Schedule A with the corresponding CSA first aid kit type and size.

# of employees per shift	Place of employment with <u>no</u> high hazard work		Place of employment with <u>high</u> hazard work*	
	Schedule A	CSA First Aid kit	Schedule A	CSA First Aid kit
1			Personal (Type P) first aid kit	1 CSA Type 1: <u>Personal</u> kit
2 – 19	<ul style="list-style-type: none"> 1 first aid kit 1 first aid provider 	1 CSA Type 2: <u>Small</u> Basic kit	<ul style="list-style-type: none"> 1 first aid kit 1 first aid provider 	1 CSA Type 3: <u>Small</u> Intermediate kit
20 – 49	<ul style="list-style-type: none"> 1 first aid kit 1 first aid providers 	1 CSA Type 2: <u>Medium</u> Basic kit	<ul style="list-style-type: none"> 2 first aid kits 2 first aid providers 	2 CSA Type 3: <u>Small</u> Intermediate kits
50 – 99	<ul style="list-style-type: none"> 2 first aid kits 2 first aid providers 	2 CSA Type 2: <u>Medium</u> Basic kits	<ul style="list-style-type: none"> 2 first aid kits 2 first aid providers 	2 CSA Type 3: <u>Medium</u> Intermediate kits
100 – 199	<ul style="list-style-type: none"> 2 first aid kits 2 first aid providers, one of whom must have access to the first aid room 1 first aid room 	2 CSA Type 2: <u>Large</u> Basic kits	<ul style="list-style-type: none"> 3 first aid kits 3 first aid providers, one of whom must have access to the first aid room 1 first aid room 	2 CSA Type 3: <u>Medium</u> Intermediate kits PLUS 1 CSA Type 3: <u>Large</u> Intermediate kit
200 or more	<ul style="list-style-type: none"> 3 first aid kits 3 first aid providers, one of whom must have access to the first aid room 1 first aid room <p>-----</p> <ul style="list-style-type: none"> 1 additional first aid provider and 1 additional first aid kit for each additional increment of 1-100 employees. 	3 CSA Type 2: <u>Large</u> Basic kits ----- 1 CSA Type 2: <u>Large</u> Basic kit for each additional increment of 1-100 employees.	<ul style="list-style-type: none"> 4 first aid kits 4 first aid providers, one of whom must have access to the first aid room 1 first aid room <p>-----</p> <ul style="list-style-type: none"> 1 additional first aid provider and 1 additional first aid kit for each additional increment of 1-100 employees 	2 CSA Type 3: <u>Large</u> Intermediate kits PLUS 2 CSA Type 3: <u>Medium</u> Intermediate kits ----- 1 CSA Type 3: <u>Large</u> intermediate for each additional increment of 1-100 employees.

Equivalent combination of kits:

- 1 medium CSA first aid kit = 2 small CSA first aid kits
- 1 large CSA kit = 2 medium CSA kits **or** 4 small CSA kits **or** 2 small CSA kits + 1 medium CSA kit

* **Work carried on at a place of employment specified below or, if no place of employment is specified, the work described below, constitutes high hazard work:**

- working at project site or mine;
- working underground, in confined spaces or in isolated areas where emergency medical help is not in close proximity to the work area;
- working on electrical transmission, generation or distribution systems;
- working at foundries or machine shops;
- working at gas, oil or chemical processing plants, steel or other base metal processing plants;
- working at woodland operations, sawmills or lumber processing plants;
- working at brewery or beverage processing plants, meat packing or processing plants;
- working with explosives or heavy equipment.

CHAPTER: 12	Records and Statistics	Rev.1 2021
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12.1 Overview

There are many reasons to produce and keep records on activities related to the Health and Safety Program. One is to establish due diligence by providing evidence that the health and safety program is being used and covers all components of the program. This is required by the Occupational Health and Safety Act and Regulations.

Another is to help identify trends that may indicate what is causing potential hazards or unsafe conditions or work practices. By analyzing data in the records, statistics can be generated to, again, help identify trends and areas to improve the level of safety.

Also, incident and injury statistics are useful for measuring the effectiveness of the health and safety program. Comparing injury rates is one of many indicators used to measure successful programs.

12.2 Types of Records Kept

The following table lists examples of the types of records that are kept:

Topic / Area	Types of records	Kept by
Injury Claims	Form 67 (Paper & electronic scan)	Original paper kept at District office. Information is entered in the Riskmaster system by Central WHS Coordinator.
Formal Training	Sign-in sheets (Paper & electronic scan)	HRIS database (entered by District)
Incident Investigations	Reports	District Offices
Inspections	Checklists (Paper)	Supervisors & District Offices
JHSC	Minutes, TOR (Paper & electronic scan)	Committee Secretary & District Offices
Safety Talks	Forms (Paper)	Supervisor & JHSC
Hazard Assessments	Tailgate Meeting Form (Paper), JHA, FLHA, (Paper & Electronic)	Supervisor
Tailgate meetings	Supervisor Logbook (Paper)	Supervisor

12.3 DTI Injury Claims System

Information about injury claims is kept in paper files and in an electronic database system called Riskmaster. All original claim information is kept in District Offices. Copies are sent to the WHS Coordinator at Central office through a secure e-mail. The coordinator enters the information into Riskmaster. The same system is used to process the monthly WSNB invoice.

From the system, tabular reports can be generated to summarize information. These are used to produce statistical reports.

12.4 Health & Safety Performance Report

This report is produced every month and tracks pro-active health and safety measures such as Employee Orientations and "Safety Talks". Injury frequency rates are also provided. Each measure is rated in percentage against a goal such as 2 Safety talks per month (Group A). If the goal was achieved for that month, then the District gets 100%. Information on current Measures is collected and compiled by the HSU. Executive reports summarize scores by groups A, B or C.

- Group A - DTI District Operations
- Group B - DTI Branches with Field Work
- Group C - DTI Branches without Field Work

Detailed scores for each Branch or District are available in Branch/District Reports.

12.5 NBDTI Injury Statistics (Health & Safety Statistics)

This report provides a summary of workplace injuries and their associated costs for DTI every six months at the end of June and December. The report is intended to provide departmental managers and employees an indicator of their current safety performance and to identify areas requiring additional preventative action.

The report provides important information and details on:

- Numbers of claims by areas, occupations, body regions and types of contact.
- Hours worked and Frequency rates
- Compensation costs by types of costs and by areas (District & Branches)
- Safety scores and standings for all groups (see HS Performance report above)

Also, the report provides a safety score which recognizes pro-active measures tracked by the performance reports. To calculate the safety score, the injury frequency is subtracted from the Health & Safety Performance Report score. Scores from all groups are compared and given a standing every six month.

13.1 Overview

The Occupational Health and Safety Act has definitions for Contractor and Contracting Employer. The purpose of this document is to ensure staff understand their roles, so they can do their jobs in a professional manner at all times.

DTI recognizes that many hazards are inherent in construction and other contract work. Compliance with safety regulations can prevent most serious injuries. This guide will serve as notification of DTI safety requirements to contractors, and subcontractors who perform work for DTI. This section does not cover all applicable safety and health laws. While onsite, contractors are required to follow applicable provincial health and safety regulations as well as DTI Policies.

The contractor is responsible and accountable for the safety of their employees and anyone that has access to the construction site, including the traveling public. DTI reserves the right to require the contractor to discontinue operation at any time it determines that the contractor's actions are exposing their employees or other non-contractor individuals to an unsafe situation or if environmental requirements/regulations are not being met.

13.2 Responsibilities

Deputy Minister:

- Provide leadership and guidance through promotion of the Program.
- Grant final approval of the Contractor Safety Management Program.

Directors:

- Oversee safety compliance and continual improvement initiatives of DTI Contractor Safety Management Program.
- Provide a strong visible commitment and be actively involved in continually building a positive safety culture.
- Ensure DTI employees (including managers and supervisors) implement the Contractor Safety Management Program within their respective areas.

Managers:

- Ensure all applicable health and safety requirements are included in the tender document process for all contracts.
- Review health and safety documents submitted by contractors.

- Prior to the commencement of work, arrange a health and safety orientation meeting with the contractor, applicable DTI representatives and, where necessary, the OHS Consultant (Contractor Safety). This can occur during the pre-construction meeting.
- Ensure required safety documentation is up to date and maintained for the duration of the service/project.
- Conduct periodic evaluations and review documents and/or progress reports with supporting documentation after work commences.
- Ensure that the site-specific safety plan is relevant to the scope of work and includes consideration of the hazards present at the worksite as well as adequate controls to prevent injury. This plan must be in place before any work commences.
- Ensure safety documentation collected during onsite work visits is filed and is available to the Wellness Health Safety Division if required.
- Ensure the health and safety performance of contractors and suppliers is monitored, (duration and frequency to be determined by the Project Manager) processes are followed through as required, and any identified corrective actions are completed in a timely manner.
- Ensure employees have the appropriate training and qualifications and are competent to perform the work in a safe manner.
- Notify other divisions who may be affected by the contract work in a timely manner to allow them to undertake appropriate actions.
- Promote the Government of New Brunswick Respectful Workplace Program.

DTI Site/Field Representative:

- Ensure that the site-specific safety plan is reviewed and on site for project duration.
- Confirm with the contractor that all employees of the contractor and or subcontractors have been informed of the hazards expected to be present at the work site and have read the site-specific safety plan and the specific requirements for controlling those hazards.
- Monitor the contractor's work performance and determine if the contractor is complying with the site-specific safety plan and other OHS Legislation/Codes.
- Request immediate corrective action from the contractor and notify DTI Director or Manager if any unsafe or non-compliant work is observed.
- Participate in contractor's Safety talks on site when practicable.
- Ensure that the contractor complies with all the required permits.

DTI HSS:

- Provide support for the ongoing implementation of the Contractor Safety Program (i.e. site-specific safety plan review, identification of training, traffic plans, etc.).
- Periodically assess contractor compliance throughout DTIs operations.
- Act as a resource in establishing safety requirements for contractors.
- Support the DTI representative in the preparation and delivery of site orientation/pre-job health and safety meetings where appropriate and as required.
- Periodically review (at least annually) the Contractor Safety Management Program and make recommendations for improvement as deemed necessary.

Contractors:

- Ensure employees have the appropriate training and qualifications and are competent to perform the work in a safe manner.
- Provide documentation (and monitor throughout contract duration) certification documents with expiry dates, equipment inspection documents, permits required to complete the work, and any other documentation required as referenced in other parts of this document.
- Be aware of and follow all applicable OHS Legislation/Codes.
- Ensure critical tasks for the project have been identified in the project hazard assessment.
- Ensure the site-specific safety plan is relevant to the work, has been submitted to DTI, has been communicated to all contractor employees and subcontractors and that the plan is followed at all times.
- Hold regular Tailgate talks, with additional talks if there are changes to the job.
- Conduct monthly site inspections of the worksite.
- Notify DTI Project Manager as required on applicable management of change issues.
- Notify DTI of all incidents; report all accidents and injuries and investigate incidents.
- Notify DTI of all OHS orders that have been issued while performing work on a DTI site. The contractor shall inform DTI's supervisor or inspector if WSNB has been onsite to conduct an inspection. A copy of the officer's report or inspection report shall be provided to DTI's onsite representative.
- Immediately correct any unsafe conditions or practices reported or observed within their jurisdiction.
- Ensure that all non-compliances of the Health and Safety Program are managed.

- The contractor shall ensure all personnel follow the requirements of the Occupational Safety and Health Act & Regulations, the contractor's policies and DTI's on-site policies.
- The contractor shall ensure that their employees and their sub-contractor employees conduct themselves in a proper business-like manner while on the DTI property.

13.3 Service Contracts

- Contractors retained for routine maintenance and/or service contracts shall meet the requirements as per the specifications identified in the Tender/Contract. Project Managers must also ensure required safety documentation is up to date and maintained for the duration of the service/project. A Project monitoring schedule will be determined by the DTI Representative for the duration of the contract based on the type/complexity of work and hazards involved.
- The OHS Consultant (Contractor Safety) can provide advice and support in this regard should it be deemed necessary by the Project Manager.

13.4 Personal Protection

All required personal protective equipment (PPE) will be provided by the Contractor. Its use is mandatory, and enforcement is the responsibility of the contractor. The Contractor supervisor shall ensure that their employees wear appropriate clothing that will provide adequate protection from normal hazards associated with the job. Examples of PPE are head, eye, hearing, hand, respiratory and fall protection equipment. All PPE used must meet or exceed WSNB regulatory standards:

1. The Contractor is responsible for supplying all equipment necessary to conduct inspections, construction, and repairs on DTI contracts.
2. The contractor overseeing the project is responsible for ensuring sub-contractors use appropriate PPE.
3. It is the responsibility of the contractor to ensure all employees are trained in the proper use of PPE.

All contractors performing work are to comply with the requirements of this policy. Failure to adhere to these requirements may result in an immediate shutdown of work and a breach of contract with DTI.

13.5 Incident Investigations

Injuries sustained to employees of contractors or their sub-contractors must be immediately reported to the DTI representative. Within 48 hours of an incident, the contractor shall furnish the DTI representative with a copy of any accident/incident report. Such reports must include a medical description of the injury (if applicable) and action taken to prevent recurrence. Report form may be obtained from the DTI representative. If a person is seriously injured, the contractor will keep the DTI representative informed of that person's condition.

Contractors are required to investigate loss events. These loss events may include, but are not limited to, the following:

- Near-miss
- Injuries
- Damage to property or equipment
- Spills
- Fire/explosion
- Harassment/violence
- Security

13.6 Emergency Information

If the work is in a building, the owner/employer will ensure the contractor is made aware of any alarms that could occur. The contractor and any sub-contractors must abide by all alarms and evacuation procedures as established by the onsite DTI representative. Any alarm triggered by the contractor must be reported immediately and a representative must be available to address the incident. In the event of an emergency, the contractor shall report the incident to DTI's onsite representative.

The contractor is responsible for having an emergency communication procedure completed for each worksite, as per section 5.2 of the NB First aid regulation.

13.7 Emergency Evacuations

Upon hearing any alarms or obtaining notification from the DTI representative or HR Director, the contractor must stop all work. The contractor's personnel shall evacuate to a location as prescribed by DTI personnel. The contractor shall take a head count to ensure that all contract personnel are accounted for. The contractor will report any individuals that cannot be accounted for to the DTI representative. Contractor personnel shall remain in the area until the "ALL CLEAR" is announced and they are instructed to return to work by the DTI representative.

13.8 Fire Alarms

Fire alarms must remain operational at occupied buildings. In the event that the alarm system must be deactivated for more than four hours, the contractor must notify the DTI representative. Approval to shut down a system will be given only with sufficient prior notice, where there is a demonstrated need, and the occupants of the building are not exposed to undue risk.

A fire watch is required whenever a DTI fire alarm system is deactivated for more than four hours. Contractor personnel are responsible for providing a fire watch service.

13.9 Housekeeping

The contractor shall keep the work area, specifically walking and working surfaces, clean and free from debris and trash which could cause slipping and tripping hazards. Tools and materials shall be kept and stored in an orderly fashion. Clean up shall be performed on a regular and ongoing basis.

All trash, waste, and scrap must be disposed of each day in proper containers supplied by the contractor. All hazardous waste storage and disposal is to be coordinated through the DTI representative.

13.10 Stairways and Corridor Egress

Stairwells, elevator lobbies and corridors are intended to provide a safe means for personnel to exit the building and emergency personnel to access the scene. The exit corridors of all areas are required to be kept clear and unblocked at all times, regardless of their width. All carts, supplies, ladders, tools, etc. must be kept out of corridors or stairways when not in use. Some projects may require construction that captures part of the corridor width. When this happens, it is extremely important that the remaining corridor(s) be clear. If an entire corridor or exit must be blocked off for a project, alternative access and egress must be provided and notice shall be provided to the DTI representative.

13.11 Tools (Powered or Non-Powered)

Power tools shall be maintained in a safe working condition. Designed safety features such as guards and interlocks shall NOT be removed or defeated. Tools powered by gasoline shall not be used inside DTI buildings unless prior permission is given by the DTI representative and safeguards are put in place to reduce exposure to the employees and others who may be working in the building. Monitoring may have to be done to ensure the levels of carbon monoxide and sulfur dioxide do not reach harmful levels.

13.12 Confined Space

The contractor must notify the Project Manager and submit a copy of their Confined Space Program to the DTI representative if work in a confined space is planned. The Contractor's Confined Space program shall at a minimum comply with WSNB Regulation 91-191 requirements pertaining to confined space. Contractors are responsible for providing their own monitoring equipment and rescue services/equipment necessary for safe confined space entry.

13.13 Electrical

A contractor conducting high-voltage electrical work must be approved for such work by the DTI representative who may ask for advice and or assistance from Electrical Safety Inspector with Safety Services NB and or NB Power representatives. All work shall, at a minimum, comply with all requirements specified in Canadian Electrical Code, and CSA standard Z462 Workplace Electrical Safety.

Electrical extension cords must be in good condition and must not create a trip hazard in hallways or on pedestrian walkways. Grounds on extension cords shall be in place, defective or damaged cords shall be removed from the site. Cords that stretch across walkways must be entirely covered, secured, elevated, or protected by other means when exposed to damage, water, or where they create tripping hazards.

Keep all electrical room doors secured when unoccupied, and only authorized personnel shall be permitted to enter electrical rooms.

13.14 Lock Out/Tag Out

Contractor's Lock Out/Tag Out program shall at a minimum comply with regulation 91-191 section 239 requirements pertaining to Lock Out/Tag Out. Contractor must request permission through the DTI representative prior to performing any Lock Out/Tag Out of building equipment, or equipment that could affect the other workers or building occupants.

Lock Out/Tag Out procedures must be observed when working with all electrical equipment.

13.15 Fall Protection (Working at heights)

In New Brunswick, if working at heights cannot be eliminated, and the work area does not have guardrails, then a fall protection system is required when

- Working at a height of 3m or more above safe level or water
- Working at a height of less than 3m above a hazard or water
- Work area has an unguarded opening
- A WSNB Health & Safety Officer has determined that it is necessary

When a work area is more than 3 m from an unguarded edge and its slope is 3/12 or less, a fall protection system is not required. The selection of a fall protection system must be done according to the following order of precedence:

1. Guardrails
2. Travel Restraint
3. Fall arrest
4. Control zone

13.16 Hazardous Materials

Use of any hazardous material is subject to the prior approval of the DTI representative with notification to the Project Manager. The DTI representative reserves the right to require substitution of materials planned for use. Hazardous materials being used for the project must be properly segregated for incompatibility and stored in secondary containment for the duration of the project. Approved chemical storage cabinets should be used and all applicable fire and local building codes shall be followed. All hazardous materials storage areas are subject to inspection by the DTI representative.

13.17 Hot Work

Prior to commencing hot work operations, the contractor must notify the Project Manager. The following are general requirements when performing any hot work operations:

- All exposed combustible materials below welding and burning areas must be removed to a safe location. In addition, an approved spark catcher must be used for overhead welding.
- A dry chemical (ABC) fire extinguisher (at least five-pound) must be maintained within twenty-five (25) feet of any welding, burning or open-flame work.
- Adequate ventilation must be provided at all times. Source extraction is required by legislation.
- Flashback arrestors must be installed on all oxy-acetylene torches.
- All arcs are to be shielded in operating areas by the use of such barriers as welding curtains, screens and enclosures.
- Approved welding eye protection or goggles must be used when welding or burning.
- An approved welding helmet must be worn for arc welding.
- Compressed gas cylinders must be secured vertically to an adequate support while in storage, transit, or use.

13.18 Scaffolding

All scaffolding shall be erected and maintained in compliance with regulation 910-191 and the manufacturer's requirements. Each scaffold must be erected and dismantled by a qualified person. Inspection of scaffolding must be made by a qualified person assigned by the contractor for the work to be performed. All scaffold platforms must be equipped with standard guardrail which includes toe board, rigidly secured and completely decked with safety plank or manufactured scaffold decking. Scaffolds must be tied off to the building or structure at proper intervals. Scaffolds 6m or more in height must be equipped with stairways.

13.19 Air Emissions

Any operation or procedure that will involve the release of significant quantities of dust, vapors, fumes or mist shall be approved by the DTI representative prior to start of work. Examples are large applications of floor, wall or roof coatings, spray applications, cement cutting, sandblasting, etc.

13.20 Environmental Permits, Registrations, and Notifications

Contractor will obtain necessary permits or registrations from Department of Environment prior to beginning any work that will require such a permit. Copies of all permits/registrations will be included in the work plan and submitted to the DTI representative in advance of such work. If the contractor is installing equipment that requires an operating permit, the contractor will obtain the permit and provide copies to the DTI representative.

13.21 Hazardous Material Spills

The contractor must report any spills immediately to the DTI representative and take immediate action to contain the spill. Regulatory agencies require containment and remediation of all spills of hazardous materials, including fuels and oil. Contractors who spill any such substances on DTI property are responsible for clean-up coordinated through the DTI representative. Clean-up of the contaminated area must be performed to the regulatory accepted level based on testing. Testing and disposal will be coordinated through the DTI representative and paid for by the contractor.

13.22 Hazardous Waste

The contractor shall comply with all NB DOE regulations pertaining to the management of hazardous waste as well as DTI requirements. Hazardous waste must be handled and accumulated on site in a safe manner and by properly trained personnel.

Hazardous waste will be transported and disposed in accordance with all applicable provincial regulations. Contractors are required to furnish the DTI representative with documentation of proper disposal whenever the contract calls for disposal of hazardous waste including spills.

The DTI representative has the right to immediately stop the contractor's work activities if it is deemed immediately dangerous to contractor or DTI employees.

13.23 Training Documentation

The Contractor and all subcontractors shall ensure that all employees are properly trained for the work they undertake and must maintain up-to-date employee files with all training records/certifications related to any equipment and work the employee is involved with. The Contractor or subcontractor shall provide copies of employee's certifications or other evidence of training if requested by the DTI representative.

CHAPTER: 14

Codes of Practice

Rev.1 2021

Codes of Practice General

A “Code of Practice” is a written statement by the employer that sets out in detail a procedure to ensure the health and safety of an employee in certain specified circumstances. Unless specified by the Regulation or by a health and safety officer the following elements should be contained in a code of practice:

1. An introduction identifying:
 - a) the hazardous substance(s) and/or situation(s) which may be encountered,
 - b) a description of the hazards, and
 - c) their possible effect(s) on health or safety.
2. Identification of the person or persons at risk from the hazardous substance(s) and/or situation(s).
3. Identification of the person or persons responsible for implementing the code of practice.
4. The time, day, or event, etc. before, during, or after which the code of practice might be applicable.
5. The location or locations where the code of practice might apply, (e.g. all ceilings throughout the building, or the tank of the delivery truck in the yard, etc.).
6. The methods and equipment to be used to ensure the health and safety of any employee at risk.
7. Emergency procedures and equipment that might be required in the event of failure of any of the regular procedures or equipment.

The Code of Practice must be:

- posted by the employer in a prominent place at the place of employment,
- Available to all employees
- modified to reflect adverse weather conditions,
- taught to employees.

References

- Legislation interpretation of the OHS Act for ‘Codes of Practice’ from WSNB, January 11 2005.

CHAPTER: 14

Codes of Practice

HSM-COP-1

SECTION: 14.1

Handling Asbestos Materials

Rev.1 2021

**THIS CODE OF PRACTICE IS APPLICABLE AT ALL TIMES
ALL SUPERVISORY PERSONNEL AND THEIR DESIGNATES ARE RESPONSIBLE FOR
IMPLEMENTATION OF THIS CODE OF PRACTICE**

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14.1.1 Definition

"Asbestos" means any of the following fibrous silicates: chrysotile (white), amosite (brown), crocidolite (blue), actinolite, anthophyllite, or tremolite.

14.1.2 Introduction

Whenever employees work with or in proximity to asbestos materials they risk of being exposed to asbestos fibers and/or contaminating work areas. This "Code Of Practice" was developed to allow DTI trained employees to work with certain types of asbestos containing materials that present a low risk of exposure.

14.1.3 Preventing exposure to asbestos materials

All worksites, such as maintenance depots, garages, offices etc. that were generally constructed prior to 1980, should be suspected of having some form of asbestos materials. Typically, asbestos materials are found in the following types of building materials: wall, ceiling and floor panels, insulation materials covering boilers and pipes, gypsum joints, acoustic products and exterior building materials etc.

Each building, where it is suspected of having asbestos containing materials, requires that a thorough assessment be conducted of all areas suspected of having asbestos materials as per section 3 of the **Code of Practice for Working with materials Containing Asbestos in NB (COPANB)**. Once we get any information confirming the existence of any material containing 1% or more of asbestos by volume, one of the following steps must be done by the employer/owner and only by trained qualified personnel as per section 8 of COPANB.

1. Remove all of the asbestos containing materials, and provide a letter stating that the building is free of all asbestos containing materials, or
2. Have any damaged materials either removed or repaired. And if there are any materials left in the building, develop an Asbestos Management Program (AMP) as per section 4 of COPANB, which require us to take the following steps:
 - a. Inform the JHSC of all findings
 - b. Ensure any damaged materials are properly cleaned up and removed
 - c. Properly repair, seal, contain any materials where it is evident they will continue to deteriorate
 - d. Prepare and maintain on site a detailed record of all asbestos remaining on site.
 - e. Notify in writing any employers (Non-DTI) who may be adjacent to areas with asbestos materials.
 - f. Educate employee who may work close to asbestos materials to not disturb it
 - g. Identify the asbestos materials in a manner that is recognizable and known to all employees
 - h. Inspect the asbestos materials on a yearly basis or sooner if conditions warrant, to check for deterioration.

14.1.4 Sampling for Asbestos Containing Materials

- Only trained personnel shall be allowed to take samples for asbestos containing materials
- The employee taking samples shall be provided with and properly wear disposable coveralls, gloves, safety glasses and a NIOSH N100 disposable respirator.
- They shall have several small clean plastic containers, such as a large pill container.
- A pair of tweezers or similar tool to grab a sample, a small spray bottle to place mist on the sample area, a marker, and a map of the building. (section 3.2 of the COPANB)
- They are to take samples from all suspect materials including old floor and ceiling tiles, wall board, pipe and boiler insulation, from all areas of the building including exterior building materials as per COPANB section 3
- Each sample is properly labeled with exact location, date, and a unique identifier number, this information would also be written on the building sampling map.

14.1.5 Types of Asbestos Operations

There are 3 classes of Asbestos operations listed in the COPANB. Class one is considered to be low risk, class two to be medium risk, and class three to be high risk. Higher class operations mean more potential risk for exposure to asbestos fibers.

DTI is limiting our trained employees to some class one operations as listed below in **Safe Work Practices or Scope of Work**: any exposure to asbestos is very dangerous and must be taken seriously even for class one tasks. The risk level is low (probability of exposure), but the hazard (potential harm) remains high.

Under no circumstances is any employee to work with asbestos or to enter an area where asbestos work is being carried out, and no supervisor shall allow an employee to work with asbestos or to enter an area where asbestos work is being carried out unless the precautions listed below have been taken.

14.1.6 Scope of Work (Work Allowed)

For DTI employees, we will limit our work with asbestos to the following types of operations:

- Inspecting known asbestos materials to make sure there has been no deterioration, damage etc.
- Removing small portions to provide access for inspection.
- Taking samples of known or suspected materials to be sent for analysis at a laboratory.
- Clean-up of small quantities of hardboard material debris containing asbestos.
- Doing minor repairs on non-friable asbestos material, which includes encapsulation, sealing or removing small pieces. (Class 1 Operations)

14.1.7 Preparation

- **Anyone working with asbestos** containing materials needs to have participated in an **Asbestos Awareness Course** or be under the direct supervision of someone who has taken this course or the equivalent.
- Employees working with asbestos must be **respirator fit tested** and wear the appropriate respiratory protective equipment, which will include a N100 disposable mask and or a reusable half mask with N100 filters, disposable coveralls and gloves.
- Supervisors shall verify that employees are competent in the use of equipment and all required personal protective equipment is worn.
- The supervisor shall verify the extent of damage and or repair, and make sure it falls within the scope of this practice and the NB COP for asbestos.
- The supervisor and or employee doing the work need to communicate to others that work will take place and they need to stay clear of the identified and marked area.

- The employee conducting the inspection, testing and or minor repair shall keep their personal protective equipment on at all times while working with or near asbestos containing materials.
- Employees must continually wear their PPE while in an area where asbestos has been disturbed, until work is completed and properly cleaned up.

14.1.8 Hired Contractors

Contractors who have knowledge and expertise working with asbestos, will be hired to perform any task beyond what our employees are trained to do safely. Contractors are all required by law to follow the WorkSafeNB Code of Practice for Working with Materials containing Asbestos and DTI's policies.

When contractors are hired there needs to be a contact representative assigned with our management team to ensure they know; the scope of the job, when they have access to the premises, after hour's work, exact location of the asbestos materials and controls to be put in place to limit exposure of those employees in vicinity of the work area. For class 2 and class 3 operations, the contractor must provide proof that asbestos fibers have not migrated out of the work area and that the work area is clear. The contractor is responsible for their employee's health and safety. DTI has the responsibility for their safety on our premises and are responsible to inform them of issues that could harm our employees or the contractor's employees.

14.1.9 Working with asbestos inside a building

- A. Besides exposing oneself the biggest concern when working with asbestos containing materials is that fibers will be allowed to migrate to other areas of the building. This then puts all others in the building at risk of exposure. For the types of jobs allowed in this Safe Work Procedure, there should not be any fibers released, as there is no work allowed with friable asbestos, and the only work allowed is doing minor repair to hardboard materials.
- B. Employees conducting the work shall ensure that the area is controlled to keep others away from the immediate work area. They should do their work when most other employees are not present if possible. You should make sure you have all materials present so the job can be done in a quick and efficient manner. The employee conducting the work shall ensure the area is fully repaired before completion. This would include placing an approved sealer over any damaged parts to ensure a good seal of any potential friable pieces.
- C. Before beginning work, visible dust is removed with a damp cloth or a vacuum equipped with a HEPA filter, from any surface in the work area, including the surface to be worked on, if the dust on that surface is likely to be disturbed.
- D. The spread of asbestos dust from the immediate work area is controlled by measures appropriate to the work to be done, including the use of drop sheets of polyethylene or other suitable material.
- E. In the case of an operation where the asbestos would be made friable, by drilling, cutting, grinding etc. the product is to be wettened, unless wetting creates a hazard or causes damage.

- F. Frequently and at regular intervals during the work and immediately upon completion of the work; (i) dust and waste containing asbestos is cleaned up and removed using a vacuum equipped with a HEPA filter, or by damp mopping; (ii) drop sheets that will be re-used are cleaned using a vacuum equipped with a HEPA filter or by damp wiping.
- G. Compressed air hoses are not used to disperse the dust.

14.1.10 Working with asbestos outside a building

There are not the same concerns with exposing others when repairing a broken piece of hardboard asbestos outdoors; however, you still have to control potential loose fibers to protect yourself and others. Use the same precautions as indoors when doing the job.

14.1.11 Controlling removed asbestos

If you removed pieces from the site, they must be properly controlled and disposed of. Place any broken pieces in a regular garbage bag if they will fit, otherwise non-friable asbestos can be placed onto the back of a truck and hauled to a regular landfill or to an approved site where construction garbage is handled. (contact your local landfill for instructions)

If a contractor has friable asbestos, it has to be taken to an approved landfill, where prearrangements have been made, place it in a 6-mil poly bag, identify it as asbestos and contact the local landfill for further instructions for disposal.

14.1.12 Managing the site

All inspections of and repairs to asbestos by DTI employees or contractors has to be documented in the asbestos management plan so that it is kept up to date. Anytime there is removal, repairs, maintenance or inspection to the asbestos you need to record this in the asbestos management plan, identifying the exact location and what work was done. This now becomes part of the yearly inspection program to verify that all of the asbestos including damaged areas, are still intact and not in need of further repair or removal.



14.1.13 Reference

- A Code of Practice for Working with Materials Containing Asbestos in New Brunswick, from Regulation 92-106 under the *Occupational Health and Safety Act*.

CHAPTER: 14

Codes of Practice

HSM-COP-2

SECTION: 14.2

Confined or Hazardous Space

Rev.1 2021

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14.2.1 Introduction

All pits, vats, tanks, voids, box girders, etc. are potentially hazardous spaces, and under certain conditions, some may be considered confined spaces. To determine whether the space is hazardous or a confined space, a “Competent Person”, or an “Entry Supervisor” as defined in the regulations*, **shall** perform an assessment before any worker can enter or work in the space.

All such spaces shall be deemed to be a confined space until the competent person determines otherwise.

The two different types of spaces have different legislative requirements. Since confined spaces expose workers to greater hazards, more legislative requirements need to be complied with in order to provide a safe environment.

Although spaces with full door access would normally not be considered confined spaces, if atmospheric or other hazards are detected in these spaces, the Health & Safety Unit recommends that principles of confined spaces be followed for employee protection.

For the purpose of this document, the term “spaces” will be used to refer to tanks, vats, scale pits, voids on ferries, box girders, culverts, and other restricted locations.

14.2.2 Definition

A “confined space”

- a) is enclosed or partially enclosed

- b) is not designed or intended for continuous human occupancy
- c) has restricted access or egress, which can complicate first aid, evacuation and rescue
- d) is or may become hazardous to a person entering it because of its design, construction, location, atmosphere or the materials or substances in it or other conditions.

***If the space you are assessing does not meet all 4 of these requirements it may not be a true confined space however it does not mean there are no hazards, you still have to assess the hazards and take adequate steps to ensure the work can be done safely. We would call this a “hazardous space”.**

14.2.3 Personnel Required for a Confined Space Entry

- 1. Competent Person (Entry Supervisor)
- 2. Attendant/Rescue Person(s)
- 3. Entrant(s)

Depending on the assessment by the Competent Person (Entry Supervisor there may be a need for 3 or more personnel on site). If the Competent Person determines the space to be Hazardous, the Competent Person will determine the number of persons needed depending on the hazard assessment.

14.2.4 Competent Person (Entry Supervisor) Shall

- Be trained in Confined Space Entry, Exit and Rescue, along with Hazard Identification, Risk Assessment and controls
- Oversee the confined space entry and conduct a thorough hazard assessment outside and inside the confined space, and that appropriate measures are taken to ensure the health and safety of anyone entering the space
- Ensure that all persons involved in a confined space entry are trained and or instructed to safely carry out their role.
- Ensure that all required tools/equipment including for those for rescue are on site and ready for use.
- Ensure there is an effective communication system in place for the entrant and attendant, plus communication available to outside emergency agencies.
- Identify appropriate personal protective equipment to be worn by entrants, and other involved in the entry and ensure all personal protective equipment is in good shape and used properly.
- Ensure all atmospheric testing has been completed using testing equipment that has been functionally tested with sensors appropriate for the hazards identified or anticipated.

- Ensure that Lockout/Tagout procedures are applied to any energized equipment that creates a hazard while working in the space.
- Select equipment that does not use-up oxygen or produce harmful emissions (i.e. gases, fumes, particles).
- Ensure work is carried out in a safe manner as per Department's "Health and Safety Manual" and as per applicable legislations.
- Record all findings on the Confined/Hazardous Space Entry Permit report.

14.2.5 The Attendant(s)/Rescue Person(s) Shall

- Be trained in confined space procedures, in both entry and non-entry rescue procedures for the type of confined space and or hazardous space being entered.
- Be competent in the type of rescue equipment on site to perform a rescue.
- Have all required rescue equipment on site and ready to be used prior to a confined space entry and or a hazardous entry as required by the permit.
- Holds a valid certificate on standard first aid and CPR, from a recognized training agency in NB.
- Where there are multiple entrants, maintain a sign on/out sheet.
- Maintain effective communication with entrant(s).
- Remain in the immediate vicinity while entrants are in the space.

14.2.6 The Entrant(s) Shall

- Participate in a confined space awareness course, and or be informed in confined space legislation.
- Be informed of the emergency response plan.
- Review the Confined/Hazardous Space Entry Permit prior to entry
- Be advised of the hazards and controls plus all required PPE needed to work in the confined space by the competent person.
- Don a safety harness of type E as required by the permit, the rescue person and competent person's requirements.
- Understand under what circumstances and under who's authority the space is to be evacuated.

14.2.7 Performing a Hazard Assessment

1. Install adequate warning signs and barricades to protect workers from any form of traffic hazard or other hazard that may exist.
2. Ensure that any liquids or free flowing solids are removed or are controlled in such a way so they do not pose a threat to entrants, and that any pipes entering the space containing liquids or free flowing solids have been disconnected or blanked off.

3. Open hatches, doors, turn on fans, or install portable fan to ventilate space.
4. Inspect the outside of the space for the presence or signs (i.e. stains, odor) of chemicals, of potential airborne contaminants (i.e. bird or mice droppings), and of any other hazard.
5. If evidence is found of any of the above, take appropriate action, which could include purging, cleaning, ventilating etc.
6. Using a bump tested atmospheric testing instrument(s), conduct tests through opening(s) and record results on the DTI Confined/Hazardous Space Entry Form.
7. Identify all other types of hazards.
8. Atmospheric results should indicate an Oxygen content between 19.5% and 23%, a lower explosive limit (LEL) of 0%, and Toxic contaminants are at levels that could cause adverse short term health effects, which should be at or below the Threshold Limit Value (TLV) as per the ACGIH TLV Booklet referenced in the regulation 91-191.
9. Where the Oxygen levels are maintained between 19.5% and 23% and the LEL cannot be maintained under 50% no one may enter or work in the space, if the LEL is between 11% and 50% inspection and cleaning so long as it does not create any source of ignition can be performed, where the LEL is maintained between 5% and 10% cold work using non sparking tools may be performed, and if the LEL is maintained between 0 and 5% regular work including hot work may be performed.
10. If oxygen levels cannot be maintained between 19.5 and 23% entry has to be restricted to professionals with training in SCBAs.
11. Complete the hazard assessment and fill out "Confined/Hazardous Space Entry Permit".
12. Competent person (entry supervisor) to review results of the "Confined/Hazardous Entry Permit" with all staff and discuss work to be done.
13. Review emergency procedures to evacuate the space in the event of an emergency (i.e. smoke, etc.).
14. If an atmospheric hazard is detected and cannot be maintained below the TLV, the competent person will make a determination as to the level of the TLV and provided the oxygen levels are maintained between 19.5 and 23% the entrant(S) can use respiratory protection. The entrant(s) would have to be fit tested and have the proper filters for the contaminate. To help maintain lower levels of an atmospheric hazard, continuous ventilation should be in place.

14.2.8 Entering a "Hazardous Space"

1. The Competent Person (Entry Supervisor) shall ensure all personnel and equipment including emergency rescue equipment are on site and ready to be used, for the type of space and equipment needed to safely remove a person or persons from the space in a timely manner.
2. When entering from the top through a restrictive hatch, entrants are to wear a full body class E harness. A tripod and rescue winch or other acceptable emergency evacuation equipment **must** be set up on site and ready for use. Entrants are to be

secured to the lifeline and winch unless there are multiple entrants, then other arrangements will be determined by the competent person and attendant.

3. When entering through a less restrictive access such as a hatch with steps, or larger hatch openings like some bridge box girders the competent person will determine the need for attendant(s) or a rescue team, the number required, the tools to be used for rescue and any specific training to effect rescue.
4. If conditions, that could create a hazardous situation, change inside or outside the space, the space **shall** be evacuated, and the competent person **shall** do a re-assessment before re-entering.
5. The competent person may determine that a person can enter a hazardous space with unrestricted access and egress to conduct inspection and or light duty work of a short duration, provided that the work alone procedure is in place and rescue can respond within 30 minutes to the site.

14.2.9 Entering a “Confined Space”

1. If entry **must** proceed, the competent person **shall** strictly follow OHS regulation 91-191 part XVII, sections 262 to 272.
2. Competent Person (Entry supervisor) will authorize the entry, once appropriate safety systems are in place.
3. Once the initial assessment has been completed and the Confined/Hazardous Space Entry Permit has been filled out, the competent person will determine the specifics of the entry and any limitations placed on the work that can be done.
4. The competent person will ensure there is effective communication between the entrant(s) and the rescue person or attendant outside.
5. The competent person will ensure everyone involved in the entry signs the entry permit and that the information on the permit is reviewed with all parties involved.
6. Anyone required to wear a full body harness will ensure it is class E for rescue.
7. Where a full body harness and fall arrest protection are required, ensure that a proper retrieval system is in position. An attachment point of suitable strength, tripod or davit arm must be provided outside the space if required. The use of a harness to facilitate rescue should be considered for all entrants. The harness may be worn beneath coveralls if necessary to avoid entanglement.
8. Any electrical equipment used in a solidly grounded space, a wet space, or where the surrounding area is wet must be bonded to ground and protected by a Ground Fault Circuit Interrupter (GFCI), be double insulated, be battery operated OR be bonded to ground and operate at less than 30 volts and 100 volt-amps.
9. If the work that is being carried out in the space changes, the confined space must be re-assessed to ascertain whether the conditions of the permit have changed.
10. No compressed gas cylinders, other than breathing air, shall be taken into the confined space.
11. Do not leave tools and materials around the opening to the confined space, where they might fall or be pushed in.

12. Workers shall be made aware of the hazards identified and trained in the safe work practices for Enclosed Space entry.
13. Workers assigned to work in Confined Spaces shall be informed of and be able to understand the results of the air quality tests.
14. All entrants shall ensure their name is recorded by the attendant on entering the confined space and ensure that the attendant immediately records their exit when they leave the space. Where there are multiple entrants, having name tags or names on clothing or hard hats is an asset.
15. If welding, burning or cutting is to take place, ensure that:
 - a) Air quality is continuously monitored, as close to the entrant(s) as possible, to ensure that the Lower Explosive Limit (LEL) remains at less than 5%, Oxygen levels remain within acceptable levels (19.5 to 23%) and any toxic gases remain below the respective TLVs.
 - b) When operations are stopped for 10 minutes or more, all fuel/gas and oxygen supply lines are removed from the space or are disconnected outside the space.
 - c) Welding hoses and valves are periodically checked for leakage.
 - d) Effective ventilation must be used.
16. If the rescue of an injured or unconscious worker would be hindered due to: limited space in or near the confined space, and/or the space having only 1 entry/exit, and/or the size of the entry/exit, and/or ladders and scaffolding in or at the entrance of the confined space, then tested emergency rescue procedures (Rescue Plan) and equipment must be readily available to enable rescue of personnel from that space. The Rescue Plan shall stipulate the minimum number of rescuers required on site for each rescue.

14.2.10 References

- Occupational Health & Safety regulation 91-191, Part XVII, Sections 262-272, 111(3).
- “Competent Person” definition, Occupational Health & Safety regulation 91-191, Section 2.
- Occupational Health & Safety regulation 92-133 for working alone.

CHAPTER: 14	Confined/Hazardous Space	HSM-F-14-2-1
SECTION: 14.2	Confined/Hazardous Space Entry Permit	Rev.1 2022

Competent Person performing assessment:	Date:
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Site location:	Description:
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Purpose of entry:

Supervisor(s) in charge of crews	Type of crew (welding, plumbing, etc)	Phone #

Permit duration:

Typical Hazards (Put N/A if item doesn't apply)	Y/N	Control measures	PPE and Rescue (Put N/A if item doesn't apply)	Y/N	Notes
Vehicles/Machines			Hard hat, Safety Boots, Safety Glasses, Hearing Protection, coveralls, gloves		
Energized machines/equipment,			Respirator(s) (Air Purifying)Air Supplied, Fit tested		
Electricity			Full Body Harness class "E"		
Slip/Trip/Fall			Lifelines		
Inadequate Lighting			Emergency Retrieval system/ Rescue Equipment		
Cutting/welding			Standby safety personnel		
Hazardous Products			Air supply system		
Influx of liquids or gasses			First aid kit		
Noise & Vibration					
Hot or Cold Environment					
Biological agents, (Bird Droppings, mold etc.)					
Falling objects					
Other					

Type of Atmospheric Hazards	Y/N	Control measures & PPE
Oxygen Deficient		Test, ventilate, purge, find source if contaminant detected, substitute a product, use non sparking tools, do only inspection, see list of PPE above.
Oxygen enriched		
Flammable		
Toxic		

AIR MONITORING								
Substance Monitored	Permissible Levels		Monitoring Results					
			1	2	3	4	5	6
Hours	-							
Percent Oxygen	19.5% to 23.5%							
LEL/LFL	*0%							
	TLV	STEL						
	TLV	STEL						
	TLV	STEL						
Atmospheric Tester Name		Bump tested Y/N	Instrument(s) Used Model# etc.			Serial# or Unit		Date of Last Calibration
REMARKS: _____								

*For levels greater than 0% and less than 50%, see section 267 of OHS Regulation 91-191.

<p>Communication procedures (including equipment):</p> <p>_____</p> <p>_____</p>
<p>Attendant: Rescue procedures; (Description of who will perform rescue and what methods they will use)</p> <p>_____</p> <p>_____</p>

ATTENDANTS AND ENTRANTS (print and sign name acknowledging you understand the job and hazards)

Attendant(s) ID# or name	Entrant(s) ID# or name

REMARKS:

Competent Person declares space entry to be: **Confined** **Hazardous**
 Print/Sign and phone number: _____

EMERGENCY NUMBERS

Service/ Person/ Place	Telephone number	Service/ Person/ Place	Telephone number
Ambulance, fire, police			
Backup to Rescue Team			
Main Office			

CHAPTER: 14

Codes of Practice

HSM-COP-3

SECTION: 14.3

Inclement Weather

Rev.1 2021

THIS CODE OF PRACTICE IS APPLICABLE AT ALL TIMES

ALL SUPERVISORY PERSONNEL AND THEIR DESIGNATES ARE RESPONSIBLE FOR IMPLEMENTATION OF THIS CODE OF PRACTICE

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14.3.1 General

DTI crews work in a variety of environments, in remote areas. Awareness of the weather and its potential impact on health and safety is vital.

This guideline provides direction on safety issues related to weather conditions, including thunderstorms, extreme cold and heat, and excessive winds.

The COP also includes information on first aid procedures for cold temperature exposure and heat-related

14.3.2 Cold Stress

Anyone working in a cold environment may be at risk of cold stress. Some workers may be required to work outdoors in cold environments and for extended periods, Cold stress can be encountered in these types of work environment. The following frequently asked questions will help workers understand what cold stress is, how it may affect their health and safety, and how it can be prevented.

- How cold is too cold?

A cold environment forces the body to work harder to maintain its temperature. Whenever temperatures drop below normal and wind speed increases, heat can leave your body more rapidly.

When most people think of hypothermia, they think of frigid temperatures or blizzard like conditions. Hypothermia occurs most often in the spring and fall, rather than winter.

Four factors contribute to cold stress: cold temperatures, high or cold wind, dampness and cold water. A cold environment forces the body to work harder to maintain its core temperature of 98.6°F. Cold air, water, and snow all draw heat from the body. So, while it is obvious that below freezing conditions combined with inadequate clothing could bring about cold stress, it is important to understand that it can also be brought about by temperatures in the 0-10 c coupled with rain and/or wind.

Wind chill is the combination of air temperature and air movement. The higher the wind speed and the lower the temperature in the work environment, the greater the danger. If weather information is not available, the following signs may help to estimate wind speeds in the field:

- 8 km/h (5 mph): light flag moves
- 16 km/h (10 mph): light flag fully extended
- 24 km/h (15 mph): raises newspaper sheet
- 32 km/h (20 mph): causes blowing and drifting snow

Wind chill is the temperature your body feels when air temperature and wind speed are combined. For example, when the air temperature is 40°F, and the wind speed is 35 mph, the effect on the exposed skin is as if the air temperature was 28°F.

Cold stress occurs by driving down the skin temperature and eventually the internal body temperature (core temperature). This may lead to serious health problems, and may cause tissue damage, and possibly death.

- What are the risk factors that contribute to cold stress?

Some of the risk factors that contribute to cold stress are

- Wetness/dampness, dressing improperly, and exhaustion
- Predisposing health conditions such as hypertension, hypothyroidism, and diabetes
- Poor physical conditioning

- How does the body react to cold conditions?

When in a cold environment, most of your body's energy is used to keep your internal temperature warm. Over time, your body will begin to shift blood flow from your extremities (hands, feet, arms, and legs) and outer skin to the core (chest and abdomen). This allows exposed skin and the extremities to cool rapidly and increases the risk of frostbite. When the body can no longer maintain core temperature by constricting blood vessels, it shivers to increase heat production. Maximum severe shivering develops when the body temperature has fallen to 95°F. Hypothermia becomes an issue at this point.

- What are the most common cold induced illnesses/injuries?

- Hypothermia
- Frostbite
- Trench Foot

14.3.2 What is hypothermia?

Hypothermia occurs when body heat is lost faster than it can be replaced and the normal body temperature (98.6°F) drops to less than 95°F. Hypothermia is most likely at very cold temperatures, but it can occur even at cool temperatures (above 40°F), if a person becomes chilled from rain, sweat, or submersion in cold water.

Risk Factors:

Anyone working in a cold environment may be at risk for hypothermia. However, older people may be at more risk than younger adults, since older people are not able to generate heat or regulate body temperature as quickly.

Symptoms:

Stage	Core Temperature	Signs and Symptoms
	37.2-36.1°C (99 - 97°F)	Normal, shivering may begin.
Mild Hypothermia	36.1-35°C (97 - 95°F)	Cold sensation, goose bumps, unable to perform complex tasks with hands, shivering can be mild to severe, hands numb.
	35-33.9°C (95 - 93°F)	Shivering, intense, muscles incoordination becomes apparent, movements slow and labored, stumbling pace, mild confusion, may appear alert. Use sobriety test, if unable to walk a 9 meter (30 foot) straight line, the person is hypothermic.
Moderate Hypothermia	33.9-32.2°C (93 - 90°F)	Violent shivering persists, difficulty speaking, sluggish thinking, amnesia starts to appear, gross muscle movements sluggish, unable to use hands, stumbles frequently, difficulty speaking, signs of depression, withdrawn.
	32.2-30°C (90 - 86°F)	Shivering stops, exposed skin blue or puffy, muscle coordination very poor, inability to walk, confusion, incoherent/irrational behavior, but may be able to maintain posture and appearance of awareness
Severe Hypothermia	30-27.8°C (86 - 82°F)	Muscle rigidity, semiconscious, stupor, loss of awareness of others, pulse and respiration rate decrease, possible heart fibrillation.
	27.8-25.6°C (82 - 78°F)	Unconscious, a heartbeat and respiration erratic, a pulse may not be obvious.
	25.6-23.9°C (78 - 75°F)	Pulmonary edema, cardiac and respiratory failure, death. Death may occur before this temperature is reached.

First Aid

Proper treatment depends on the severity of the hypothermia.

Mild hypothermia:

- move to warm area
- stay active
- remove wet clothes and replace with dry clothes or blankets, cover the head

- drink warm (not hot) sugary drinks such as sports drinks (avoid caffeinated beverages and alcohol)

Moderate hypothermia:

All of the above, plus

- call 911 from a phone or cell phone for an ambulance
- cover all extremities completely
- place warm objects, such as hot packs or water bottles on the victim's head, neck, chest and groin

Severe hypothermia:

- Call 911 from a phone or cell phone for an ambulance
- Handle the victim carefully. Sudden movement or rough handling can upset heart rhythms.
- Do not attempt to re-warm -- the victim should receive treatment in a hospital

14.3.3 What is frostbite?

Frostbite is an injury to the body that is caused by freezing of the skin and underlying tissues. The lower the temperature, the more quickly frostbite will occur. Frostbite typically affects the extremities, particularly the feet and hands. Amputation may be required in severe cases.

Frostbite occurs when layers of skin tissue freeze. In severe cases, amputation of the frostbitten area may be required. Frostbite can be caused by exposure to severe cold or by contact with extremely cold objects. In fact, frostbite occurs more readily from touching cold metal objects because heat is rapidly transferred from skin to metal.

Frostbite typically affects the extremities, particularly the face, ears, fingers and toes. Initial symptoms vary, but typically include skin that looks waxy and feels numb. Once damaged, tissues will always be more susceptible to frostbite in the future.

Signs and Symptoms of Frostbite:

- Cold, tingling, stinging or aching feeling in the frostbitten area, followed by numbness
- Skin color turns red, then purple, then white or very pale skin, cold to the touch
- Hard or blistering skin in severe cases

Treatments:

- Follow the recommendations described above for hypothermia.
- Do not rub the affected area to warm it because this action can cause more damage.

- Do not apply snow/water. Do not break blisters.
- Loosely cover and protect the area from contact.
- Do not try to rewarm the frostbitten area before getting medical help; for example, do not place in warm water. If a frostbitten area is rewarmed and gets frozen again, more tissue damage will occur. It is safer for the frostbitten area to be rewarmed by medical professionals.
- Give warm sweetened drinks, if the person is alert. Avoid drinks with alcohol.

14.3.4 What is immersion/trench foot?

Trench Foot or immersion foot is caused by prolonged exposure to wet and cold temperatures. It can occur at temperatures as high as 60°F if the feet are constantly wet. Non-freezing injury occurs because wet feet lose heat 25-times faster than dry feet. To prevent heat loss, the body constricts the blood vessels to shut down circulation in the feet. The skin tissue begins to die because of a lack of oxygen and nutrients and due to the buildup of toxic products.

Signs and symptoms:

- Tingling, itching or burning sensation
- Blisters

Treatment:

- Soak feet in warm water, then wrap with dry cloth bandages
- Drink a warm, sugary drink

14.3.5 How can cold stress be prevented?

Planning for work in cold weather is the most important defense. Wearing appropriate clothing and being aware of how your body is reacting to the cold are important to preventing cold stress. Avoiding alcohol, certain medications and smoking can also help to minimize the risk.

Protective Clothing

Wearing the right clothing is the most important way to avoid cold stress. The type of fabric also makes a difference. Cotton loses its insulation value when it becomes wet. Wool, on the other hand, retains its insulative qualities even when wet. The following are recommendations for working in cold environments:

- Wear at least three layers of clothing:

- a) An **outer** layer to break the wind and allow some ventilation (like Gortex® or nylon)
 - b) A **middle** layer of down or wool to absorb sweat and provide insulation even when wet
 - c) An **inner** layer of synthetic weave to allow ventilation
- Wear a hat. Up to 40% of body heat can be lost when the head is left exposed.
 - Wear insulated boots or other footwear sized appropriately. Tight-fitting footwear restricts blood flow, as can wearing too many socks.
 - Wear insulated gloves sized appropriately, especially when contacting metallic surfaces and tool handles.
 - If you get hot while working, open your jacket, but keep hats and gloves on.
 - Keep a change of dry clothing available in case work clothes become wet.
 - Do not wear tight clothing which can restrict blood flow. Loose clothing allows better ventilation.

Work Practices:

- *Drinking:* Drink plenty of liquids, avoiding caffeine and alcohol. It is easy to become dehydrated in cold weather.
- *Work Schedule:* If possible, heavy work should be scheduled during the warmer parts of the day. Take breaks out of the cold.
- *Buddy System:* Try to work in pairs to keep an eye on each other and watch for signs of cold stress. Victims of hypothermia may not recognize symptoms.

Engineering Controls

Some engineering controls are available to reduce the risk of cold stress:

- Radiant heaters may be used to warm workers.
- Shield work areas from drafts or wind.
- Use insulating material on equipment handles when temperatures drop below 30° F.

Training

Employees and supervisors need to be trained to be able to detect early signs of cold stress. Supervisors should watch for signs of cold stress and allow workers to interrupt their work if they are extremely uncomfortable. Supervisors should also ensure that work schedules allow appropriate rest periods and ensure liquids are available. They should use appropriate engineering controls, personal protective equipment and work practices to reduce the risk of cold stress.

14.3.6 Wind Chill Hazards and What to Do

The following chart from Environment Canada describes the health concerns and potential for frostbite when being outside at various temperatures.

NOTE: Environment Canada's recommendations consider all individuals who may be outside, including young children and the elderly. These recommendations may not match exposure values developed by other organizations that have specifically made recommendations for working adults who are in good general health.

Wind Chill	Exposure Risk	Health Concerns	What to Do
0 to -9	Low risk	<ul style="list-style-type: none"> Slight increase in discomfort 	<ul style="list-style-type: none"> Dress warmly Stay dry
-10 to -27	Moderate risk	<ul style="list-style-type: none"> Uncomfortable Risk of hypothermia and frostbite if outside for long periods without adequate protection. 	<ul style="list-style-type: none"> Dress in layers of warm clothing, with an outer layer that is wind-resistant. Wear a hat, mittens or insulated gloves, a scarf and insulated, waterproof footwear. Stay dry. Keep active
-28 to -39	High Risk: exposed skin can freeze in 10 to 30 minutes	<ul style="list-style-type: none"> High risk of frostnip frostbite: Check face and extremities for numbness or whiteness. High risk of hypothermia if outside for long periods without adequate clothing or shelter from wind and cold. 	<ul style="list-style-type: none"> Dress in layers of warm clothing, with an outer layer that is wind-resistant Cover exposed skin Wear a hat, mittens or insulated gloves, a scarf, neck tube or face mask and insulated, waterproof footwear Stay dry Keep active
-40 to -47	Very high risk: exposed skin can freeze in 5 to 10 minutes (In sustained winds over 50 km/h, frostbite can occur faster than indicated.)	<ul style="list-style-type: none"> Very high risk of frostbite: Check face and extremities for numbness or whiteness. Very high risk of hypothermia if outside for long periods without adequate clothing or shelter from wind and cold. 	<ul style="list-style-type: none"> Dress in layers of warm clothing, with an outer layer that is wind-resistant. Cover all exposed skin. Wear a hat, mittens or insulated gloves, a scarf, neck tube or face mask and insulated, waterproof footwear. Stay dry Keep active.
-48 to -54	Severe risk: exposed skin can freeze in 2 to 5 minutes (In sustained winds	<ul style="list-style-type: none"> Severe risk of frostbite: Check face and extremities frequently for numbness or whiteness. Severe risk of hypothermia if outside for long periods without adequate clothing or shelter from 	<ul style="list-style-type: none"> Be careful. Dress very warmly in layers of clothing, with an outer layer that is wind-resistant. Cover all exposed skin

	over 50 km/h, frostbite can occur faster than indicated.)	wind and cold.	<ul style="list-style-type: none"> • Wear a hat, mittens or insulated gloves, a scarf, neck tube or face mask and insulated, waterproof footwear. • Be ready to cut short or cancel outdoor activities. • Stay dry. • Keep active.
-55 and colder	Extreme risk: exposed skin can freeze in less than 2 minutes	<ul style="list-style-type: none"> • DANGER! Outdoor conditions are hazardous. 	<ul style="list-style-type: none"> • Stay indoors.

From: ["Wind Chill Index" Environment Canada \(2017\)](#)

For working populations, the American Conference of Governmental Industrial Hygienists (ACGIH) also provide recommendations. These recommendations were developed to protect workers from the severest effects of cold stress (hypothermia and frostbite). The recommendations also describe exposures to cold working conditions under which it is believed nearly all workers can be repeatedly exposed without adverse health effects. Included in these recommendations is the following wind chill temperature index.

14.3.7 Wind Chill Temperature Index

WIND CHILL TEMPERATURE INDEX Frostbite Times are for Exposed Facial Skin												
Air Temperature (°C)												
Wind Speed (km/h)	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45	-50
5	4	-2	-7	-13	-19	-24	-30	-36	-41	-47	-53	-58
10	3	-3	-9	-15	-21	-27	-33	-39	-45	-51	-57	-63
15	2	-4	-11	-17	-23	-29	-35	-41	-48	-54	-60	-66
20	1	-5	-12	-18	-24	-30	-37	-43	-49	-56	-62	-68
25	1	-6	-12	-19	-25	-32	-38	-44	-51	-57	-64	-70
30	0	-6	-13	-20	-26	-33	-39	-46	-52	-59	-65	-72
35	0	-7	-14	-20	-27	-33	-40	-47	-53	-60	-66	-73
40	-1	-7	-14	-21	-27	-34	-41	-48	-54	-61	-68	-74
45	-1	-8	-15	-21	-28	-35	-42	-48	-55	-62	-69	-75
50	-1	-8	-15	-22	-29	-35	-42	-49	-56	-63	-69	-76
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80	-3	-10	-17	-24	-31	-38	-45	-52	-60	-67	-74	-81

FROSTBITE GUIDE

Increasing risk of frostbite for most people in 10 to 30 minutes of exposure
High risk for most people in 5 to 10 minutes of exposure
High risk for most people in 2 to 5 minutes of exposure
High risk for most people in 2 minutes of exposure or less

https://www.ccohs.ca/oshanswers/phys_agents/cold_working.html

14.3.8 The Work Warm-Up Schedule

The Work Warm-Up Schedule shows the warm-up breaks required for working in cold conditions and the normal breaks to be provided every two hours. The schedule allows additional breaks for workers as the wind velocity at the work site increases and/or the temperature drops.

Warm-up breaks should begin when the temperature reaches -26°C (-15°F) with winds of 16km/h (10mph) or greater. All non-emergency work should stop by the time the temperature

reaches -43°C (-45°F) if there is no noticeable wind. If there is wind, use the chart below for advice.

NOTE: The information in the chart applies to moderate to heavy physical work activity in any four-hour period. At the end of the four-hour period an extended break in a warm location is expected. Warm-up breaks are assumed to provide 10 minutes in a warm environment. These guidelines apply to workers wearing dry clothing.

Sunny Sky Air Temperature		No noticeable wind		Wind 8 km/h (5 mph)		Wind 16 km/h (10 mph)		Wind 24 km/h (15 mph)		Wind 32 km/h (20 mph)	
oC below zero *	oF below zero *	Max. work period	Number of breaks**	Max. work period	Number of breaks**	Max. work period	Number of breaks**	Max. work period	Number of breaks**	Max. work period	Number of breaks**
26 to 28	15 to 19	120 minutes	1	120 minutes	1	75 minutes	2	55 minutes	3	40 minutes	4
29 to 31	20 to 24	120 minutes	1	75 minutes	2	55 minutes	3	40 minutes	4	30 minutes	5
32 to 34	25 to 29	75 minutes	2	55 minutes	3	40 minutes	4	30 minutes	5	Non-emergency work should stop	
35 to 37	30 to 34	55 minutes	3	40 minutes	4	30 minutes	5	Non-emergency work should stop			
38 to 39	35 to 39	40 minutes	4	30 minutes	5	Non-emergency work should stop					
40 to 42	40 to 44	30 minutes	5	Non-emergency work should stop							
43 and below	45 and below	Non-emergency work should stop									

* All temperatures are approximate.

** Number of breaks: This includes a normal break after 2 hours and the number of additional warm-up breaks needed.

<https://www.saskatchewan.ca/business/safety-in-the-workplace/hazards-and-prevention/safety-in-professions-and-industry/working-outdoors>

14.3.9 Heat Stress

Because of potentially serious health effects, OHS legislation and Department standards require the protection of workers from heat stress. Therefore, workers exposed to work conditions that may lead to heat illnesses must be adequately protected.

Supervisors and managers shall implement adequate control measures to provide the most effective protection against heat stress as indicated in the next section. Supervisors should use this guideline to plan work according to forecasted hot weather. Also, since weather can change quickly, it is likely that control measures may need to be changed or adjusted during the work period.

Workers shall follow all control measures implemented at their worksite by their supervisors or managers. The standards are established to keep workers healthy and prevent heat related illnesses.

Control Measures

Adequate protection of workers should include, a “**Rest Period**” and any of the applicable control measures listed in “**Additional General Control Measures**” below.

To determine the “**duration of a rest period**”, supervisors/ managers should follow the following steps. First, get the **Humidex** (forecasted or current) for the general area. This can be obtained from Environment Canada’s web site or from another reliable source of weather information. Once you have the Humidex, look at the left column of Table 1 and locate in which “**Humidex Range**” it falls into. Finally, look in the right column on the corresponding line to get the duration or “**Minimum Rest Period**”. If Humidex is not available, but temperature is, follow the same process with Table 2.

It should be noted that Humidex is preferred over temperature, because it takes into account the effect of humidity. Therefore, Table 2 should only be used when Humidex is not available or below 35.

Supervisors should be aware that the temperature at their worksite may be higher or lower than the regional temperature from Environment Canada. Thus, if workers show **signs & symptoms** (i.e. rash, cramps, heavy sweating, nausea, fatigue, breathing rapidly, dizziness) or do not recuperate during a rest period, the supervisor should increase the duration of the rest period more than what is recommended in the tables. Also, a worker with a **risk factor** such as a medical condition, heavy clothing or a physically demanding task may need longer rest periods or other control measures such as cool water for hands and forearms.

Rest Periods

Increasing the **frequency of** may be another control measure to consider. This may make it easier to apply a rest period to certain work situations. For example, a rest period could be 10 minutes every half hour instead of 20 continuous minutes every hour.

TABLE 1

Humidex Range	Minimum Rest Period Every Hour
Humidex 35 to 37	Provide 10 minutes of rest
Humidex 38 to 40*	Provide 20 minutes of rest
Humidex 41 to 43*	Provide 30 minutes of rest
Humidex 44 and over*	Provide continuous relief & continuous monitoring of workers, or redirect to other duties, or cease work activities.

TABLE 2

Temperature Range	Minimum Rest Period Every Hour
30 to 31 (with humidity < 60%)	Provide 10 minutes of rest
32 to 33 (with humidity < 50%)*	Provide 20 minutes of rest
34 to 35 (with humidity < 50%)*	Provide 30 minutes of rest
36 and over*	Provide continuous relief & continuous monitoring of workers, or redirect to other duties, or cease work activities.

* Remind workers to drink at least 1 cup of water every 20 minutes

Additional general control measures to follow:

- Ensure that each worker has an adequate supply of cool drinking water.
- Remind workers to drink extra water.
- Remind workers to use sunscreen with a minimum SPF of 15 when necessary.
- Remind workers of signs & symptoms of heat stress.
- Provide shaded rest areas if possible.
- Remind workers to wear light cotton shirts & pants.
- Plan work tasks in advance.
- Do labor intensive work during cool part of day if possible.
- Do shaded work during hot part of day if possible.
- Provide mechanical aids for material handling where possible.
- Rotate worker tasks if possible or reduce the work pace.
- First Aider(s) must be available for consultation(s).

Note: Please refer to section 3.4.1 for “a summary sheet” on Heat Stress control measures.

Potential Causes of Heat Stress

Different sources of risk factors that may cause heat stress include: environmental; work; and individual or personal. Although it is possible that a single factor can cause heat stress, a combination of factors can significantly increase the chance of it occurring.

Factors cause heat stress by breaking down a person’s natural cooling system which maintains our internal body temperature at 37°C. The following table lists primary factors with their sources.

Sources	Risk Factors
Environment	<ul style="list-style-type: none"> High air temperature, high humidity, lack of air movement, radiant heat.
Work	<ul style="list-style-type: none"> Physically demanding tasks, hot equipment, heavy clothing or equipment such as a respirator, shift duration, fast work pace.
Individual or personal	<ul style="list-style-type: none"> Medical & physical conditions, use of medications, skin disorders, age, alcohol & caffeine, lack of acclimatization, dehydration.

14.3.10 Heat Illnesses

The following table summarizes normally reported symptoms of heat illnesses and action to be taken in each case. Individuals may experience different symptoms. Any symptom of feeling unwell should not be ignored. First aiders should be consulted as required. Workers should be aware that they can experience symptoms after they have left the worksite.

Illness & Symptoms	Caused by	Treatment
<u>Heat Rash (prickly heat)</u> <ul style="list-style-type: none"> Tingling & burning of the skin; Red itchy rash. 	<ul style="list-style-type: none"> Plugged sweat glands. 	<ul style="list-style-type: none"> Change into dry clothes. Keep skin clean. Rest in a cool place.
<u>Heat Cramps</u> <ul style="list-style-type: none"> Painful spasms of muscles. 	<ul style="list-style-type: none"> Loss of salt through sweating. 	<ul style="list-style-type: none"> Rest briefly and cool down. Gentle massage of muscle. Eat salt-containing foods or electrolyte-containing sports drink. (unless to be avoided for medical reasons)

<p><u>Fainting;</u></p> <ul style="list-style-type: none"> • Sudden fainting; • Cool moist skin; • Weak pulse. 	<ul style="list-style-type: none"> • Not enough blood flow to the brain, heart attack or other illness. 	<ul style="list-style-type: none"> • Report to first aider. • Lie down in a cool place. • Assess need for CPR. • Offer sips of cool water & apply cool compresses.
<p><u>Heat Exhaustion</u></p> <ul style="list-style-type: none"> • Heavy sweating, very thirsty, tired, dizzy, breathing rapidly; • Slow weak pulse or fast pulse of 160 to 180. • Can lead to unconsciousness, coma and death. 	<ul style="list-style-type: none"> • Fluid loss & inadequate salt & water intake. • Body temperature > 38°C. 	<ul style="list-style-type: none"> • Report to first aider. • Lie down in a cool shaded or air-conditioned place with knees raised or feet raised slightly. Loosen or remove excess clothing. • Drink cool, not cold, fluids or sports drink containing electrolytes. • Fan & spray with cool water. • Call an ambulance if the person's condition does not improve or worsens.
<p><u>Heat Stroke</u></p> <ul style="list-style-type: none"> • Weakness, hot dry red skin, fast pulse, confusion, headache or dizziness. • Person may pass out, have convulsions and die. • Can kill a person quickly! 	<ul style="list-style-type: none"> • Absence of sweating, • Body temperature > 41°C. 	<ul style="list-style-type: none"> • <u>CALL AN AMBULANCE</u> • Report to first aider. • Move person in a cool shaded or air-conditioned place. • Remove excess clothing. • Cool person with damp sheets or by spraying with cool water. • Direct air onto the person. • Offer sips of cool water, if the person is conscious.

References

- Occupational Health Clinics for Ontario Workers Inc., “Humidex Based Heat Response Plan” (May 2011).
- Occupational Health and Safety Regulation 91-191, sections 22 & 23.
- WorkSafeNB Risk Alert “Heat Stress Can Kill” (July 2010)
- WorkSafeNB News Release “Heat Stress Can Kill” (July 2009)
- WorkSafeNB Risk Alert “Working Outdoors”, do you have everything under the sun?” (July 2010)

14.3.11 Lightning

Lightning kills more Canadians than hail, wind, rain and tornadoes combined. Each year lightning kills approximately 10 Canadians and injures approximately 100 – 150 people. A lightning bolt is a million times more powerful than household current and carries 100 million volts of electricity. Lightning bolts can travel 220,000 kilometers per hour and can exceed 30,000 Celsius, which is six times hotter than the surface of the sun. The average length of a lightning bolt is 10 kms long and these storms can move at 40 kms/hr. Lightning can strike without rain. Most lightning fatalities and injuries occur when people are caught outdoors without shelter. People who have been struck by lightning do not carry an electrical charge and can be safely handled.

General Practices

30-30 RULE:

- 30 Seconds: Count the seconds between seeing the lightning flash and hearing the thunder. Each second represents about 300 meters. If this time is 30 seconds or less, then the lightning storm is less than 10kms away and there is an 80% chance that the next strike will happen within that 10 kms next.
- 30 Minutes: After seeing the last lightning flash or thunder clap, wait 30 minutes before leaving shelter. More than half of lightning deaths occur after the thunderstorm has passed. Stay in a safe area until you are sure the threat has passed.

Procedure(s)

If thunder is heard and the ratio, as per the 30-30 Rule, is calculated to be 30 (representing 10 km) or less, supervisory personnel will inform field personnel of the potential for lightning in the area.

If the ratio intensity reaches a value of 15 (i.e. 5 km), supervisory personnel will suspend all crane hoisting and elevated work activities.

If the ratio reaches a level of 9 (i.e. 3 km), the site shall be cleared, and the following safety protocols be implemented.

In the Event of a Thunderstorm:

- Get inside a home or large building (best choice) or inside an all-metal vehicle with the windows up.
- Stay away from windows, sinks, toilets, tubs, showers, electrical boxes, outlets and appliances. Lightning can flow through these systems and “jump” to a person.
- Do not take a shower or bath during a thunder and lightning storm.
- Avoid appliance use and unplug appliances if possible.
- If you are inside a vehicle during lightning, avoid parking under trees or powerlines that may topple over during the storm. Be aware of any downed powerlines that may be

touching your vehicle. You are safe inside your vehicle; however, you may receive a shock if you step outside.

- If you are outside, with no time to reach a safe shelter (building or vehicle):
 - Do not stand under a natural lightning rod: tall isolated trees, towers, powerlines, telephone poles etc.
 - Avoid all unsafe shelters: metal objects such as power poles, fences, gates, bleachers, small sheds, partial shelters, electrical equipment, mowing and road machinery. Avoid solitary trees, hilltops, water, open fields, high ground and caves.
 - Avoid wire fences, clotheslines, metal piping, rails and other metallic paths which could carry lightning towards you.
- If you are in a wooded area, seek shelter in a low area under a thick growth of shorter trees. Crouch down away from the tree trunks. In open areas, seek shelter in low places such a valley.
- Get out of and away from open water as well as puddles, even if wearing rubber boots. Lightning can strike water and travel quite a distance from its point of contact.
- Get off of and away from motorcycles, scooters, mowing equipment, bicycles and metal machinery.
- Ensure all tools are put down. Holding something can make you the tallest object and a target for lightning.

If with a group of people, ensure there are several meters between each person to avoid lightning from jumping from person to person.

If you feel your skin tingle, your hair stands on end, and/or you hear “crackling noises” a strike may be about to happen. If outdoors, immediately remove metal objects and get into the “lightning safety crouch”.

Crouch down on the balls of your feet with your feet close together. Keep your hands on your knees and lower your head. Some people may prefer to wrap their hands over their ears or cover the back of their neck. Make yourself the smallest target possible and minimize your contact with the ground. **DO NOT LIE ON THE GROUND.**



Lightning Safety Crouch

Helping someone that has been struck by lightning:

- Get emergency help as soon as possible.
- Administer First Aid immediately; common injuries include burns, wounds and fractures.
- If numerous people have been struck by lightning, treat those who are unconscious first, they are at the greatest risk.

CHAPTER: 14	Codes of Practice	HSM-COP-4
SECTION: 14.4	Vibratory Tools	Rev.1 2021

This **Code of Practice** shall be used by all Departmental personnel utilizing vibratory hand tools (e.g. jack hammers; chipping hammers; etc.)

THIS CODE OF PRACTICE IS APPLICABLE AT ALL TIMES
ALL SUPERVISORY PERSONNEL AND THEIR DESIGNATES ARE RESPONSIBLE FOR IMPLEMENTATION OF THIS CODE OF PRACTICE

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14.4.1 Introduction

Hand-arm vibration can cause a range of conditions collectively known as hand-arm vibration syndrome (HAVS), as well as specific diseases such as white finger or Raynaud’s syndrome, carpal tunnel syndrome and tendinitis. Vibration syndrome has adverse circulatory and neural effects in the fingers. The signs and symptoms include numbness, pain, and blanching (turning pale and ashen).

14.4.2 Tools

There are many different types of hand-held power tools and equipment which can place workers at increased risk of developing HAVS. Some of the more common ones are

- chainsaws
- impulse tools
- ratchet screwdrivers
- concrete breakers
- cut-off saws
- hammer drills
- hand-held grinders
- impact wrenches
- polishers
- power hammers

- power chisels
- powered lawn mowers
- powered sanders
- brush/weed cutters

14.4.3 Legislation

By law, as an employer, you must assess and identify measures to eliminate or reduce risks from exposure to hand-arm vibration. The purpose of the code of practice is to help identify the specific hazards in the workplace and to clearly describe everything necessary for the safe application of a hand-arm vibration code of practice.

Section 33.2 of the General Regulation 91-191 requires that an employer ensure that the exposure of an employee to hand-arm vibration is kept as low as is practical and does not exceed the following exposure limits as outlined below:

Exposure of the Hand to Vibration in either Up and Down, Sideways or Forward and Back Directions		
Total daily exposure duration*	Values of the dominant**, frequency-weighted, root mean square, component acceleration which shall not be exceeded	
	m/s²	g***
4 hours and less than 8 hours	4	0.40
2 hours and less than 4 hours	6	0.61
1 hour and less than 2 hours	8	0.81
less than one hour	12	1.22

* The total time vibration enters the hand per day, whether continuously or intermittently

** Usually one axis of vibration is dominant over the two remaining axes. If one or more vibration axis exceeds the total daily exposure, then the exposure limit has been exceeded.

*** 1 g = 9.81 m/s²

The first step in identifying the hazards is to determine the vibration rating in meters/second square (m/s²) for each tool. There are two methods that can be used to obtain vibration level values for power tools:

- Use declared vibration values provided by tool manufactures as an estimate.
- Measure in-use vibration magnitude with a vibration meter.

14.4.4 Obtaining the manufacturer declared vibration magnitude values

Tool specifications

Model number	JCT-2610	JCT-2611	JCT-2612
Stock number	550610	550611	550612
Bore	1-3/16 in. (30mm)		
Piston stroke	11 in. (279mm)	8 in. (203mm)	6 in. (153mm)
Impact rate (blows per minute)	850	1,140	1,560
Rivet capacity	1-1/4 in.	1-1/8 in.	1-1/16 in.
Energy per blow @90psi	80 lbf•ft	60 lbf•ft	45 lbf•ft
Average air consumption	44 CFM	44 CFM	50 CFM
Air inlet	1/2 in. NPT		
Air hose minimum inside diameter	1/2 in.		
Required air pressure	90 psi (6.2 bar)		
Vibration value	14 m/s ²	15 m/s ²	15 m/s ²
Noise level *	95-100 dB		
Overall length	25-1/2 in. (279mm)	22-1/2 in. (572mm)	20-1/2 in. (522mm)
Handle	D-style, drop-forged		
Retainer style	Jumbo 11X		
Housing material	Steel		
Required oil	Air Tool Oil (or ISO VG32/SAE 10W equivalent)		
Net weight	33 lb. (15 kg)	30 lb. (14kg)	26 lb. (12 kg)
Shipping weight	35 lb. (15.9 kg)	32 lb. (13.6 kg)	28 lb. (12.7 kg)

Pneumatic Rivet Buster

#550610, JCT-2610
#550611, JCT-2611
#550612, JCT-2612



Operation & Parts Manual
M-550610
Edition 1
07/2016

Because acquiring actual field measurements with a vibration meter can be time consuming and difficult, this code of practice allows the use of manufacturer declared vibration values. Most manufacturers follow ISO test standards for determining vibration values and report these as three-axes vibration values as oppose to the current requirements which are based on dominant single-axis vibration values. Even though they are different, it will be acceptable practice to utilize the current three-axes vibration Threshold Limit Values (TLVs) published by the most recent publication of the American Conference of Governmental Hygienists (ACGIH) when applying manufacturer declared three-axes vibration values.

It should be noted that while the manufacturers' values are measured according to internationally recognized test standards, the measurements are taken in controlled environments and as such, they may not actually reflect specific work conditions. The real-time exposure to the user in a specific tool application may vary from the manufacturer results. Therefore, onsite measurements should first be considered to determine the hazard level in that specific application if applicable. If measurements are not available, the default is to apply the manufacturer declared vibration values.

14.4.5 Controlling exposure to vibration

Tool selection can make a difference to the vibration level. It must be suitable for the task and used correctly. When selecting the proper equipment, you need to consider two factors: lower vibration values or decrease exposure time. For example, equipment with a higher vibration value may allow decreased exposure time by being more efficient, whereas, equipment with lower vibration may reduce work rest regimes. The important things to look for are equipment or tools that produce less vibration or that can do the job faster. Check that you are using the most effective tool for the job task being performed.

14.4.6 Using the Equipment

The manufacturer will normally indicate the proper use of the equipment or selection of the right insertion tool. The failure to do either could result in a longer time to complete a task and may result in higher levels of vibration exposure. A worn tool will also cause increased working time. As an employer, it is important that you provide training to supervisors and employees on how to properly operate the tool as per recommendations from the manufacturer.

14.4.7 Limiting Daily Exposure Time

Restricting exposure time (“finger-on-trigger” time) may be required to bring exposures below the exposure limit, even after all practicable measures to reduce vibration levels are in place. Employers can implement administrative controls such as job rotation to reduce exposure. It should be noted, that exposure duration is not the overall time spent on a specific job. The exposure duration is only the finger-on-trigger time during which the hands are exposed to vibration.

14.4.8 Anti-Vibration Tools

Tools can be designed or mounted in ways that help reduce the vibration level. Some pneumatic tool manufacturers do supply anti-vibration tools such as anti-vibration pneumatic chipping hammers, pavement breakers and vibration-damped pneumatic riveting guns.

To ensure exposure to hand-arm vibration is reduced, personnel shall carry out the following:

- * Wherever possible, vibratory tools must be equipped with a means of anti-vibration protection
- * Preventative maintenance of tools must be carried out as per the manufacturer’s recommendations.
- * Any defective tools or personal protective equipment must be reported immediately to the immediate supervisor for repair or replacement.

14.4.9 Anti-Vibration Gloves

Anti-vibration gloves may be used in some circumstances. However, since they have limited effectiveness, using gloves on their own is not recommended as a method of reducing exposure.

14.4.10 Work Practices

Proper work practices must be used and should include

- Using a minimum strength hand grip that still allows the safe operation of the tool or process.
- Wearing sufficient clothing, including gloves, to keep warm.
- Avoiding continuous exposure by taking regular breaks
- Encouraging operators to exercise fingers.

- Resting the tool on the work piece whenever practical.
- Not using faulty tools.
- Maintaining tools properly. Tools that are worn blunt or out of alignment will vibrate more.
- Consulting with a doctor at the first sign of vibration disease;
- Considering changing to a job with less exposure.

To minimize vibration exposure, supervisors shall use proper job planning to ensure the safe and efficient use of vibratory tools.

14.4.11 Job Rotation

To reduce hand-arm vibration exposure, supervisors must implement a rotational schedule that **must** be followed by all personnel when utilizing vibratory tools. A rotational schedule should limit continuous use by one employee to a cycle which meets minimum requirements (*e.g. 20 minutes using a vibratory tool followed by 20 minutes on other work, etc.*).

14.4.12 Employee Education and Training

Training programs are an effective means of heightening the awareness of HAVS in the workplace. Training should include proper use and maintenance of vibrating tools to avoid unnecessary exposure. Vibrating machines and equipment often produce loud noise as well. Therefore, training and education in controlling vibration should also address concerns about the effect of noise and noise control.

The vibration control design is an intricate engineering problem and must be set up by qualified professionals. Many factors specific to the individual work station govern the choice of the vibration isolation material and the machine mounting methods.

14.4.13 Incident Reporting

Employees are encouraged to bring all hand-arm vibration issues to their supervisor and then, if necessary, to the program administrator. All employees must co-operate with the program administrator in the performance of the administrator's duties.

Documentation of incidents involving vibratory tools must be kept up to date by supervisory staff and personnel using an existing "Incident Form" or other method approved by the District.

This Code of Practice will be used in conjunction with proper job training / job coaching for personnel using this equipment.

14.4.14 Reference

*Section 33.2 of the General Regulation 91-191 under the Occupational Health & Safety Act.
Occupational Health and Safety Act; Chapter O-02, Section 50(2), 50(3), 50(4)
American Conference of Governmental Industrial Hygienists (ACGIH)
Threshold Limit Values 1994-1995; Section on Hand-Arm Vibration Exposure*

CHAPTER: 14 Codes of Practice
SECTION: 14.5 Working Alone

HSM-COP-5
Rev.1 2021

THIS CODE OF PRACTICE IS APPLICABLE AT ALL TIMES
ALL SUPERVISORY PERSONNEL AND THEIR DESIGNATES ARE RESPONSIBLE FOR
IMPLEMENTATION OF THIS CODE OF PRACTICE

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14.5.1 Overview

When employees are required to work alone during the normal course of their duties, OHS regulation 92-133 requires the employer to develop a **specific** Code of Practice (COP) for all working alone situations. The specific COP will follow OHS requirements and will take into consideration all factors and aspects of the work situation to provide adequate protection to a worker.

This document provides details for departmental managers and supervisors on working alone principles and how to develop a specific COP. The Wellness Health and Safety Consultants are available to consult and assist in the development of a specific COP.

14.5.2 Working Alone

A person is considered to be working alone when they are on their own or when they cannot be seen or heard by another person or in circumstances where assistance is not readily available when needed.

For example, persons doing land assessments, inspectors on a remote site, field assessors, bridge or culvert inspectors, employees performing after hours work in an office, employees driving back roads with little expected traffic.

14.5.3 Can Working Alone Be Avoided?

OHS regulations do not allow working alone when

- Using a spacing or chain saw
- Working in a confined space
- Using Fall Arrest

In all other situations, even if the law allows the Department to have an employee work alone, it should be avoided, if at all possible.

14.5.4 Steps to Take If Working Alone Cannot Be Avoided

The employer must

1. Assess hazards and risks
2. Modify work environment, work conditions or tasks to eliminate or control hazards and risks
3. Develop a COP
4. Provide instruction on the COP
5. Provide equipment and/or training if necessary

14.5.5 Assessing Hazards and Risks

Evaluate the risk by determining the following points, make sure employees who will be working alone are involved in the discussion and then have the JHSC review.

Points to be considered in making an evaluation:

- Time of day when the employee will work alone.
- Weather conditions expected during time of working alone.
- Tasks to be performed.
- Tools or equipment to be used.
- Hazards expected to be encountered.
- Location and type of terrain to be covered.
- Opportunity for assistance.
- Expected length of time the person would be alone.
- Reliable form of communication available (visual, vocal, electronic, etc.).
- Worker risk factors (medical or health condition, experience, training, etc.).
- Other.

14.5.6 Developing a Specific COP

This step consists of putting together and analyzing the information gathered during the assessment to decide how to adequately protect the worker. The information can be either inserted into the Forms at the end of this section or be written in a document which should contain

- Who it applies to (scope)
- Who is responsible to do what
- What safe job procedures, safe work practices, and/ or control measures to follow
- Tasks or activities not to be performed, if applicable
- Who it is approved by
- Any other pertinent information

14.5.7 Providing instructions on the COP

Supervisors must ensure that

- Employee is instructed in the information contained in the COP.
- Employee is instructed in the safe procedures to be followed to minimize the risks identified, if applicable.
- Employees are following the COP.
- Records are kept of the COP usage.

14.5.8 Employee responsibilities

- To follow the procedures and requirements contained in the COP.

14.5.9 Reference

- Occupational Health and Safety Regulation 92-133 cited as the *Code of Practice for Working Alone Regulation- Occupational Health and Safety Act*.
- A Working Alone COP form can be found in Section 3.4.2.1 of this manual.

CHAPTER: 14	Codes of Practice	HSM-COP-5
SECTION: 14.5	Working Alone	Rev.1 2021
SUBSECTION: 14.5.1	WACOP General Form	

APPLICATION AND GENERAL RULES

- Supervisor will review this code of practice with all employees when applicable.
- Time intervals between contacts should be a maximum of two hours for situations with low risks and less for situations with higher risks.
- A “designated person” can be any DTI worker, including another lone worker, or can be a service provider.

GENERAL INFORMATION

Employer name:	Address :	Phone:
Workplace Location:	Specific:	Phone:
Nature of the Work Performed at this Location:		

IDENTIFICATION OF POSSIBLE RISKS TO WORKERS AND CONTROL MEASURES

<ul style="list-style-type: none"> ▪ Example: Slips, trips & falls – Proper footwear/ Proper housekeeping/Other ▪ Other: _____ 	
<ul style="list-style-type: none"> ▪ Tasks not to be performed: _____ ▪ Procedures/control measures to be followed to minimize risk: _____ 	

CONTACT PROCEDURE (Please attach & follow service provider’s procedure if different)

<ol style="list-style-type: none"> 1. The “lone worker” will initiate a call/visit to their “designated person” prior to working alone. 2. The “designated person” will contact the “lone worker” at prescribed time intervals. 3. Either the “lone worker” or the “designated person” will record all communication by completing the contact log on the back of this sheet. 4. The “lone worker” shall respond to contacts made by the “designated person”. 5. The “lone worker” will make additional calls/contacts to the “designated person”: <ul style="list-style-type: none"> • When they temporarily leave the safety of the building, <u>or</u> • When deviating from the procedure. 5. The “lone worker” will close out the procedure with their “designated person”: <ul style="list-style-type: none"> • When they are no longer in a “working alone” situation, <u>or</u> • At the end of their shift. 6. In the event that the <u>lone worker does not respond</u> to several contact attempts, the “designated person” will: <ul style="list-style-type: none"> • Immediately dispatch someone to the location to check on the worker <u>or</u> call the <u>emergency contacts</u> below, and • Contact other emergency services as may be required (Police, Ambulance, Fire).
--

CONTACT INFORMATION

Lone Worker (Name & Phone #):		Designated Person (Name & Phone #):	
Emergency Contacts: (Attach separate sheet if more than 3)	Position	Name	Phone Numbers

This “code of practice” shall be in effect from _____ to _____

Supervisor Name: _____ Signature: _____ Date: _____

CHAPTER: 14	Codes of Practice	HSM-COP-6
SECTION: 14.6	Working at Heights	Rev.1 2020

THIS CODE OF PRACTICE IS APPLICABLE AT ALL TIMES
ALL SUPERVISORY PERSONNEL AND THEIR DESIGNATES ARE RESPONSIBLE FOR
IMPLEMENTATION OF THIS CODE OF PRACTICE

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14.6.1 Overview

This Code of Practice is established to provide simplified information to DTI Employees, Contractors and visitors, who may have to perform or supervise work on a roof or any other elevated surface, where fall protection may be required.

The requirement to work safely at heights applies to all DTI employees and individuals or contractors working at or on our buildings or structures. All employees are to be instructed in the fall protection measures in place.

The precautions and requirements listed within this document must be understood and implemented while working at heights. Other requirements may be necessary, depending on the specific situation, and should be employed as required. All Personnel must be aware of the hazards and must follow the controls outlined to limit or eliminate exposure to Fall Hazards.

Working at heights is any work area where a person could fall and be injured. These areas may include, for example, falling from a ladder, off a roof, off an unprotected edge or through an unguarded hole in the ground or floor and working over or near water.

14.6.2 Purpose

To prevent the inadvertent fall of workers this working at heights COP is intended to outline the various elements and hazards associated with the use of Fall Protection and working at heights on a DTI Maintenance operations and Projects and is required to ensure compliance with all applicable Policies, Procedures, Standards, Occupational Health & Safety and other Regulatory requirements.

All manufacturer's instructions and recommendations must be reviewed and followed.

This COP is Applicable To

All DTI employees, contractors, representatives and visitors required to work at heights.

14.6.3 Applicable Legislation

NEW BRUNSWICK REGULATION 91-191
PART VII

Fall-protection system

Applicable standards

Fall-arresting system

Anchor point in a fall-arresting system

Vertical life lines

Horizontal life lines

Methods of fall-protection system

Work area

Fall-protection code of practice

Training

Inspections of fall-protection system components

Inspections of personal fall-protection system Components

Water and other liquid safety

Portable ladders

Aerial devices

NEW BRUNSWICK REGULATION 91-191
PART X

Guard rails

Walking surfaces

Openings and fall prevention

Elevating Work Platforms

Scaffolds – specifications

Personnel Carrying Equipment

What is an Elevated Work Surface?

Examples of elevated work surface are: bridge decks, roofs, open floors, ends of buildings, elevated walkways, catwalks, access platforms, top of storage tanks, etc.

Work Activities That Potentially Involve Fall Protection:

- Scaffold Erection
- Working from Scaffolds
- Elevated Work Platforms
- Electrical Installation
- Structural Steel Erection
- Overhead Crane – Installation, maintenance and repair
- Rebar Installation
- Mechanical equipment Installation
- Loading/Offloading Trailers
- Ladder Use
- General Work Above 3m (10ft)
- Working Near Leading Edges
- Working from Bridge Deck

14.6.4 Responsibilities

- DTI Management and Supervision will be responsible for the administration of the Fall Protection program and ensuring personnel are competent and trained.
- Workers – Understand and comply with the standards set out in this plan.
- Contractors/representatives - will supply photo copied proof of certification of personnel and approved compatible equipment coming onsite. This shall be coordinated through DTI Contractor Management program.

The employer shall provide, and the employee shall continually use a fall-protection system when an employee works from:

- (a) an unguarded work area that is
 - i. 3 m or more above water or the nearest permanent safe level,
 - ii. above any surface or object that could cause injury to the employee upon contact, or
 - iii. above any open top tank, bin, hopper or vat,
- (b) a work area that is 3 m or more above a permanent safe level and from which a person may fall if the work area tips or fails, or
- (c) a work area where an officer has determined that it is necessary for safety reasons to use a fall protection system

Before an employee is allowed into an area where a risk of falling exists, an employer and a contractor shall each ensure the employee is instructed in the fall protection system for the area and in the post-fall rescue procedure, if applicable, and that the employee is competent in the procedures to be followed.

To meet the requirement the employer must install an engineering control such as a guardrail. An employer must ensure that a worker at a permanent work area is protected from falling by a guardrail if the worker may fall a vertical distance of more than 1.2 meters (4 ft.) and less than 3 meters. If a guardrail is not reasonably practicable, an employer must ensure that a worker uses a travel restraint system to prevent them from getting to the hazard. If a travel restraint system is not reasonably practicable, then the employer must ensure the worker uses a personal fall arrest system. If a personal fall arrest system is not reasonably practicable, the employer must ensure that a worker uses an equally effective fall protection system.

14.6.5 Training and Qualifications

- All workers required to work at heights must be competent.
- Workers must be able to present a valid training certificate prior to obtaining a Fall Protection Harness and accessories.
- All Training records shall be documented, verified and logged in training matrix. A copy of the certificate will be placed in the workers personnel's HR file.
- All training must be delivered by certified and reputable training provider.

14.6.6 Fall Protection Methods

Hierarchy of Controls

1. **Elimination**-The primary solution to a fall hazard must be to eliminate the fall hazard completely. Example: Accomplish the work at ground level, install guard rails.
2. **Engineering**-Potential fall protection hazards shall be minimized using engineered solutions and systems as the secondary solution to minimize fall potential. Examples: Scaffold and Elevated Work Platforms.
3. **Administrative**- Safety Policies, Practices, Plans and Training are in place to aid in the planning and control methods associated when personnel are required to work at heights.
4. **PPE (Personal Fall Protection)**-As the last line of defense, it is important to remember that when required to work at heights in unguarded areas not only donning fall protection but choosing and utilizing the appropriate fall protection components will drastically reduce the likely hood of failure or personal injury from occurring.

14.6.7 Selection of a fall protection system

The list below shows the different types of systems from the safest to the least safe. "Guardrails" must always be considered first. Then, the next system can be considered, only if it's difficult and impractical to use the previous system. "Warning Lines" should only be considered as the last choice.

1. Guardrails

Keeps a barrier between you and the edge – your safest choice! *Section 97: Permitted for fall protection on elevated work surfaces up to 6/12 slope. Guardrails are a common and convenient way to protect employees from falls. They can be used to guard walking surfaces, openings, roof edges, catwalks and from edges on scaffolds, suspended work platforms, forklift platforms, elevating work platforms and other working surfaces.*

2. Travel Restraint

Keeps you from getting close to the edge – if you're properly tied into it. *Section 105(8): Is allowed on flat surfaces up to a slope of 3/12 with an anchorage that is twice the employee's weight. It can be used on slopes over 3/12 if the anchor strength is increased to 3.5 kN. To be able to use a travel restraint system, the system must be rigged so the employee cannot reach the unguarded edge, and the employee must wear a full body harness attached to the anchorage.*

3. Fall-Arrest

Keeps you from hitting the ground after you've fallen – your last resort! *Section 49: If you can't eliminate the risk of falling by bringing the task down to ground level or by eliminating the need for the task, you must continually use a fall protection system. A fall protection can be used on any slope and at the unguarded edge of the elevated work surface. Anchorages must be approved by an engineer or manufacturer to withstand 22kN (equivalent to the weight of a mid-size car), and the employer must have a rescue plan. All employees are trained in their personal fall protection system, the system being used and the rescue plan. Employees shall wear a full body harness. Any potential fall has to be limited to 1.8m. If a situation cannot be limited to a 1.8 M fall, then a modified system must be designed and approved by a competent person to limit the force on the body to less than 8 kN.*

4. Control Zone/ Warning Line

Keeps you a safe distance from the unguarded edge (the warning line) – use other methods of fall protection when entering. Should only be used where other fall protection systems are impractical. (Can only be used on a surface which is flat up to 3/12 slope and must be 2m from the unguarded edge.) *Section 105: A warning line, as part of a control zone, can be used, if other fall protection systems are not practical, and if the work area is no less than 2 meters from the unguarded edge, and if the work surface has a slope of 3/12 or less. The warning line must be installed at the 2m mark to indicate to all workers that you can't go closer to the unguarded edge or into the control zone without other fall protection measures. The warning line used to define a control zone and shall have readily identifiable markers placed every 1.5m along its length, be at least 10mm in diameter and supported at a height of 750 to 900mm. The warning line shall be maintained at least 2m from the unguarded edge unless it is moved to within 1m for snow clearing or weatherproofing.*

14.6.8 Working at Heights FAQ

- Is the surface flat or up to 3/12 slope? (If yes, a Warning Line can be used.)
- Is the slope equal to or less than 4/12? (If yes, a safety monitor can be used for weatherproofing in the control zone which is between the warning line and the unguarded edge.)
- Is the slope less than or equal to 6/12? (If yes, guardrails can be used.)
- Is the slope more than 6/12? (If yes, guardrails cannot be used, and fall arrest is required)
- Is the area that you will be working at or above 7.5 m in height? (If yes, a Code of Practice is required.)
- How are you going to access the work area? (Inside by a stairway or fixed ladder, or outside by a ladder or aerial device etc.)
- If the area being accessed is slippery, icy, etc. other measures may need to be taken.
- Weather conditions before and expected during time of work.
- Tools, materials or equipment to be used, and how to get them to the work location.
- Working alone (May need a work alone procedure, if using fall arrest, you cannot work alone.)

14.6.9 Fall Protection General Standards

Before relying on any Fall Protection component, all users must read, understand, and follow the instructions and recommendations in the manufacturer's specification.

Safety harnesses, lanyards, lifelines, and any other fall protection devices must be CSA approved.

- Full body harnesses and double lanyards, complete with shock absorbers and locking snaps, are mandatory requirements for personal fall arrest.
- Fall protection will be used at all unprotected elevations 3m (10 ft.) and above or where a fall from a lower height involves an unusual risk of injury.
 - Examples would include falling onto exposed rebar or onto operating machinery.
- Workers must review and follow the manufacturer's instructions on care and use of fall protection equipment.
- Lanyards shall only be attached to engineered anchor points:
 - Fall Arrest must be capable of supporting a minimum of 22 kN.
 - Fall Restraint must be capable of supporting a minimum of 3.5 kN.
- Free fall distance shall not exceed 1.2 m on systems without an energy absorber and systems with energy absorbers will be manufacturer's specification.

- Daily Inspections of Personal Fall Protection Equipment must be conducted by the end user.
- Fall Protection over water if less than 3m can be life jacket, survival suit, over 3m shall be a fall protection harness, lanyard etc.

A written COP (Fall Protection Plan) is to be in place and described to all employees for any workplace where a fall protection system is or will be used and 1 or more of the following conditions exist:

1. **Work will take place at or above 7.5m, or**
2. **A safety monitor for weatherproofing will be used, or**
3. **Requested by a WSNB Health & Safety Officer**

Quick Conversion Tables

<i>Force</i>		<i>Distance</i>	
Kilonewtons (kN)	Pounds	Meters	Feet
1	225	1	3.3
3.5	800	1.2	4
16	3600	1.8	6
22.2	5000	3	10

14.6.10 Anchors

Fall Arrest

The anchor must be able to withstand a minimum of 22 kN or, if used under the direction of a competent person, four times the maximum load that may be generated in the fall-arresting system.

Travel Restraint

The anchor must be able to withstand a minimum of 3.5 kN per worker attached,

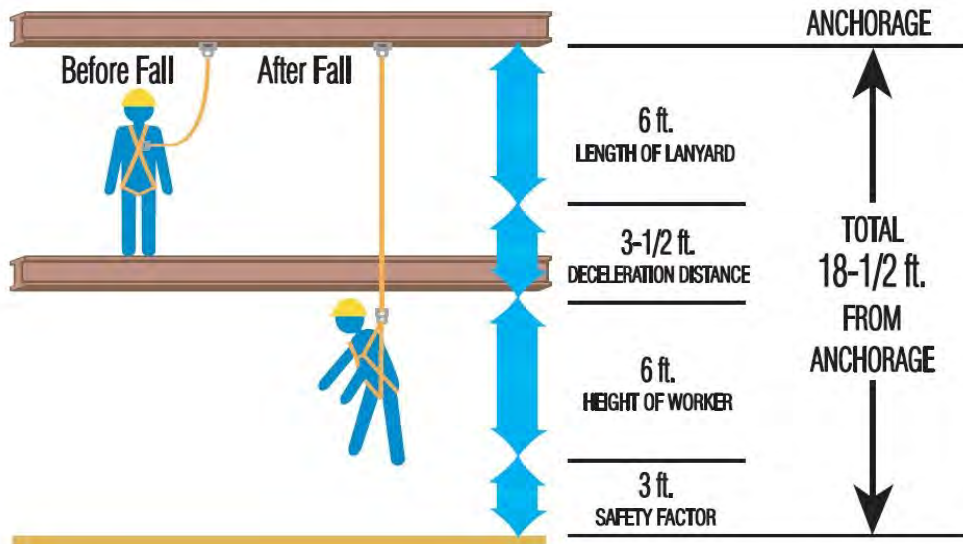
- Installed in accordance with the manufacturer's specifications.
- Marked "travel restraint only"

Inspection

50.4 An owner of a place of employment shall ensure that every anchor point is inspected and certified by a competent person

- a) before being used for the first time,
- b) as recommended by the manufacturer, the installer or an engineer and at least every 12 months,
- c) after any event or maintenance and repairs, and
- d) when the owner of a place of employment is informed under subsection (4) of a defect or inadequacy.

Determining Your Anchor Points



Acronym	
FFD	Free Fall Distance
TFD	Total Fall Distance
CR	Clearance Distance
L	Length of Lanyard & Connecting Devices
B	Height of D-Ring From Workers Feet
C	Distance Between Anchor Point & Unguarded Edge
EAE	Energy Absorber Extension
DS	D-Ring Slippage
SM	Safety Margin

L	+	B	-	C	=	Free Fall Distance (FFD)
	+		-		=	

FFD	+	DS	+	EAE	=	Total Fall Distance (TFD)
	+		+		=	

TFD	+	B	+	SM	=	Clearance Requirement
	+		+		=	

Inspection

Provincial regulation 91-191 section 50.4(1) requires that all fall protection components be inspected daily by the user and periodically by a competent person.

50.4(1) An owner of a place of employment, an employer and a contractor shall each ensure that each component of a fall-protection system is inspected as follows to determine whether there are any defective or inadequate components:

- a) visually by the employee before use during a shift, and
- b) by a competent person before initial use and periodically as recommended by the manufacturer, installer or an engineer.

50.4(2) If the inspection reveals a defect or inadequacy, no one shall use the fall-protection system and no owner of a place of employment, employer or contractor shall permit its use until the defect or inadequacy has been eliminated.

Pre-Use Inspection

- A competent worker shall inspect a fall arrest system before each use.
- Follow the manufacturer's instructions and recommendations for equipment, including documentation, inspection schedule, maintenance, and storage.
- If the integrity of any fall protection equipment is in doubt, it shall be retired from service permanently or repaired and re-certified by the manufacturer.
- Check with the manufacturer's instructions before using any cleansers, markers, paint, stickers on synthetic materials or hardware.
- Store fall protection equipment to avoid moisture, abrasion, dirt, ultraviolet light, extreme temperatures and other hazards. Use appropriate containers to store equipment.
- All inspections shall be conducted by a competent worker.
- *Note – Any fall protection device that has sustained an impact as the result of a fall, shall be removed from service and inspected by the manufacturer.*

14.6.11 Working Near Leading Edges

Guardrails

Guardrails are a common and convenient way to protect employees from falls. They can be used to guard walking surfaces, openings, roof edges, catwalks and from edges on scaffolds, suspended work platforms, forklift platforms, elevating work platforms and other working surfaces.

“guardrail” means an assembly of components joined together to form a barrier that is designed to prevent an employee from falling off the edge of a surface

Following below are several methods of attaching and using guardrails:

Portable self-standing – Generally weighted. This type of guardrail must be engineered or used as per manufacturers specifications and then tested when set up.

Job built – This type of guardrail must be built and attached to work surfaces using information from section 97 of regulation 91-191 NB OHS.

An effective guardrail should consist of

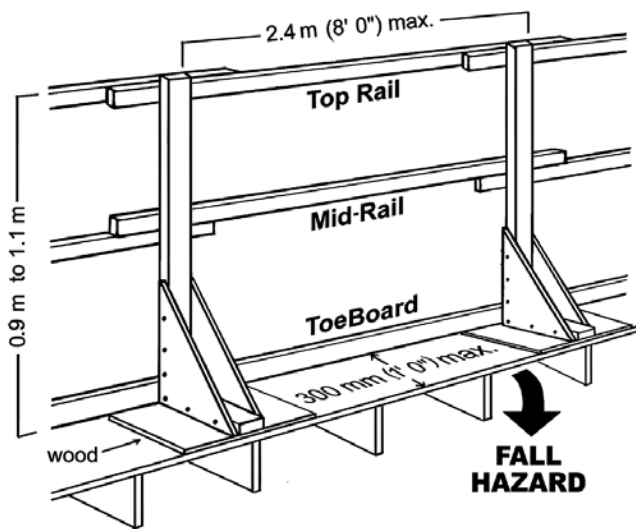
- a) A top rail between 900 mm and 1.07 meters high, fastened to the top or the inside of the vertical supporting post.
- b) A mid-rail, fastened to the inside of the vertical supporting post, mid-way between the top rail and the floor.
- c) A toe board that is a minimum of 127 mm high, fastened to the inside of the vertical supporting posts, and with a space not more than 6 mm between the bottom of the toe board and the floor.
- d) Vertical supporting posts 2.4 m apart maximum [or 3m on scaffolding], and adequately fastened to the structure.
- e) Sufficient strength and rigidity to support loads which may be imposed on it, with the following minimums:
 - o 675 N (150 lbs.) in any direction, at any point along the top rail
 - o 450N (100 lbs.) in any direction, at any point along the intermediate rail
 - o 900 N in any direction, at any point along the top rail, intermediate rail
 - o toe board if the guardrail is used on a surface that is sloped more than 3 in 12 and less than 6 in 12

A guardrail can be pre-engineered or, when fabricated, made of the materials and to the specifications as given in the table below:

If made of				
	Wood	Metal Pipe	Angle iron	Wire Rope
Top Rail, vertical supporting posts	At least 50 mm x 100 mm, these measures being nominal No. 2 grade or better SPF Not be painted other than by a transparent protective coating	At least 40 mm in diameter	At least 40 mm x 40 mm by 5 mm	Top and intermediate rail - at least 10 mm in diameter, be attached to welded fastening on the vertical supporting posts with metal clips and be distinguishable from the background Vertical supporting posts - made of steel of at least 40 mm in diameter or of a material of equivalent strength
Intermediate rail	At least 50 mm x 100 mm, these measures being nominal No. 2 grade or better SPF Not be painted other than by a transparent protective coating	At least 25 mm diameter	At least 32 mm x 32 mm x 3 mm	

Note:

If an employee is engaged in perimeter work and a guardrail is used as the method of fall-protection, a toe board is not required.



Typical Dimensions for Guardrails

Removal and replacement of guardrails

Where a guardrail is removed for work to be done, adequate precautions must be taken to ensure the safety of the employee doing the work and any other employee, and the area is not left unguarded. Any employee who removes a guardrail in order to do work shall replace the guardrail before leaving the area.

Openings in floors and roofs

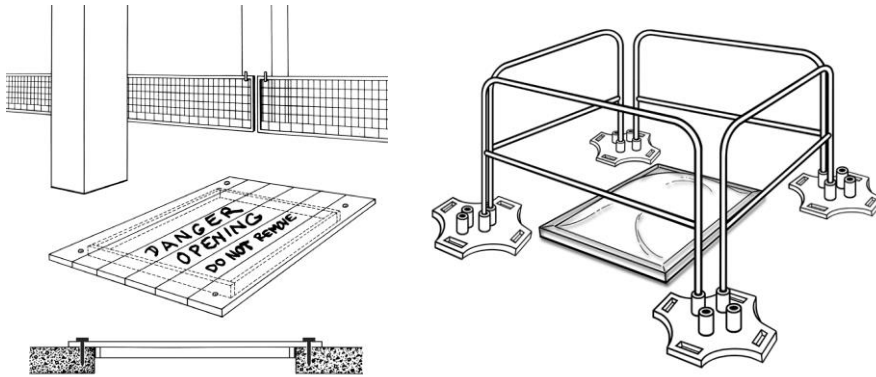
Guardrails are the best method of protecting workers around openings in floors and roofs. Sometimes, however, they're not practical. In such cases, securely fastened covers made of planks, plywood or steel plates must be used instead.

An employer and a contractor shall each ensure that an opening on a work surface into which an employee may fall is:

- a) on all exposed sides by a guardrail; or;
- b) by a protective covering that
 - (i) completely covers the opening,
 - (ii) is securely fastened,
 - (iii) is made from material adequate to support all loads to which the covering may be subjected, and
 - (iv) is marked as covering an opening.

Examples:

1. **DO NOT REMOVE.**
2. **DANGER!**
3. **HOLE IN FLOOR.**



Inspection

Guardrails must be inspected daily by a competent person before initial use and visually by the employee before use.

14.6.12 Scaffold Erection/Working from Scaffolds

- The scaffold must be built as per manufacturers specifications and secured to the building or structure as per section 131- 140 of regulation 91-191.
- The guardrail must be between 900 mm and 1.07 M in height above the work surface and has to have a mid-rail and toe board.
- The guardrail must be built close enough to the work surface so that an employee cannot fall between the scaffold and the building or structure. Generally, the distance between the scaffold and the structure should be less than 15cm.
- The guardrail must extend past each side of the work area by a sufficient distance, so an employee cannot fall and slide past the edge of the rail. (3m on each side should normally be adequate.)
- Scaffolds 6m or more in height require a scaffold stairway for safe access, unless there is internal access to the work surface.

Inspection

Scaffolds must be inspected daily by a competent person before initial use and visually by the employee before use.

14.6.13 Elevating Work Platforms and Aerial Devices

As an employer we must ensure that an elevating work platform is designed, constructed, erected, maintained, inspected, monitored and used in accordance with all applicable standards and manufacture specifications.

If an employee is required to work from an elevating work platform the employer must provide, and the employee must continually use a travel restraint system or fall-arresting system attached to an anchor point on the elevating work platform.

“Aerial device” means any vehicle-mounted telescoping or articulating device that is used to position a person by means of a bucket, basket, ladder or platform directly secured to the boom.

The lanyard used must be short enough to prevent the worker from being ejected from the basket and long enough to permit work.

During travel, a worker must use a fall restraint system that will prevent the worker from being ejected from the basket.

Supervisors must include the use of an AWP on their Hazard Assessment.

Under no circumstance shall an employee operate or direct any aerial device or equipment unless qualified and deemed competent to do so.

Supervisors and Operators must ensure that the AWP is operated in accordance with the Manufacturer’s recommendations and that the equipment is used only for its intended purpose and design. Operators must be familiar with the Manufacturer’s recommendations before operating the equipment.

Qualification Requirements

- The Operator shall have completed an approved training course and received certification for safe operation of AWP’s.
- The Operator must hold a valid fall protection certification. Copies must be retained in the employee’s file.
- Always refer to Manufacturer’s recommendations.
- All workers involved in the work must perform a Hazard Assessment before work in the AWP is started. The assessment shall include, but not be limited to, road and traffic conditions, and the presence of overhead wires, cables, and other obstructions.
- All workers in the aerial platform must have fall arrest anchored to the appropriate anchor point for that platform. The handrail is not an appropriate anchor point.

Inspection

Before mobilizing any AWP, the supervisor will ensure that the equipment has been inspected and safe for use.

Before starting work, the Operator will make inspection checks on all equipment, lift mechanisms, fluids, and safety equipment. Inspect the travel path and work area before moving the AWP.

14.6.14 Suspended Man Baskets

A commercially manufactured suspended man basket will be erected, used, operated, and maintained in accordance with the Manufacturer’s specifications or specifications certified by a professional engineer.

Each worker within the man basket shall wear a separate personal fall arrest system attached to an engineered tie off point in the man basket.

EXCEPTION: *If it is not practicable to provide a separate personal fall arrest system using a vertical lifeline for each worker in the man basket, then there shall be attached, between the suspended man basket and the hoist line above the hook assembly, a separate support that is capable of withstanding the weight of the man basket, materials, equipment, and workers, should the hook assembly fail.*

Each employee who works on or from suspended equipment must have an effective means of summoning assistance. Employees must also be protected from falling while getting on or off the suspended equipment and use a vertical life line that is suspended independently from the suspended equipment that is securely attached to an anchor point so that the failure of one means of support will not cause the life line to fail.

Inspections

Each component of suspended equipment must be inspected by a competent person as outlined below:

- a) visually at least once daily
- b) before being used for the first time
- c) as recommended by manufacturer, installer or designer and at least every 12 months
- d) after an event or after maintenance and repairs

14.6.15 Ladder basics

Ladders are used to access and leave elevated or sub-level work areas.

Make all possible efforts to limit the amount of work done from ladders. Work done from ladders is limited to short service work.

Job-made ladders shall not be used, unless the design and build are under the direction as per regulation 91-191 by a journeyman carpenter and in compliance with occupational health and safety legislation.

No ladders will be painted, as paint may hide defects and deformities.

Ladders used in servicing energized or potentially energized equipment must be made of non-conductive material.

Anyone on a ladder must maintain three-point contact.

*All Ladders must be CSA grade 2 minimum.

*Grade 3 are prohibited from use on all DTI worksites.

SHORT SERVICE WORK

Short service is defined as

- a) The work is of short duration (under 5 minutes) at each location, and
- b) Is light during work
- c) The workers center of gravity is between the side rails, and
- d) The workers maintain 3-point contact

PORTABLE LADDERS

Work must not be performed from the top two (2) rungs, steps, or cleats of a portable ladder, unless the ladder has been manufactured for that purpose.

SECURING AND POSITIONING

Portable ladders must be secured against movement and placed on a stable base. Side rails of a ladder shall be at least 1 meter above the platform/work area. Ladders must be tied off at the top and secured from movement at the base.

FALL ARREST

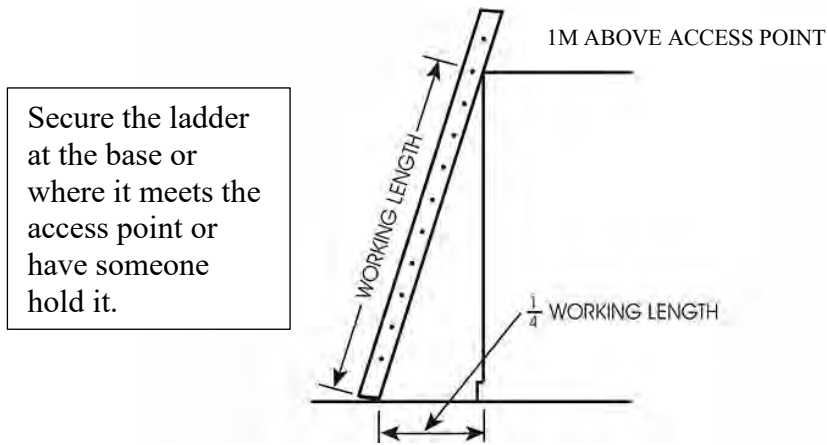
Where there is a risk of a worker falling more than 3 metres or risk of unusual or extreme injury at heights less than 3 metres a fall arrest system must be used.

Fall protection is not required when moving up and down a ladder.

A worker may work without fall protection from a ladder if:

- a) The activity does not meet the requirement for fall protection, as described above, and
- b) The work is short duration (under 5 minutes) at each location, and
- c) The work is light duty work, and
- d) The worker's center of gravity is between the side rails, and
- e) The worker maintains 3-point contact.

Any access to an elevated work surface must be done in a safe manner. Always use a grade I or II ladder that is positioned at an angle of 4 to 1 against the building and that extends past the access area by at least 1 meter. Also, the ladder must be secured in place or held by another employee. Always have both hands free when climbing a ladder. Use a back pack or other means to get tools and supplies to the work area. Always face a ladder when climbing or descending.



Inspections

Ladders must be inspected daily by a competent person before initial use and visually by the employee before use. Inspections should include the following:

- missing or loose steps or rungs (they are loose if you can move them by hand)
- damaged or worn non-slip feet
- loose nails, screws, bolts or nuts
- loose or faulty spreaders, locks, and other metal parts in poor repair
- rot, decay or warped rails in wooden ladders
- cracks and exposed fiberglass
- cracked, split, worn or broken rails, braces, steps or rungs
- sharp edges on rails and rungs
- rough or splintered surfaces
- corrosion, rust, oxidization and excessive wear, especially on treads
- twisted or distorted rails.
- missing identification labels
- loose, broken or missing extension locks
- defective locks
- missing or defective pads or sleeves

Tag and take out of service any ladder that has defects or is broken or bent. Destroy ladders that cannot be repaired safely by a person authorized by the manufacturer. Ladders should be destroyed in a way that makes them useless.

14.6.16 Working from Bridge Deck

Bridge work and performing work from a bridge or bridge deck in the province has many unique and unusual site characteristics, hazards and risks associated. Building and maintaining bridges creates a long list of potential hazards for workers. In addition to the hazards already associated with highway work zones and other types of structures, bridges are nearly always elevated, creating a risk for falling off them.

Some Hazards may include

- Working at heights
- Working over water
- Working around insufficient guardrail height
- Vehicle traffic
- Working in enclosed or partially enclosed spaces

Given that much of the work being performed on a bridge involves elevated surfaces, providing fall protection is a top priority

The bellow is a guide and Regulations established to provide simplified information to DTI employees or contactors must perform or supervise work involving inspections, maintenance and construction of Bridge structures.

92(1) Where construction is being carried out on a highway or bridge and an employee's safety may be endangered by vehicular traffic, an employer shall ensure that

- (a) concrete barriers or material offering equivalent protection is erected at both ends of the construction and as a divider between the traffic and the work area of the highway or bridge, and*
- (b) appropriate lane control devices and flashing lights or flares are used.*

102(2) Subject to subsection (6), an employer and a contractor shall each ensure that a guardrail which meets the requirements of section 97 is provided at the open sides and open ends of

- (a) a floor, mezzanine, balcony, walkway or platform,*
- (b) **the surface of a bridge or overpass, and***
- (c) a concrete roof while the formwork remains in place, to which an employee has access and from which the employee may fall a vertical distance of 1.2 m or more.*

Where current Guiderails of a bridge structure do not me the requirements stated above additional fall protection devises must be used.

Examples of additional fall protection devices

1. Extension to current guiderail to meet Guardrail requirements above
2. Addition of guardrail meeting requirements of NB OHS

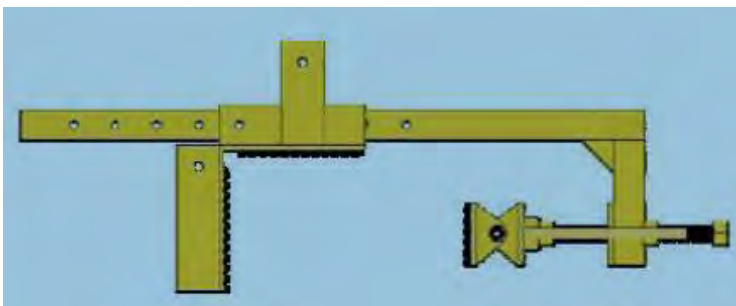
3. Fall protection attached to an approved engineered anchor point
4. Travel Restraint attached to an approved anchor point
5. Control Zone/ Warning Line if the work area is no less than 2 meters from the unguarded edge

The two main types of fall prevention systems in bridge work are guardrails and personal fall restraint systems.

For more detailed information see above section 6) Selection of a fall protection system

Guardrails are vertical barriers erected to prevent workers falling to a lower level. Guardrails are an engineering control. Guardrail systems for fall protection are usually different from highway guiderails designed to keep vehicles on the road. Guiderails in place on bridges may not meet OHS requirements

Any bridge work with a wall or rail less than 900mm (36") an auxiliary rail may be added. Some Examples shown below.





Many bridges continue to carry traffic while work is being performed, steps must be taken to separate the workers from the traffic flow and to ensure their visibility. Barricades and other traffic control devices can provide a safe distance between drivers and workers. High-visibility clothing and reflective vests call additional attention to the presence of the workers, reducing the chances that they'll be struck by a motorist. Ref current DTI WATCM.

14.6.17 Working Over Water

Overview

The bellow is a guide of Regulations established to provide simplified information to DTI employees or contactors who must perform or supervise work above water. Water in this instance may be a river, brook, lake, swamp etc. where there is a risk of drowning.



Regulation 91-191 section 51 requires the employer to ensure the safety of employees and when around water it is more towards the risk of drowning.

51(2) *If an employee is exposed to a risk of drowning, an owner of a place of employment, an employer and a contractor shall each ensure the employee uses one of the following:*

- (a) a fall-protection system;*
- (b) a life jacket that conforms to CGSB standard CAN/CGSB-65.7-M88, "Life Jackets, Inherently Buoyant Type";*

(c) a personal flotation device that conforms to CGSB standard CAN/CGSB-65.11-M88, "Personal Flotation Devices";

(d) an automatically inflatable personal flotation device that meets UL1180-95, "Fully Inflatable Recreational Personal Flotation Devices"; or

(e) a personal safety net that conforms to the requirements of section 49.8.

When working 3m or more over water and a fall into that water is possible, the employer is to ensure there is a fall protection system in place, the hierarchy is

1. Guardrails as per section 97.
2. Travel restraint as per section 105(8).
3. Fall arrest as per section 49

If you are less than 3m above the water the employee has the option of wearing a life jacket or PFD (personal flotation device) all specification is listed above. Otherwise an alternate fall protection system shall be used.

If you are working alone and or rescue is not immediately available you shall wear a life jacket, which if you are unconscious turns you face up in the water.

Rescue Boat

The law requires fall protection first, so if you have a strong fall protection system, in which employees have safe access to and from work areas, if they have a guard railed environment 100% tie off fall protection system or travel restraint then you should not require a rescue boat as a fall into water should not be possible.

If, however there are employees working at lower heights in life jackets or PFD's, or from boats, or you simply feel there is a risk of falls into water and that a rescue boat is necessary then there are requirements to follow.

1. The boat must be in an easy to access area.
2. The boat must be stable in the water being accessed, consider, flow, depth, other boat traffic, etc.
3. The boat needs to be powered in such a way as to make rescue as quick and simple as possible. (motorized in swift or rough water).
4. The operator(s) of the boat must be competent to do so. (should have training from a recognized boat course like the Power and Sail Squadron)
5. The boat must be equipped with a life ring or buoy attached to 30m of rope and a boat hook.

If an employee may fall into water and require rescue the employer shall write an emergency rescue procedure which shall be posted in the workplace.

The emergency rescue procedure shall contain

- A. A full description of the emergency procedures including the responsibilities of all employees granted access to the workplace.
- B. The location of any emergency equipment and the name of the employee designated to operate the equipment.
- C. With regards to water or another liquid
 - (i) its temperature,
 - (ii) its depth, and
 - (iii) its flow;
- D. any water traffic;
- E. the distance to the rescue boat;
- D. the distance to reach an employee;
- E. any projections or objects beneath the surface;
- F. any visibility issues;
- G. the time of day; and
- H. any adverse weather conditions

If an employee may fall into liquid and require assistance to return to a place of safety the employer and contractor shall ensure:

- (a) Appropriate emergency equipment is ready to be used. (this could be a life ring attached to a guardrail with rope that could be thrown to the person in trouble)
- (b) An employee who is competent in the use of the emergency equipment is readily available to provide assistance.; and
- (c) An alarm system is provided to signal the need for a rescue. (air horn, whistle, alarm etc.)

14.6.18 Emergency Rescue

One of the most important aspects of fall protection is the rescue plan. Emergency Rescue should outline the policy and procedures involved in assembling, maintaining, inspecting, using, and dismantling equipment. Plans must be specific to each site where workers are at heights. There is "no one size fits all". Requirements and equipment used will change from workplace to workplace, site to site, and job to job.

Before any work at height can commence the following provisions must be in place as a minimum legal requirement:

- There must be a rescue plan and procedure.
- The operatives are trained and competent in use of rescue equipment.
- A sufficient number of trained and competent personnel on site.

- The rescue procedure in place is practiced on a regular basis and competence is maintained on record.
- The selection of rescue equipment needs to be appropriate for the nature of work.

Rescue Procedures *General Regulation 91-191*

49.2(4) Before any use of a fall-arresting system by an employee, an owner of a place of employment, an employer or a contractor shall develop a procedure to be used for rescuing an employee in an emergency.

49.2(5) An owner of a place of employment, an employer and a contractor shall each ensure that an employee is trained to use the procedures referred to in subsection (4) for rescuing another employee in an emergency.

A written emergency rescue procedure is to be in place and reviewed with all employees for any workplace where a fall arrest system is used.

The emergency rescue procedure must contain

- a) A full description of the emergency procedures including the responsibilities of all employees granted access to the workplace.
- b) The location of any emergency equipment and the name of the employee designated to operate the equipment.

The magnitude and complexity of the plan will depend on the size of the project

**The site must be capable of performing a rescue.*

**Not required when guardrail system used.*

Supervisors will never solely rely on public emergency services without written permission from the organization.

The reality is that rescue services are often a secondary aspect for public emergency services. When public emergency services arrive at the scene for a rescue, they will need to spend time assessing the site and its hazards, which can result in precious time passing before the rescue takes place.

Rescues should only be attempted by trained persons, and only if the attempt can be made with no risk of injury to the rescuer.

The following elements must be present in the Emergency Rescue Procedure:

- A method of reporting the emergency. Generally, telephone is the most effective. However, an alternative should exist
- A list of personnel responsible in emergency situations, and how to contact them.
- A list of phone numbers for emergency and support services.
- Types of rescue equipment available to worker.

- Locations of any rescue line anchor points for rope rescue.
- How to attach retrieval or lowering lines to a fallen worker's harness.
- Specifics about training required to perform rescue work.
- Other site-specific details needed for a safe and successful rescue
- A plan correction and mitigation of hazards.

Questions for Rescue Planning

1. Who will be executing the rescue operation?
2. Where will the rescue take place?
3. What kind of equipment do we need?
4. What are our rescue options for this area?
5. Who Will be Executing the Rescue Operation?

What kind of equipment do we need will depend on the site itself, because sometimes the employee can be far away from the anchor point.

These are some equipment examples:

- | | |
|--|--|
| <ul style="list-style-type: none"> ● Rescue Ladder ● Rescue Haul System (casualty lowering) ● Rescue Winch (casualty raising or lowering) ● Rescue Descent kit (casualty lowering) ● Rescue Low height kit (casualty lowering) ● Suspended access equipment ● Ropes | <ul style="list-style-type: none"> ● Aerial ladder truck ● EWP or scissor lift ● Climbing/rope rescue equipment ● Crane Man Basket. ● Ladder or step ladder ● Rescue pole ● Crane ● Scaffold ● Aerial work platform |
|--|--|

Even when all steps are taken to prevent them, falls can still occur. If a worker falls, you should call 911. Once the worker is moved to a safe area, a certified individual should perform normal first aid procedures. Even if you can rescue the worker and they don't seem injured, they should always be examined by a medical professional.

After any rescue operation it is important to take stock and consider how smoothly the execution of the rescue plan went. Unexpected events or problems during a rescue can be used to improve the plan in the future.

It is also important that the employees involved in the rescue are debriefed to ensure this incident will not affect them in the future.

Rev	Sections Changed	Change Made	Name	Date
1.0	All	New document created.	Brent Lyons	2020

CHAPTER: 14

Codes of Practice

HSM-COP-6

SECTION: 14.6.1

Fall Protection Equipment Inspection Procedure

Rev.1 2021

THIS CODE OF PRACTICE IS APPLICABLE AT ALL TIMES

ALL SUPERVISORY PERSONNEL AND THEIR DESIGNATES ARE RESPONSIBLE FOR IMPLEMENTATION OF THIS CODE OF PRACTICE

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14.6.1.1 WHO IS RESPONSIBLE?

Provincial regulation 91-191 section 50.4(1) requires that all fall protection components be inspected daily by the user and periodically by a competent person.

It is the employer’s responsibility to ensure there is an inspection program and that employees are trained to carry out inspections.

DTI has several employees who have received training and are deemed as being qualified to inspect personal fall protection components.

14.6.1.2 REGULATIONS AND LEGAL REQUIREMENTS

Fall protection equipment and other components fall under both provincial legislation, DTI Policy and CSA Standards.

Regulation 91-191 requires all employees and employers to take proper precautions and care when issuing, using, storing and inspecting fall protection equipment.

An owner of a place of employment, an employer and a contractor shall each ensure that the components of a fall-protection system

- (a) are designed in accordance with good engineering practices,
- (b) are erected, installed, assembled, used, handled, stored, adjusted, maintained, repaired and dismantled in accordance with the manufacturer's specifications, and
- (c) meet the requirements of the applicable standards.

49.1(2) For the purposes of paragraph (1) (c), the following CSA standards apply:

- (a) Z259.1-05, "Body Belts and Saddles for Work Positioning and Travel Restraint" or Z259.1-95, "Safety Belts and Lanyards";
- (b) Z259.2.1-98, "Fall-arresters, Vertical life lines, and Rails" or Z259.2-M1979, "Fall-arresting Devices, Personnel Lowering Devices and Life Lines", if the fall-arrester complies with Z259.2-M1979 it must be modified to make the fall-arrester panic proof;
- (c) Z259.2.2-98, "Self-Retracting Devices for Personal Fall-Arrest Systems", or equivalent;
- (d) Z259.2.3-99, "Descent Control Devices", or equivalent;
- (e) Z259.10-06, "Full Body Harnesses" or Z259.10-M90, "Full Body Harness";
- (f) Z259.11-05, "Energy Absorbers and Lanyards" or Z259.11-M92, "Shock Absorbers for Personal Fall-Arrest Systems";
- (g) Z259.12-01, "Connecting Components for Personal Fall-Arrest Systems", or equivalent;
- (h) Z259.14-01, "Fall Restricting Equipment for Wood Pole Climbing", or equivalent;
- (i) Z259.13-04, "Flexible Horizontal Life Line Systems"; and
- (j) Z259.16-04, "Design of Active Fall-Protection Systems".

An owner of a place of employment shall ensure that every anchor point is inspected and certified by a competent person

- (a) before being used for the first time,
- (b) as recommended by the manufacturer, the installer or an engineer and at least every 12 months,
- (c) after any event or maintenance and repairs, and
- (d) when the owner of a place of employment is informed under subsection (4) of a defect or inadequacy.

50.4(1) An owner of a place of employment, an employer and a contractor shall each ensure that each component of a fall-protection system is inspected as follows to determine whether there are any defective or inadequate components:

- (a) visually by the employee before use during a shift; and
- (b) by a competent person before initial use and periodically as recommended by the manufacturer, installer or an engineer.

50.4(2) If the inspection reveals a defect or inadequacy, no one shall use the fall-protection system and no owner of a place of employment, employer or contractor shall permit its use until the defect or inadequacy has been eliminated.

14.6.1.3 THINGS TO CONSIDER

Whenever we use or plan to use fall protection components there are some things we should look and before purchasing or using certain equipment.

Size of user:

Is the equipment appropriate for the use and user, It is not the responsibility of the Qualified Inspector to know every application of equipment and the person using it, however if you are inspecting equipment and you know the user is say over 300lbs and is using a harness and lanyard that are only rated to that weight, you need to let them know that they need equipment for a larger weight level, once you add clothing, tools etc. that person will be over the limit of the lanyard which may not work properly. Most fall protection equipment is rated for up to 310lbs, there is equipment rated over that limit but generally only up to 400lbs. Some employees may also be very small framed so even medium equipment may not fit them or work for them properly, and then height could be a factor, both very tall or very short employees may need specialized equipment, or considerations.

Right Gear for Application

If you are inspecting harnesses where someone is working in confined spaces and it does not have class “E” D rings on the shoulders, then it cannot be used for that application, you need to tell the user and supervisor.

If in your inspections you see oil, grease, paint etc. that is damaging or destroying the equipment, you may want to discuss the option of PVC coated equipment which can handle some of those products.

Types and Variety of Products Used

To facilitate the fall protection program and inspection process, DTI will attempt to limit the variety of equipment we purchase and use, but not to the detriment of any specialized equipment needed or to compromise the safety of any employee. To facilitate the inspection process, we would like to limit our use of lanyards to a few SRL’s and a few regular single and double lanyards. One type we would like to avoid purchasing is the elastic web lanyards with the wrinkled overcoat on the shock absorber, as shown below.



The reason for not using this type is that they offer no real advantage to other types and they are more difficult to inspect as there are so many areas where you may miss a cut, burn etc. in the many folds of the material.

Proper Storage of Equipment:



All equipment has to be cared for in a manner that will ensure it is maintained for as long as it can safely be used. In the past each user has been requested to store their personal fall protection equipment, being a harness, lanyard, relief straps etc. in a waterproof storage container. Equipment has to be dry before being placed in the container. This will ensure that harmful sun rays or other things like ultraviolet light, sparks, paints etc. don't come into contact with department gear.

14.6.1.4 SERVICE LIFE OF PRODUCTS

Most fall protection products have an undetermined service life, although a lot of manufacturers look at a 5-year time frame. This is a general period of time; however, any equipment can be expired in days or many years depending on use, care, damage etc.

DTI will try to purchase quality equipment that is designed for the environment, for example we have purchased PVC coated harnesses and lanyards for some areas where products being used could damage a regular harness or lanyard. By purchasing a more expensive piece of equipment it may last more than 5 years with good, care, cleaning and inspections.

In our inspection process and inventory, we will try to monitor equipment that does not appear to be lasting **as long as** intended so changes can be made.

14.6.1.5 PRIORITY LIST:

A priority list is basically equipment that may need inspected more often than other equipment, such as rescue equipment, we will develop a list here of what some of those items may be. All newly purchased equipment will also need to be inspected before being put into use. We should look for an inspection from our vendor or have it inspected by one of the qualified inspectors in the department.

Most DTI equipment is used through the construction season and then generally not used as much in off season; thorough inspections have been carried out on a yearly basis with no apparent issue so unless other factors come into play we will continue with this time frame. If our inspection program or users daily use inspections finds certain equipment is failing more often we will determine if we should target that equipment or area more often.

14.6.1.6 CONDEMNING PRODUCTS:

Some products will be condemned thru the inspections by the user or qualified inspector and or through product recalls. When a piece of equipment is condemned from use, the department wants to have it tagged as condemned, then packaged and sent to the Health and Safety Unit with a paper identifying the reason for condemning it, once received at head office it will be removed from our inventory.

14.6.1.7 REMOVAL FROM SERVICE:

Any product that has been damaged or does not meet our specifications for safe use will be condemned and removed from service. It is to be recorded on an inspection sheet then take photos of the gear and then destroy it and take to the local dump.

14.6.1.8 REPORTING DEFECTS:

The should be one contact route with manufacturers and suppliers, that would be through the health and safety unit, so any defective equipment can be properly reported and recorded.

14.6.1.9 INSPECTIONS:

By the User:

Every time a piece of fall protection equipment is used it is to be inspected by the user. These inspections are not required to be recorded, although supervisors and managers should be aware that these inspections are being done and done properly. If there are problems or issues with a piece of equipment it can be addressed through the qualified inspector in most districts, or on the list shown.

Annually:

DTI would like to have all equipment inspected each year between February and April, as equipment is inspected we can use a simple identification system to show that it has been inspected by placing a Cable Tie of different colors on the equipment. Eight-inch cable ties seem to work for most equipment, once in place cut off any excess as close to the connector as possible, then test it to make sure it is intact.

Unique Identifier:

In order to maintain an accurate inventory we need to make sure certain information is gathered for each piece of equipment that we inspect. Below is a table that should help you when conducting your inspections. One thing is essential, as you are doing inspections and a piece either passes or is determined to be unsafe for use, we have to look for several pieces of information that will identify that piece of equipment.

Typical identifiers are District or Branch, Owner, Make and Model,

Equipment Type	Manufacturer	Unique Identifier
Harnesses	Miller/North	Inspection #
	MSA	Serial # Part # and Date
	Protecta	
	Norguard	
	Safewaze	
	McCordick	No Unique Identifiers
	Titan	
Lanyards	DBI Sala	
	Miller/North	Inspection #
	MSA Older than 2008	Model P/N #
	MSA 2008 and newer	Serial # Part # and Date
	Titan	Could find nothing unique Model/Size
	Norguard	
Safewaze		

	Protecta	
	3m Safeway	Lot # or Part #
	DBI Sala	
	McCordick	No Unique Identifiers
	Degil	
Chockers and Slings	Miller/North	Inspection #
	Protecta	
	Safewaze	
	Titan	
	DBI Sala	
Rope Grab	Miller/North	Inspection #
	McCordick	No Unique Identifiers
	Elk River	Serial #
	Protecta	
	Titan	
	DBI Sala	
Life Lines	Miller/North	
	DBI Sala	
Rescue Equipment	All Miller	Identified parts
Carabiners etc.	Various manufacturers	No district identifier?
Relief Straps	Miller	Inspected by user as not fall arrest gear

2020 the color will be white.
2021 the color will be yellow
2022 the color will be red.
2023 the color will be green.



The zip tie needs to be placed on each piece of equipment, so it is not interfering with the function of the equipment and is in a place that is not easily destroyed, and clearly visible.

On harnesses on the front near the chest strap is a good location



On lanyards near where it attaches to the rear dorsal.



Place the zip tie on the equipment, make sure it is clicking as you pull it snug to the gear, then cut off the loose end. An 8 inch

Special circumstances:

For Twin Turbo retractable lanyards, we need to inspect and identify each of the three parts individually, on the inspection sheet you can put all of the information just make sure you indicate there are potentially 3 different manufacturer dates and there should be 3 unique identifiers, for the SRL's the inspection no is unique.



Existing equipment:

Each inspector will receive a copy of the equipment listed for the area he is inspecting, as equipment is inspected the inspector will identify equipment on the data system with equipment to be inspected, transfer that data to the individual inspection sheet. Information required; District or Branch, Kit #, work unit, owner, supervisor, brand, serial number, model number and manufacture date are critical. Some equipment does not have a serial or model number, if not use other information such Inspection No. There is an example of a report on the R drive under Ed MacFarlane, Fall protection Equipment Inspections. Clear handwriting is required.

New Equipment:

All new equipment should have a thorough inspection and details onto an inspection sheet before being put into use. This will allow us to confirm that it is safe, right for the use and that we have it in our records system

Once completed a copy of the inspection sheets should be kept in the district or Branch where they belong and a copy sent to HR branch care of Dana Hollett, (DTI/MTI) Dana.Hollett@gnb.ca and the electronic data base will be updated.

Some good reference material is available at

<https://www.millerfallprotection.com/smart-solutions/guide-to-fall-protection/inspection-and-maintenance?tab=harnessbody>

<https://www.millerfallprotection.com/pdfs/Smart%20Policy%20MillerGuide.pdf>

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To be completed when using Fall Protection. Also, a Rescue Plan form must be completed.		
Job Number:		Date:
Job Location:		Job Task:
Completed By:		Signature:

Site / Task Specific Information
Nature of work:
Duration of work:
Description of work:
Tools & Equipment used
Regulations that apply to work:
Effects of weather:
Designated Competent Supervisor:
Training Required:
Fall Protection Systems to be used (Check all that apply)
<input type="checkbox"/> Travel Restraint <input type="checkbox"/> Guardrails / Temporary Flooring/ Nets <input type="checkbox"/> Personal Fall Arrest <input type="checkbox"/> Work Positioning
Fall Protection System Components to be used (Check all that apply)
<input type="checkbox"/> Full Body Harness <input type="checkbox"/> Lanyard <input type="checkbox"/> Connecting Devices <input type="checkbox"/> Self-Retracting Devices <input type="checkbox"/> Vertical Life Line <input type="checkbox"/> Carabineer <input type="checkbox"/> Fall Arrestor/Rope Grab <input type="checkbox"/> _____ <input type="checkbox"/> Horizontal Life Line <input type="checkbox"/> Anchorage <input type="checkbox"/> Work positioning Rope <input type="checkbox"/> _____

Anchor Point Locations and Description

Fall Hazard Analysis and Briefing Checklist Instructions

Use this checklist in your evaluation and as the talking points in the daily briefing to identify the controls established for the elevated work. The briefing and checklist requirements must be reviewed, verified and communicated to the workers daily, prior to the start of work. If the scope of work or location changes reevaluation by the Competent Person is required.

1. Identify all fall hazards:

<input type="checkbox"/> Roof Work (within 2m feet of edge)	<input type="checkbox"/> Unprotected Stairways	<input type="checkbox"/> Ladders (portable or fixed)
<input type="checkbox"/> Roof penetration or Skylight (work within 2m of unprotected opening)	<input type="checkbox"/> Wall or floor openings (work within 2m of unprotected wall or floor opening)	<input type="checkbox"/> Aerial lifts, Scissor lifts and elevating work platforms
<input type="checkbox"/> Scaffold erection / disassembly	<input type="checkbox"/> Leading edge	<input type="checkbox"/> Steel erection

Other Describe:

2. Method of fall protection to be provided:

<input type="checkbox"/> Passive (guardrail or hole cover)	<input type="checkbox"/> Fall Restraint	<input type="checkbox"/> Ladder Safety Device
<input type="checkbox"/> Positioning System	<input type="checkbox"/> Personal Fall Arrest (PFAS)	<input type="checkbox"/> Warning Lines

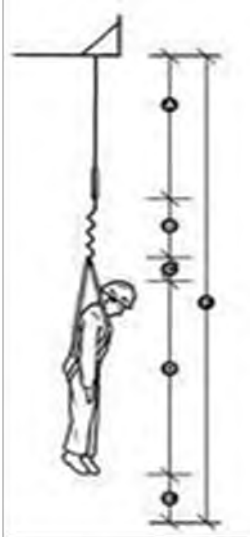
Comment:

3. Fall Protection Equipment required (CSA and ANSI compliant), if applicable:

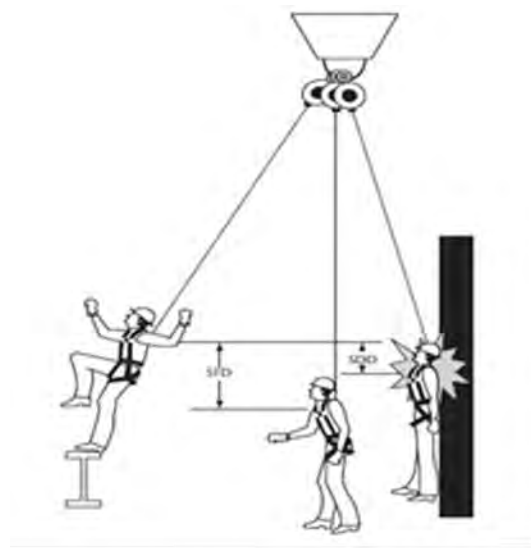
<input type="checkbox"/> Anchorage Connector	<input type="checkbox"/> Full Body Harness	<input type="checkbox"/> Restraint Lanyard
<input type="checkbox"/> Shock Absorbing Lanyard	<input type="checkbox"/> Self-Retracting Lanyard (SRL)	<input type="checkbox"/> Leading Edge SRL
<input type="checkbox"/> Twin Leg Lanyard	<input type="checkbox"/> Rope Grab	<input type="checkbox"/> Safety Nets

NOTE: The Competent Person must confirm system selection and compatibility.

Calculation of Fixed Anchor Vertical & Swing Fall Clearance Distance



Vertical Fall				
		Worker	1	2
A	Length of Lanyard			
B	Shock Absorber Elongated			
C	Harness Stretch (from top of workers head)			
D	Height of Worker			
E	Safety Factor (0.6M) beneath feet			
F	Overall Minimum Clearance Beneath the Anchor			



SDD MUST NEVER EXCEED 1.2 M

TOTAL SWING DROP DISTANCE (SDD)

(The drop-in height of D ring from the onset of the swing to the point where the worker may impact any structure)

Staff # 1 SDD = _____

Staff # 2 SDD = _____

Worker # 1 – Name:

Worker # 2 - Name:

Describe the Steps for the Assembly, Use and Disassembly of the Fall Protection System
Procedures for Handling, Storing and Securing Tools and Materials while using Fall Protection (Brief description of plan to avoid dropping tools or materials or losing balance or footing)

Inspection of Fall Protection Systems		
System	Schedule	Person Responsible
Guardrails		
Temp Flooring		
Personnel Net		
Travel restraint		
Fall Arrest		
Work Positioning		

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SECTION: 14.6	Fall Protection Rescue Plan	Rev.1 2021

**Form must be completed and reviewed with all persons involved in the rescue.
Also, a Fall Protection Plan form must be completed.**

Date: _____ **Location:** _____

Task Description:

Start Date: _____ **End Date:** _____

Rescuer(s):	Rescue Equipment	Emergency Contacts:
	Aerial <input type="checkbox"/> Crane <input type="checkbox"/>	
	Lifting/Lowering Device <input type="checkbox"/>	
	Rescue Pole <input type="checkbox"/> Recue Rope <input type="checkbox"/>	
	Scaffold <input type="checkbox"/> Ladder <input type="checkbox"/>	
	Suspension Trauma Straps <input type="checkbox"/>	
	First Aid Kit <input type="checkbox"/>	
	Other: _____	
Rescuer(s) trained? <input type="checkbox"/> Yes <input type="checkbox"/> No		Rescue plan available on-site? <input type="checkbox"/> Yes <input type="checkbox"/> No
Competent Person(s):		
Method of Communication(s):	Backup communication Devices:	Emergency communication form available on-site? <input type="checkbox"/> Yes <input type="checkbox"/> No

Rescue Equipment Location:

Fall distance/exposure to the next lower level:

Critical Rescue Factors:

Anchor Point(s):

Rescue Obstructions/Hazards:

Describe rescue or evacuation procedure to be followed in the event of a fall:

Please answer the following questions

Have alternatives to using fall arrest equipment been considered?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Has rescue equipment been inspected and in good shape?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Is equipment adequate for the rescue plan?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Have communication devices been identified, located, and tested?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Are all rescuers familiar with the use of the rescue equipment?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Do first-aiders know how to respond to fall injuries (i.e. suspension trauma)?	<input type="checkbox"/> Yes	<input type="checkbox"/> No

Diagram of worksite and rescue equipment set-up (optional):

18.	Adequate access to get on and off the scaffold? Less than 6M ladder or stairway 6M or more Stairway.										
19.	No Tripping hazards on Platforms?										
20.	Gaps between the scaffold platform and a building or other structure is not greater than 304 mm (12 in.).										
21.	No obvious damage to frames, braces, planks, sills, screw jacks or any other scaffold components. <i>OHS Reg 191-91 sec.132 (2)(b)</i>										
22.	If inspection reveals scaffold is unsafe to use, has "Do Not Use" tag been placed at all access points?										

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Form must be completed and reviewed with all persons involved in the rescue.		
Date:	Task Location:	
Task Description:		
Start Date:	End Date:	Supervisor:
Rescuer(s):	Rescue Equipment	Emergency Contacts:
	Rescue Boat <input type="checkbox"/> Life Ring <input type="checkbox"/> PFD <input type="checkbox"/>	1.
	<input type="checkbox"/> Other Describe:	2.
		3.
		4.
Rescuer(s) trained? <input type="checkbox"/> Yes <input type="checkbox"/> No	First Aid Kit Onsite: <input type="checkbox"/> Yes <input type="checkbox"/> No Air Horn Onsite: <input type="checkbox"/> Yes <input type="checkbox"/> No	
Method of Communication(s):		
Backup communication Devices:		
<u>Rescue Equipment Location:</u>		
<u>Critical Rescue Factors (if applicable):</u>		
<u>Rescue Obstructions/Hazards:</u>		

Please answer the following questions as per Section 51(9)(12) NB OHS Regulations 91-191		
Approximate Water Temperature:		
Approximate Water Depth in work area:		
Water flow:		
Any water traffic to be aware of? <input type="checkbox"/> Yes <input type="checkbox"/> No If yes, describe procedures put in place:		
Approximate distance to rescue boat:		
<ul style="list-style-type: none"> If using a rescue boat, is boat equipped with a life ring and 30 m of rope? <input type="checkbox"/>Yes <input type="checkbox"/>No 		
Approximate distance to reach employee:		
Any objects beneath water that can hinder rescue operation? <input type="checkbox"/> Yes <input type="checkbox"/> No <i>If yes, please describe</i>		
Any visibility issues? <input type="checkbox"/> Yes <input type="checkbox"/> No		
Any adverse weather conditions? <input type="checkbox"/> Yes <input type="checkbox"/> No		
Is equipment onsite adequate for the rescue plan?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Have communication devices been identified, located, and tested?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Are all rescuers familiar with the use of the rescue equipment?	<input type="checkbox"/> Yes	<input type="checkbox"/> No

CHAPTER: 14

Codes of Practice

HSM-COP-7

SECTION: 14.7

Respiratory

Rev.1 2021

**THIS CODE OF PRACTICE IS APPLICABLE AT ALL TIMES
ALL SUPERVISORY PERSONNEL AND THEIR DESIGNATES ARE RESPONSIBLE FOR
IMPLEMENTATION OF THIS CODE OF PRACTICE**

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14.7.1 Overview

The COP and Rules for respiratory protection have been developed to ensure the protection of personnel from respiratory hazards, through training hazard identification, fit testing and the proper selection and use of respirators.

The department is committed to providing employees with a safe and healthy working environment. This is accomplished by utilizing facilities and equipment that have all feasible safeguards incorporated into their design. When engineering controls are not practical, or when they are being initiated, respiratory protection shall be used to ensure personnel protection.

Approved respirators and supplies will be provided to the employees that require them. Employees must use the equipment according to instructions and training provided.

Persons contracted or hired to perform work for the New Brunswick Department of Transportation and Infrastructure are responsible for providing their own respiratory protective equipment and training of employees. They must have and use their own Code of Practice or DTI's, whichever is more stringent.

Respirator protection is required to be worn by employees who work in areas where the concentration of air contaminants may exceed 50% of the threshold limit value (TLV), or where there is the possibility of accidental exposure above the TLV, or where the oxygen content in the atmosphere is below 19.5%, or where an employee believes their health or safety may be at risk due to an air contaminant.

14.7.2 General Requirements

All Departmental employees who are required to enter or work in a hazardous or oxygen deficient atmosphere or that contain a toxic or disease-producing contaminant shall comply with the following rules:

- Attempt to eliminate respiratory hazards by using non-hazardous alternatives or engineering controls. When these alternatives are not feasible, respirators are to be used as a "last line of defense" against a hazard.
- Use respirators that are approved by the National Institute for Occupational Safety and Health (NIOSH).
- Comply with the Departmental "Code of Practice for Respiratory Protection" when respiratory equipment is required because of a hazard. Receive training on the contents of the Department's "Code of Practice for Respiratory Protection".
- Co-operate in attaining an effective fit when respiratory equipment is required and be as ***clean shaven*** as is necessary to ensure an effective facial seal.

14.7.3 Administration

Designation of Responsible Personnel

The DTI Health and Safety Unit will act as the Administrator for this COP. Supervisors will administer the components of the COP at the district/ branch level. *Managers and employees*, to whom this COP applies, are responsible to comply with the COP.

14.7.4 Responsibilities

The HSU is responsible to ensure that the COP for respiratory protection is implemented in the appropriate work areas as well as:

Administrator's Responsibilities (HSU):

- Ensure the implementation of the Code of Practice for Respiratory Protection (COP).
- Develop and update the employee-training course on Respiratory Protection.
- Evaluate the overall effectiveness of the COP through a periodic audit.
- Co-ordinate revisions to the COP when required.
- A resource to aid in conducting hazard assessments, which includes re-evaluations, to ensure that the protection provided is appropriate for the hazard, utilizing the hierarchy of controls. (see Chapter 2)
- Assist with the selection of suitable respiratory equipment ensuring the proper respirator is selected for the contaminants.
- Maintain records of training, Health condition and qualitative Fit test forms as well as medical evaluation forms as needed.
- Annually review and update this COP.

Supervisor's Responsibilities:

- Implement the COP and Rules for Respiratory protection in the workplace.
- Ensure that all employees requiring respiratory protection have been trained and fit tested.
- Recognize new potential respiratory hazards and contact the HSU for evaluation.
- Provide approved respirators and associated equipment; monitor respirator maintenance.
- Conduct inspections to verify that employees are using protective equipment appropriate for the job and work environment.
- If medical assessment is required to assess an employee's ability to use respiratory equipment, the supervisor must contact the HR Consultant for

assistance. All medical information relating to the COP must be maintained in confidential files.

Employee's Responsibilities:

- Comply with the COP.
- Attend formal training including fit-testing procedures.
- Be clean-shaven while using a tight fit respirator.
- Wear the respirator when and where required, in the manner in which he/she was instructed.
- Inspect, clean, maintain and store his/her respirator as instructed.
- Report immediately to the supervisor any difficulties, malfunctions, or damages to the respirator and supplies.
- Take precautions to prevent damage to the respirator and equipment.

14.7.5 Hazard Identification and Evaluation

Hazardous atmospheres in the workplace shall be identified and assessed for selecting appropriate respiratory protective devices. This will be done through ongoing inspection of the workplace and appropriate monitoring (air sampling) where hazards are suspected.

Before the proper respirator can be selected for a job, be sure you have already

- Identified the respiratory hazard
- Evaluated the hazard
- Considered whether engineering controls are feasible

The questions below can help determine if you have enough information to choose the type of respiratory protection. It may be required to consult with Product SDS or a Safety Professional, Supplier of respiratory protection or an Occupational Hygienist when selecting a respirator.

Questions:

- Is it to be used in firefighting or emergencies?
- Is it to be used in oxygen-deficient atmospheres (less than 19.5% oxygen in air)?
- What is the nature of the hazard (chemical properties, concentration in the air, warning properties)?
- Is there more than one contaminant (i.e. a mixture or more than one chemical is present)?
- Is the airborne contaminant a gas, vapor or particulate (mist, dust or fume)?

- Are the airborne levels below or above the safe exposure limit, or are they above levels that could be immediately dangerous to life or health?
- What are the health effects of the airborne contaminant (carcinogenic, potentially lethal, irritating to eyes, absorbed through the skin)?
- What are the characteristics of the operation or the process (e.g., hot temperature, confined space)?
- What activities will the worker be doing while wearing the respirator (e.g., strenuous work)?
- How long will the worker need to wear the respirator?

14.7.6 Respirator Selection

The Department of Transportation and Infrastructure will purchase and maintain National Institute of Occupational Health and Safety (NIOSH) approved respirators and supplies.

For the purpose of the “Code of Practice for Respiratory Protection”, a respiratory protective device (respirator) is either

1. A tight-fitting mask that fits over the nose and mouth or entire face, it can accept filters for a variety of particulates, gasses, vapors or fumes, or is attached to a line that supplies air to the user from a safe and tested source. This type of mask is classified as an air purifying (disposable or reusable) or an air supplying respirator.
2. A loose-fitting hood that fits over the head and is supplied with air. No fit testing is required for this type of respirator (typically used for sandblasting operations).

A determination of the type of respirator needed will be based upon the results of the initial hazard assessment to include the following:

- A. The nature of the hazardous operation or process
- B. The type of respiratory hazard
- C. The period of time for which respiratory protection must be provided
- D. The activities of workers in the hazardous area, physical demands etc.
- E. The physical characteristics, functional capabilities and limitations of various respirator types
- F. The respirator protection factors

The HSU may be consulted when respiratory equipment and supplies are purchased to ensure adequate personnel protection.

There are many varieties of respirators available and some are interchangeable for similar protection. DTI employees will mostly use Air Purifying respirators of the disposable dust/mist type but may need to be fitted with other respirators such as a ½ face or full-face reusable that have the ability to be fitted with many different cartridges.

For unknown concentrations of contaminants or for oxygen deficient atmospheres, air supplying respirators must be used.

You MUST be fit tested for each type and or Manufacturer of respirator you use.

There are 9 classes of particulate filters, depending on the particulate material. They are classified based on levels of oil resistance and filter efficiency. Oil can break down certain types of filters which means it is important to know the materials you are working with at all times and always select the right disposable respirator or cartridge for adequate protection. The main categories for particulate filters are:

- N series (Not resistant to oil) - May be used in any atmosphere where there is no oil particulate. N95, N99 and N100.
- R series (Resistant to oil) - May be used in any atmosphere where there is no oil particulate, or up to one shift where there is oil particulate present. "One shift" means eight hours of continuous or intermittent use. R95, R99 and R100.
- P series (Oil-Proof) - May be used in any atmosphere, including those with oil particulates (e.g., lubricants, cutting fluids) for more than one shift. If the filter is used in atmospheres with oil particulates, contact the manufacturer to find out the service life of the filter. P95, P99 and P100.

The numbers 95, 99 and 100 represent the purification efficiency of filters as a percentage.

14.7.7 Emergency Respirators

Due to the complexity of a job it may be deemed necessary to provide emergency respirators.

There are many reasons for emergency respirator use, a few examples are

1. For someone wearing an airline respirator and its failure could leave the employee in an Immediately Dangerous to Life and Health (IDLH) situation, (using an air/oxygen supplied respirator in a confined space).
2. Where employees may be called upon to respond to an emergency where the air contaminants are potentially hazardous (e.g. a chemical spill).
3. When the normal extraction or ventilation system fails, and you need to use respiratory protection or improve the respiratory protection you were using.

Where an emergency situation takes place, you should leave the contaminated area to a safe place, then before re-entering, evaluate the situation to make sure it is safe for you or anyone else to enter, even with better protection.

In all cases, emergency included, employees who may need to use the respirator have to fill in a medical evaluation, attend the COP training and be fit tested.

14.7.8 Compressed Breathing Air

Compressed breathing air shall comply with the purity requirements of CSA Standard CAN3-Z180.1. This test must be made every 6 months by an accredited lab.

14.7.9 Respirator Fit Testing

Respirators will be assigned to individual workers for their exclusive use.

Different sizes of respirators are available, and it is very important that the wearer be tested to ensure a tight facial seal. The fit test is required for each type of respirator they may need to wear, such as a disposable half face versus a reusable half or full-face piece.

Facial fit shall be determined by performing a **Qualitative or Quantitative Fit Test** during the initial training session and the wearer shall be re-fitted every two years. The Qualitative Fit testing method is a test of the sensory response of the employee to an agent, as determined by the Fit tester. Quantitative fit testing uses a device that measures the difference in the number of particles inside and outside the mask.

Prior to each use, the wearer will perform a **Negative and Positive Pressure Check** as instructed in the training.

A positive pressure check is done by closing off the exhalation valve and exhaling gently into the face piece. The face fit is considered satisfactory if a slight positive pressure can be built up inside the face piece without any evidence of outward leakage of air at the seal.

A negative pressure check is done by closing off the inhalation valve and inhaling gently until the face piece collapses slightly. If the face piece remains in its slightly collapsed condition for 10 seconds and no inward leakage of air is detected, the tightness of the respirator is considered satisfactory.

Respirators must only be worn when conditions allow a good facial seal. The presence of a beard, sideburns, deep scar, and absence of one or both dentures can seriously affect the fit of the face piece. The purpose of the requirement to be clean-shaven is to attain an adequate seal of the respiratory equipment against the face. The fit is important to keep contaminants out. Since respiratory equipment could be required in emergency situations where there is not time to do repeated fit tests, the Commission advises employers and employees that an employee should be freshly clean shaven when performing any work that may require a respirator for the task or for rescue.

If eyeglasses, goggles, face shield or welding helmet must be worn with a respirator, they must be worn so as not to adversely affect the seal of the face piece.

14.7.10 Training

Respiratory protection training will be completed and must be properly documented to include the type and model and manufacture of respirator for which the individual has been trained and fit-tested. Training records shall be kept for at least the duration of employment of the person trained. Retraining shall be conducted as required or when

1. Changes in the workplace or the type of respirator render previous training obsolete.
2. Inadequacies in the employee's knowledge or use of the respirator indicate that the employee has not retained sufficient understanding or skill.
3. Other situations arise in which training appears necessary to ensure safe respirator use.

Respirator wearers, their supervisors and personnel issuing respirators will receive training on the contents of the New Brunswick Department of Transportation and Infrastructure's COP. The training will consist of classroom instruction and hands-on respirator fit testing.

The Classroom Instruction:

- The DTI COP and review of responsibilities.
- The nature and degree of respiratory hazards and their effects.
- Proper respirator selection and use.
- How improper fit, usage, or maintenance can compromise the protective effect of the equipment.
- Limitations of a respirator.
- How to use a respirator in an emergency situation.
- How to inspect a respirator.
- Proper maintenance and storage procedures.
- How to recognize medical signs and symptoms that may limit the effective use of a respirator.

Hands-on respirator fit-testing:

- Respirator inspection / record keeping
- Respirator cleaning and sanitizing
- Respirator storage
- Respirator fit-test (qualitative)
- Demonstration of positive and negative pressure tests
- How to determine when the respirator no longer provides adequate protection

14.7.11 Use of Respirators

Employees **shall** wear a respirator to protect themselves from respiratory hazards when exposed to

- an air contaminant level that may exceed 50% of the TLV; or
- an air contaminant level that might exceed the TLV during an accidental exposure; or
- air that contains less than or may contain less than 19.5% oxygen by volume.

Before respirators can be used, other control measures must be considered and put into practice by the employer. If they are not practical or possible, then respirators can be used.

There may be circumstances where employees may want to use a respirator to protect themselves from non-hazardous levels of airborne contaminants. Although fit testing is not required for these exposures, face piece positive and/or negative pressure checks should be done to confirm seal of the respirator (See element #4 above).

Respirators should not be the first choice for respiratory protection in workplaces. They should only be used

- when following the "hierarchy of control" is not possible (elimination, substitution, engineering or administrative controls);
- while engineering controls are being installed or repaired;
- when emergencies or other temporary situations arise (e.g., maintenance operations).

14.7.12 Inspection, Cleaning, Maintenance and Storage of Respirators

Respirators shall always be maintained in good working condition.

The maintenance of respiratory devices involves a thorough visual inspection for cleanliness and defects (e.g. holes in the filters, dents or deterioration on cartridges, loss of elasticity, distortion or cracks or scratches on the face piece, residue or dirt in the valves or on the parts, missing parts, cracking rubber, tears or deterioration of straps and hoses, defective exhalation and inhalation valve etc.). A respirator with worn or deteriorated parts shall be replaced or repaired immediately.

- No attempt shall be made to replace components, make adjustments or repairs on any respirator beyond those recommended by the manufacturer.
- Under no circumstances will parts be substituted, as such substitutions will invalidate the approval of the respirator.

- Before and after each use, the user will inspect his/ her respirator.

Employees are responsible to clean their respirators. Cleaning and disinfecting of respirators must be done frequently to ensure that skin penetrating and dermatitis causing contaminants are removed from the respirator surface.

The following procedure is recommended for cleaning and disinfecting a respirator:

1. Remove the filters, cartridges or canisters.
2. Wash face-piece and breathing tube in a cleaner/ disinfectant solution prescribed by the manufacturer. A hand brush may be used to remove dirt. Solvents that can affect rubber and other parts shall not be used.
3. Rinse completely in clean, warm water.
4. Air-dry in a clean area in such a way as to prevent distortion.
5. Clean other respirator parts as recommended by manufacturer.
6. Inspect thoroughly to ensure proper working condition.
7. Reassemble respirator and replace any defective parts.
8. Place in a clean dry plastic bag or other suitable container for storage after each cleaning and disinfecting.

A respirator must be tested and inspected before each use.

14.7.13 Storage of Respirators

Respirators will be stored in readily accessible, clean and sanitary locations to protect against contamination and damage.

- They will be protected against sunlight, heat, extreme cold, and moisture.
- Suitable plastic sealable bags may be used to store respirators **Cartridges must be removed and stored separately** to avoid contamination. If they are stored in locations where the bag may be punctured, carrying cases or cartons are preferred.
- Respirators shall be packed or stored so that all the parts of the respirator will rest in a normal position and not be crushed. This will prevent deformation.
- The respirator wearer's name must be clearly visible on the sealed plastic bag, carrying case, carton, or other means of storage.

14.7.14 Medical Evaluation and Monitoring

Wearing a respirator makes special physical demands on the employee. Breathing is somewhat more difficult when wearing a respirator, therefore it is important that the employee seek medical consultation if existing medical conditions could limit or

preclude the use of a respirator. A description of the work and type of respirator required is to be supplied to the physician. (See APPENDIX C).

If the physician advises the employee against the use of a respirator, the physician's evaluation section of the DTI medical evaluation questionnaire needs to be completed.

14.7.15 Evaluation

DTI will periodically audit the program to verify that

1. Respiratory protection is maintained.
2. Employees are using RPE where and when required.
3. Respiratory protection being used is appropriate for the hazard.

14.7.16 Record Keeping

The HSU shall ensure documents are developed and maintained for the following:






1. Hazard Evaluation/Respiratory selection guide (See APPENDIX A).
2. Training, fit-testing, and respirator selection records for the duration of employment.
3. Cleaning, maintenance and inspections done on each respirator according to the manufacturer's specifications (include dates; repairs completed; tests carried out) (See sample – APPENDIX B)
4. Medical records where required (See sample – APPENDIX C)
5. COP evaluation checklist (See sample – APPENDIX D)

14.7.17 References

- New Brunswick Regulation 91-191 (Section 45, 46, 47)
- *Occupational Health & Safety Act* Chapter 0.02 (Section 50)
- CSA Standards Z94.4 – M93 (Selection, Use and Care of Respirators.)

Personal Protective Equipment Respirator Selection Guide

All respirators must be approved by the National Institute for Occupational Safety and Health (NIOSH) or an equivalent.

		Types of Respirators											
		Air Purifying						Air Supplying					
		Disposable		Reusable Half-face and Full-face		Powered Air Purifying Respirator (PAPR)		Airline (5)		Self-contained Breathing Apparatus (SCBA)			
													
Activities/Contaminants	Hazards	Efficiency (%)			Chemical cartridges	Particulate cartridges efficiency (%)			Chemical cartridges	Particulate cartridges efficiency (%)			
		95	99	100		95	99	100					100
Particulates	Grinding, sanding, woodworking, general dust, ...	✓ (1)	✓ (1)			✓ (1)	✓ (1)						
	Lead, cadmium, arsenic, ...			✓ (1)				✓ (1)					
	Asbestos removal (7)	Class 1			✓ (1)				✓ (1)				
		Class 2							✓ (1)				
		Class 3								✓ (1)		✓	
	Welding, cutting, brazing	Welding fumes	✓	✓	✓		✓	✓	✓				
Microbials removal (4)	Mold and bacteria	✓	✓	✓		✓ (3)	✓ (3)	✓ (3)		✓ (3)			
Gases and Vapours	Solvent, organic vapour, paint, thinners, Formaldehyde, ... (8)				✓ (2)				✓ (2)			✓	
	Ammonia, acid gases, ...				✓ (9)							✓	✓
	Autobody paint											✓	
	Confined space rescue or areas where the contaminants have not been measured	Unknown concentration of contaminants or immediately dangerous to life and health atmosphere										✓ (6)	✓

- (1) Respirators are available in the N, R or P classes. N means no oil mist resistance; R means some oil resistance and P means oil mist resistant.
- (2) Chemical cartridges may be fitted with dust pre-filters when particulates are present.
- (3) Acid gas cartridges may be used in addition to particulate cartridges, if a bleach is used as a disinfectant.
- (4) The required protection depends on the extent of the contamination and the nature of the abatement project.
- (5) Airline systems air quality has to be tested every 6 months to ensure it meets CSA Standard CAN3-Z180.1.
- (6) Requires an emergency escape cylinder.
- (7) As described by the Code of Practice "A Code of Practice for Working with Materials Containing Asbestos in New Brunswick."
- (8) The required cartridges will differ depending on the airborne contaminants.
- (9) A full-face respirator is required at high concentrations.

This chart is to be used as a guide and represents the most common applications where respirators are used. The respirators that are selected may vary depending on the work conditions. Respirators should only be used where engineering controls are not possible or have failed to adequately reduce worker exposure to contaminants. The airborne contaminants must be identified and measured before selecting the best respirator.

APPENDIX B RESPIRATOR MAINTENANCE LOG

Employee: _____

Type of respirator: _____

Month: _____

Number or Make: _____

Cleaning			Inspection & Maintenance					
Tested	Cleaned	Disinfected	Good condition	Defective component * (Identify)	Recommended Action		Date	Signature
					Repair	Replace		

* Notify Supervisor

APPENDIX C MEDICAL CLEARANCE QUESTIONNAIRE FOR RESPIRATOR USE

Employee Name

Employee Number

Supervisor

Work Location

HAZARD REQUIRING PROTECTION (circle all that apply):

Pesticides Solvent Vapours Dusts Spores Pollen Other

CIRCLE TYPE OR TYPES OF RESPIRATOR (S) TO BE USED:

Air-Purifying (disposable, reusable) Air-Purifying (Powered) Air-Supplying

LEVEL OF WORK EFFORT:(Circle 1)

Light Moderate Heavy Strenuous

EXTENT OF USAGE:(Circle 1)

1. On a daily basis
2. Weekly
3. Occasionally - but more than once a week
4. Rarely - or for emergency situations only

LENGTH OF TIME WEARING RESPIRATOR EACH DAY: _____

SPECIAL WORK CONSIDERATIONS: (e.g., high places, temperatures, hazardous material, protective clothing, etc.)

Respirator Co-ordinator

Date

Complete and send to employee's evaluating medical provider.

PHYSICIAN'S EVALUATION

EMPLOYEE: _____

CLASS: (Circle 1)

- I. No restrictions on respirator use
- II. Some specific use restrictions
- III. No respirator use permitted

RESTRICTIONS:

Examining Physician

Date

Physician: Complete and return to employee who provides to Supervisor and Respirator Co-ordinator.

APPENDIX D RESPIRATOR STANDARDS EVALUATION CHECKLIST

Y	N	#	A. Respiratory protective equipment selection
		1.	Are work area conditions and worker exposures evaluated?
		2.	Are respirators selected on the basis of hazards to which the worker is exposed?
		3.	Are selections made by individuals knowledgeable of proper selection procedures?
		4.	Are only certified respirators purchased and used?
		5.	Have respirators been issued to the users for their exclusive use, and are there records covering issuance?
			B. Respiratory protective equipment fitting
		6.	Are the users fit-tested to the respirator they will be wearing?
		7.	Is fit-testing conducted every 2 years?
		8.	Are those users who require corrective lenses properly fitted?
		9.	Are users prohibited from wearing contact lenses when using respirators?
		10.	Are workers prohibited from wearing respirators in contaminated work areas when they have facial hair or other characteristics that may cause face seal leakage?
			C. Respirator use in the work area
		11.	Are respirators being worn correctly?
		12.	Are workers keeping respirators on all the time while in the contaminated work area?
			D. Maintenance of respiratory protective equipment
			Cleaning and Disinfecting
		13.	Are respirators cleaned and disinfected after each use?
		14.	Are proper methods of cleaning and disinfecting utilized?
			Storage
		15.	Are respirators stored in a manner so as to protect them from dust, sunlight, heat, excessive cold or moisture, deformation, or damaging chemicals?
			Inspection
		16.	Are respirators inspected before and after each use and during cleaning?
		17.	Are users instructed in inspection techniques and can they demonstrate?
			Repair
		18.	Are respirators repaired with only manufacturer's approved parts?
			E. Training
		19.	Are all users trained in proper respirator selection, care, use and inspection?

Comments and recommendations:

Signature

Date

APPENDIX E GLOSSARY

The following definitions are important terms relating to respiratory protection:

Air-purifying respirator means a disposable or reusable device with an air-purifying filter, cartridge or canister that removes specific air contaminants by passing ambient air through the air-purifying element.

Air-supplying respirator means an airline or a self-contained breathing apparatus (SCBA) that provide protection against oxygen deficiency and toxic atmosphere. The air source for these devices must be tested for air purity as per CSA standard CAN3-Z180.1 (see COP element #3).

Airline respirator: means a supplied air respirator for which the breathing air source is not carried by the user.

Canister or cartridge means a container with a filter, sorbent, or catalyst, or combination of these items, which removes specific contaminants from the air passed through the container.

Emergency situation means any occurrence such as, but not limited to, equipment failure, rupture of containers, or failure of control equipment that may or does result in an uncontrolled significant release of an airborne contaminant.

Filtering face piece (dust mask) means a negative pressure particulate respirator with a filter as an integral part of the face piece or with the entire face piece composed of the filtering medium.

Fit test means the use of a protocol to evaluate the fit of a respirator on an individual.

High efficiency particulate air (HEPA) filter means a filter that is at least 99.97% efficient in removing particles of 0.3 micrometers in diameter. The equivalent NIOSH 42 CFR 84 particulate filters are the N100, R100, and P100 filters.

Hood means a respiratory inlet covering that completely covers the head and neck and may also cover portions of the shoulders and torso.

Immediately dangerous to life or health (IDLH) means an atmosphere that poses an immediate threat to life, would cause irreversible adverse health effects, or would impair an individual's ability to escape from a dangerous atmosphere.

Oxygen deficient atmosphere means an atmosphere with oxygen content below 19.5% by volume.

Powered air-purifying respirator (PAPR) means an air-purifying respirator that uses a blower to force the ambient air through air-purifying elements to the inlet covering.

Qualitative fit test (QLFT) means a pass/fail fit test to assess the adequacy of respirator fit that relies on the individual's response to the test agent.

Quantitative Fit Test (QNFT) an assessment of the adequacy of respirator fit that uses numerical measurement of the amount of leakage into the respirator. Quantitative fit tests use a sensor inside the facemask.

Self-contained breathing apparatus (SCBA) means an air-supplying respirator for which the breathing air source is designed to be carried by the user.

Service life means the period of time that a respirator, filter or sorbent, or other respiratory equipment, provides adequate protection to the wearer.

CHAPTER: 14

Codes of Practice

HSM-COP-8

SECTION: 14.8

Lock Out Tag Out

Rev.1 2021

THIS CODE OF PRACTICE IS APPLICABLE AT ALL TIMES
ALL SUPERVISORY PERSONNEL AND THEIR DESIGNATES ARE RESPONSIBLE
FOR IMPLEMENTATION OF THIS CODE OF PRACTICE

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14.8.1 Overview

There is potential of serious injury when employees are *cleaning, maintaining, adjusting or repairing* machinery if the energy is not properly controlled. Section 239(4) of Regulation 91-191 states that **an employer shall ensure** that no employee shall do any of the above functions unless the machine is placed in a zero-energy state and be verified by employees who work on it. Plus, **no employee** will do any of those functions listed above until they have verified that the machine is in a zero-energy state.

This section describes the lockout procedures to be used to protect employees during installation, repair, maintenance, and adjustment of equipment. It also establishes lockout procedures for all operating and maintenance operations.

14.8.2 General Practices

- Management is responsible to make sure each machine that is hard wired has all energy sources (electrical, hydraulic, pneumatic, mechanical, kinetic, chemical and thermal) identified (labeled) to correspond with the machine. Also, if applicable, the disconnect / valve and bleed off points must be identified for each energy source.
- Management shall develop written lock-out procedures for each hard-wired machine and may adopt a general lockout procedure for all soft wired machines.
- Management shall ensure that employees who may have to use the lockout procedures are instructed or trained in the procedures, and that employees follow the procedures as prescribed.
- Locks and tags will be made available to employees. The lock and tag is to be affixed to the machine whenever they use the procedure (locks are to be keyed individually).
- Each individual working on a machine will place a lock and tag on the energy source(s).

14.8.3 Definitions

Isolating Device:

A device such as an electric circuit breaker, disconnect switch, manually operated switch or valve, slide gate, slip blind, "Figure 8" blind for blanking off piping, or a similar device. If a slip blind is used, its presence as an isolating device is evident.

Lockout:

The act of padlocking a switch, lever, valve, gate, or other isolating device in the OFF position. Most isolating devices have a lockout means built in; others may require modification before locks can be used. A lockout means shall accommodate more than one padlock, so that if more than one employee is working on the equipment, each person can use their own padlock for absolute protection.

14.8.4 Competent Workers

Workers must be competent (adequately qualified, suitably trained, and with enough experience) to safely perform work without supervision, or with only a minimal degree of supervision.

Before being assigned a lock, all workers will be deemed competent in the specifics of the lockout program.

14.8.5 Lock Control

Locks shall be used:

- a) *To lock out all machinery that is shut down for servicing, repairs, tests, or adjustments.*
- b) *In all lockout procedures. When used, locks should be set up as individual protective devices on a personal one-key/one-lock basis*

It is policy to use key-operated locks. Combination locks are not acceptable.

Locks shall be purchased from a reputable lock company.

All individuals are responsible for any locks they have signed for but have not been signed off by someone else, even if the lock is not in their possession.

14.8.6 Lock Identification

Each lock applied must be identified with a Tag that must provide the following information:

- a) *Employees name*
- b) *Name of employee's Supervisor*
- d) *Emergency numbers and contact information*

Lock Tag Identification - Each lock applied to an energy isolating device must be identified with a tag that must provide the following information:

- a) *Employee's name*
- b) *Employee's number*
- c) *Name of employee's Supervisor*
- d) *Date and time lock are attached*
- e) *Reason for lockout*

14.8.7 Preparation for Lockout

Employees shall be certain that disconnect devices apply to the equipment being locked out. *NOTE: Some equipment may have more than one disconnects device that must be opened to complete the deactivation both electrically and mechanically.*

The main disconnect devices for all machinery shall be clearly identified so that it is unnecessary to trace shafting or wiring.

14.8.8 General Procedure for Hard-Wired Machines

- Ensure that written lock-out procedures are available for each machine, with all energy sources for each individual machine clearly identified.
- Employee shuts off the machine following the written procedure. Place a lock with identification tag on each identified energy source. Make sure all parts come to a complete stop (**ensuring that shutting it off will not affect other employees**).
- Ensure any stored energy, free moving parts, etc. have been adequately blocked released or restrained to prevent movement.
- Once all energy sources have been shut off, locked out and brought to a zero-energy state, then you can test the machine, by turning it on to verify that all energies have been correctly de-energized (always hit the stop buttons after testing).
- Carry out the required repairs, maintenance, etc.
- Once all repairs, maintenance etc. have been completed, replace all guards, and remove the lock(s) and tags.
- Make sure starting the machine won't place anyone else in danger, and then begin the process of re-energizing the machine.
- Ensure the machine is operating safely.

14.8.9 General Procedure for Soft-Wired Machines (plug in)

- Shut off the machine using normal stop buttons and switches.
- Once it has come to a complete stop, unplug the machine and place the plug in a location where you can easily see it.
- Test to ensure zero energy by pressing any start button or switch.
- Carry out the necessary repairs, maintenance, etc.
- Once all repairs, maintenance, etc. are completed, replace any missing guards.
- Plug the machine in and test to make sure it is safe to operate.
- If you cannot complete the repairs, and it must be left in a non-working state, place a lock and tag on the plug end so others will not attempt to operate it and cause further damage to the machine or harm to themselves.

14.8.10 Mobile Equipment

Any vehicle being shut down for cleaning, maintenance, adjustments, or repairs shall be put into a **ZERO ENERGY STATE** by the employee before the work is started. This will prevent any unexpected movement, which could cause bodily injury or death to an employee in or near the work area.

To ensure a zero-energy state, employees shall complete **ONE OR A COMBINATION OF** the following steps: (depending upon the type of work being performed).

- *Removal of keys or key fobs**
- *Disconnect negative battery cable (place lock box on cable end and padlock on box)*
- *Ensure vehicle with a manual transmission is in neutral and has it's park brake engaged, and wheels chocked*
- *Ensure vehicle with an automatic transmission is in park and has it's park brake engaged*
- *Wheels chocked*
- *Master switch off*

**Key fobs must be stored at a safe distance to prevent ignition of engine or power to accessories. Tests should be performed before working.*

If it is necessary that the driveline or differential components be in motion while working on a machine, the vehicle MUST be supported on approved safety stands (Blocked) and/or the wheels properly chocked. Also, any raised piece of equipment with mechanical or hydraulic moving pieces must be adequately supported (Blocked). The employee shall contact the supervisor for additional help.

NO VEHICLE SHALL BE LEFT UNATTENDED WITH THE ENGINE RUNNING WHILE IN THE SHOP.

THE EMPLOYER SHALL ENSURE that procedures are followed, and safety equipment is always accessible. Employees trained in first aid shall be readily available, as well as adequate hoisting apparatus in the event of failure of this CODE OF PRACTICE.

If a worker has any doubt or is not certain as to which circuit breaker, disconnect switch, valve, gate, or similar device, controls a piece of equipment, the worker will check with the Supervisor for positive direction. In such cases, a check shall be made by responsible and qualified persons. (This is doubly important if devices are remote from the equipment or located on master panels containing several devices. It is also extremely important that any change in function or circuitry be immediately shown on the circuit diagram or machine drawings, in case they should be referred to in any lockout procedure.)

If the lockout is occurring within an existing Facility, faculty owner personnel will usually provide guidance regarding lockout locations and times. If the plant does not already have this information, the Supervisor and a plant representative shall independently review the Process and Control Diagrams, then compare chosen lockout points and resolve any discrepancies to ensure a complete and effective lockout.

If the installation is a complex one, with remotely located disconnecting devices, pre-planning will be necessary. Under these circumstances, and if any uncertainty exists, the worker shall consult with the Supervisor until both are in complete agreement on the planned procedure.

Sufficient time must be allowed for proper lockout. The timing of lockouts is very important, especially in shutdown situations. Schedules should be made up to allow time for lockout, and for any servicing required to bring systems or equipment back into service (test and flush, drawing, cleaning, calibration and adjustment, etc.).

14.8.11 Lockout for Electrical or Electrically Powered Equipment

The following steps should be used when locking out electrical or electrically powered equipment.

NOTE: No one other than electrical or other authorized personnel shall open an enclosure to operate a disconnect device therein.

- a) *Notify the Supervisor in charge of equipment of the proposed work and obtain approval.*
- b) *Shut down equipment by the normal stop process (STOP buttons, open toggle switches, etc.).*
- c) *To avoid arcing or equipment damage, open main disconnect switch(es) or circuit breaker(s). **NOTE:** Do not operate switches or breakers while the machine is in operation unless an emergency stop is necessary and the normal stop process(es) are inoperative.*
- d) *Lock out the switch in the OFF position using a personal padlock. Each worker must perform his or her own personal lockout, EVEN IF someone else has already taken the equipment out of service.*
- e) *After lockout, test the equipment as follows:*
 - i. *Try the disconnect handle or switch handle to make certain it cannot be moved to the ON position, and*
 - ii. *Try the machine start controls to make certain that the main switch is open, and*
 - iii. *Verify visually or by phase-to-phase and phase-to-ground meter readings.*

NOTE: *Push buttons, toggle switches, pressure switches, limit switches, and similar devices shall NOT be considered as lockout or isolating devices.*

NOTE: *Pulling a fuse alone shall never be used as a substitute for lockout or tagout. A pulled fuse is no guarantee that the circuit is dead; there is nothing to stop someone from replacing the fuse.*

14.8.12 Lockout for Mechanically Powered Equipment

Mechanically-powered equipment includes that driven directly by air, gas, oil, water/steam under pressure, internal combustion engines, or similar energy sources that are not directly adaptable to electrical shutdown.

The following lockout steps are recommended for use on mechanically powered equipment:

- a) *Notify the Supervisor in charge of the equipment of the proposed work and obtain approval.*
- b) *Shut down the equipment using the normal stop process (depress STOP button, shift lever, operate valve, etc.).*
- c) *Operate the mechanical isolating device (valve, lever, etc.), so it is in the safe position.*
- d) *Lock out (padlock) the mechanical isolating device in the safe position using a personal padlock. Generally, each person must perform his or her own personal lockout, EVEN IF someone else has already taken the equipment out of service.*
- e) *After lockout:*
 - i. *Try the mechanical isolating device to make certain it cannot be moved to the ON position, and*
 - ii. *Try the machine start controls to be certain that the isolating device has shut down the equipment.*

14.8.13 Lockout for Vessels and Pipelines

Pre-planning is necessary before starting work on vessels and pipelines, so that potential hazards can be properly evaluated. The Supervisor and the employee shall be in complete agreement on the steps to be followed.

Experience has shown that valves may not be closed or may leak liquids or gases. Therefore, thorough precautionary measures must be taken to make sure that any valves are closed or are not leaking to a hazardous degree. Safety considerations shall include

- a) *Closing adjacent in-line valves, and*
- b) *Capping, blanking, blinding, or even disconnecting all service, process, vent, or overflow lines on the unit to prevent entrance or release of the dangerous material, and*
- c) *Bleeding and purging these lines in a safe fashion.*

Pneumatic and hydraulic power also pose the problem of residual pressure. Closing a valve may control the upstream pressure, but at the same time, it may lock in the downstream pressure. This may result in unexpected cycling of the equipment and serious injury. The downstream pressure must, therefore, be bled off by means of a bleed-off valve or by disconnecting the applicable lines between the shut-off valve and the equipment.

- a) If a bleed-off valve is available, it shall be opened and locked.
- b) If a line must be disconnected, the two halves shall be separated and locked.

Personal protective equipment (PPE) is necessary when working on vessels and lines in hazardous environments. Depending upon the hazardous environment or material, required PPE may range from chemical-type goggles, rubber apron, and gloves, to a specially designed, complete coverage suit.

Enough time must be scheduled for proper drainage and flushing of all vessels and pipelines.

The nearest deluge shower and eye wash should be located and tested before work is started.

Employees should never expose their skin when working on a line carrying identified hazardous materials.

In all lines carrying hazardous fluids, inspection holes must be cold cut for gas inspection before the lines are cut into.

14.8.14 Restoring Equipment to Service

When workers are certain that a job is complete, and equipment is safe to operate, the personal padlocks shall be removed. When all personal locks have been removed, the equipment shall be "cleared".

No one is permitted to remove anyone else's personal lock. If a worker leaves the job before the work is complete and someone else is carrying on the repair, the personal lock should be removed.

There may be times when the person who has locked out equipment is not available when the equipment must be started. The Senior Supervisor must make every effort to contact the individual, including checking whether the worker is on the site, and trying to reach him by telephone. If the worker cannot be contacted and the Supervisor has ensured that the machinery or equipment can be operated safely, the lock may be removed.

Workers coming on shift shall place their own locks on all control devices before the individuals going off shift remove their locks, or Shift Supervisors may lock out the control device during shift changes, to allow workers going off shift to remove their locks.

The lock out documents will identify a means of verifying that no worker is in danger before a worker removes the securing devices and the machinery, equipment, powered mobile equipment, piping, pipeline, or process systems is returned to operation.

14.8.15 Exceptions

As per section 240 of regulation 91-191, where a lock out procedure cannot be followed for *cleaning, maintaining, adjusting or repairing* of a machine the employer shall develop a code of practice that is to be followed and details personnel responsibilities, training, specifics on how the machine is to be de-energized and restarted to protect an employee. (Refer to VMA's Code of Practice for Cleaning, Maintenance, Adjustment or Repairs of Mobile Equipment).

14.8.16 Removing A Lock

Removing another employee's lock is a serious matter and is prohibited by law (Regulation 91-191 section 239(6)) except in the case of an emergency and only when this procedure has been followed.

- 1) *The supervisor shall be informed that a lock needs to be removed and that the person assigned to the lock cannot be located.*
- 2) *The supervisor will make every effort to contact the lock owner and document these attempts on the Departmental Lock Removal Form.*
- 3) *The supervisor will contact a superintendant and an employee rep of the JHSC or other employee representative if the employee JHSC rep is not available to request their attendance for inspection and safe lock removal.*
- 4) *Once the machine has been inspected, is clear of hazards, and it can be verified that re-energizing the machine can be done safely; the lock(s) may be cut off.*
- 5) *(5) The supervisor shall be responsible for filling out and distributing the Departmental Lock Removal Form found on page 4 of this document.*
- 6) *(6) A copy of the Departmental Lock Removal Form shall be forwarded to the Joint Health and Safety Committee for review.*

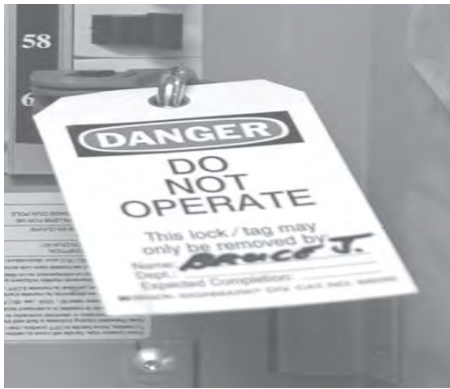
14.8.17 Lockout Procedure for a Hard-Wired Machine

The following procedure is an example of a written lockout procedure for a lathe, and in this case the lathe has only one energy source which is electrical.

Lathe (Hard-Wired)

This lathe has 1 energy source – electrical:

1. *Shut off the lathe using the normal stop buttons, located on the machine*
2. *Locate Breaker switch # 60 in panel #1 located to the right of the lathe on the wall and shut off the breaker*
3. *Apply a lock and tag to the lock out device fitted over the breaker*
4. *Where more then one person will be applying locks, use a multiple lock attachment if necessary (scissor lock)*
5. *Press the start button on the lathe to be sure that the lathe power has been disconnected, and then press the stop button twice.*
6. *Perform repairs and /or maintenance.*
7. *Upon completion, clear away all tools or other materials.*
8. *Replace all guards and protective devices.*
9. *All employees working on the lathe are to remove their lock(s) and tags as soon as they have completed their maintenance.*
10. *Ensure that everyone is clear of the lathe.*
11. *The person who originally shut off the power then removes his lock and tag last and turns the power back on and tests to make sure operation of the lathe is safe.*

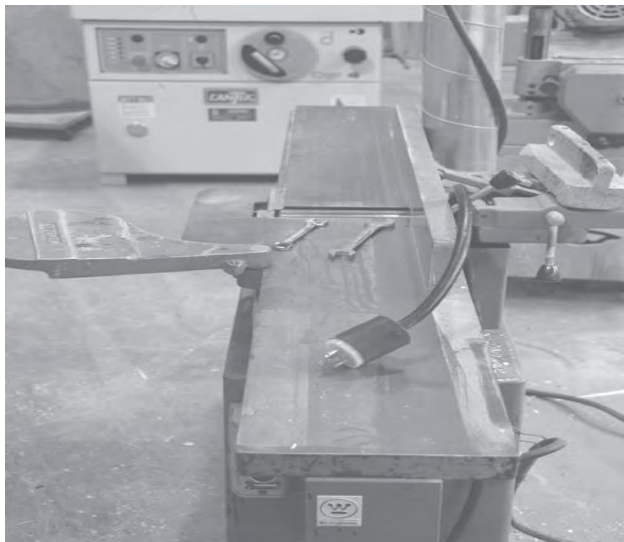


14.8.18 Lockout Procedure for a “Soft-Wired” Machine

This could be in the form of a larger poster on a wall such as over a workbench where there are many plug-in tools. (Drill, grinder, cut off saw, sander, circular saw, etc)

The following procedure shall be followed for all soft wired machines, where *cleaning, maintaining, adjusting or repairing* is required to be performed. (always refer to manufacturer’s instructions as well).

1. *Shut off the tool or device using the normal stop button.*
2. *Follow the plug wire and unplug from the receptacle.*
3. *Place the plug near where you will work on the tool.*
4. *Carry out your required repairs, maintenance etc.*
5. *Once completed replace all guards.*
6. *Plug in the device and verify that it is working properly and safely.*
7. *If repairs cannot be completed and it has to be left for a period of time place a locking device over the plug end, then attach your lock and tag so it cannot be used.*



14.8.19 References

- Occupational Health and Safety Regulation 91-191 sections 237- 239

LOCK REMOVAL PROCEDURE

Lock and Tag Owner

EMPLOYEE NAME and MACHINE IDENTIFICATION

3 ATTEMPTS TO REACH EMPLOYEE

- | | |
|-----------------|--------------|
| 1. TIME: | DATE: |
| 2. TIME: | DATE: |
| 3. TIME: | DATE: |

PERSONS TO DETERMINE IF LOCK CAN BE REMOVED WITHOUT PLACING ANYONE IN DANGER OR INJURY.

SUPERVISOR'S SIGNATURE: _____

HEALTH AND SAFETY REP.: _____

INDIVIDUAL REQUESTING REMOVAL: _____

ABOVE SIGNED DECLARE LOCK CAN BE SAFELY REMOVED

REASON FOR REMOVING LOCK:

LOCK REMOVED BY: _____

SIGNATURE: _____

DATE AND TIME: _____

CHAPTER: 14
SECTION: 14.9

Codes of Practice
Excavating and Trenching

HSM-COP-9
Rev.1 2020

THIS CODE OF PRACTICE IS APPLICABLE AT ALL TIMES
ALL SUPERVISORY PERSONNEL AND THEIR DESIGNATES ARE RESPONSIBLE FOR
IMPLEMENTATION OF THIS CODE OF PRACTICE

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14.9.1 Introduction

Whenever digging for foundations, install culverts or pipes we create an excavation or trench. This procedure is developed to minimize the danger for employees who work in and around them.

This procedure outlines safety requirements for the following activities:

- a) *Locating buried facilities.*
- b) *Disturbing the ground.*
- c) *Performing work in excavations and trenches (includes shoring and drainage requirements).*

All excavations and trenches must be constructed and maintained in accordance with the applicable provincial Occupational Health and Safety regulations.

Before a worker is allowed by the provincial Occupational Health and Safety code to enter any excavation:

- The excavation must be supported against potential cave-in or collapse, and
- The excavation shoring procedure must be certified by a Professional Engineer licensed to practice in the locale of the work, and
- The slopes and the excavated material must be prepared according to the pertinent Industrial Health and Safety Regulations.
- A combination of shoring and back sloping may also be used, as directed by a Professional Engineer, to prevent slope failures.

Under no circumstances is any employee to enter, and no supervisor shall allow an employee to enter a trench that is 1.2m or more in depth unless it is: cut in solid rock or the walls are supported by engineered shoring, bracing or caging or it is an excavation or trench which is wide enough to allow the employee to stay the height of the wall from it.

14.9.2 Definitions

Angle of Repose:

The angle, measured from the horizontal, at which a non-cohesive soil piles up in the absence of any stability enhancement. The angle of repose of a non-cohesive soil is the steepest angle at which a pile of that soil can stand without sliding. For example, a typical angle of repose for fine-grained sand is 40 degrees.

Excavations and Trenches:

For the purposes of this section, an excavation is defined as any man-made depression, hole, or other dug out area of ground, including trenches.

Shoring:

A temporary protective structure constructed of timber, screw jacks (adjustable length metal braces), or hydraulic equipment that is designed to support the sides of an excavation and prevent collapse of its sides. This includes bracing, uprights, posts, stringers, cleats, and all other members of the temporary support structure except for sheeting.

Soil Types:

Soil types are described in terms of the size, uniformity, cohesion, and sometimes colour of the particles in the soil. Two examples of soil classifications are “fine-grained, dark, silty sand” and “heavily over-consolidated clay, mixed with bands of brown silt”. The soil types that are least stable when sloped are the fine-grained, non-cohesive soils, and soils containing a

high percentage of soft clay. It is important to recognize that most slope failures occur after the slope is weakened by saturation from heavy rains or other water sources.

Soils Report:

This is the report prepared by a Geotechnical Consulting firm detailing the location, thickness, and nature of the soil strata present at a proposed site.

Spoil Pile:

The pile of dug out earth that results from any excavation, borehole, or tunnel.

Trench:

An elongated excavation whose width at the bottom is less than its depth.

14.9.3 Preparation

- Call before you dig, contact all utilities to identify and protect all underground utilities, NB Power, Enbridge, Bell Aliant, municipal water & sewer, DTI electrical or pipes etc.
- Follow WATCM manual to ensure proper traffic control; if possible set up a detour around the opening.
- Use adequate barriers to protect employees in the opening from traffic as per regulation 91-191 section 188(2).
- Ensure any pole, tree, etc. within 3m of the excavation or trench is adequately secured.
- Supervisors shall verify that employees are competent in the use of equipment and all required personal protective equipment is worn.
- Whenever anyone is in an excavation or trench there must be at least one employee on the surface who can see all employees in the excavation or trench.
- There needs to be good communication between the employees to safely follow this procedure.
- The TLB/ excavator operator must always be very vigilant and keep other employees in view.
- Employees must position themselves, so the TLB/excavator operator can see them and use all necessary precautions to ensure onsite safety.

14.9.4 Location of Services/Underground Facilities

When there is any uncertainty about the location of a service or facility, it should be positively located and identified by manual or hydraulic excavation.

If the locations of underground utilities are unknown, non-destructive means will be used to locate the utilities before any mechanical excavation methods are used.

Before any digging is started, the locations of existing underground power lines, piping, or other structures must be determined from drawings, and stakes must be used to mark the position and depth from the existing ground surface to these services or installations.

All stakes and other identification markers must be selected and installed to remain visible, even to equipment Operators, despite any snow, wind, or work activities.

There must always be a clear line of vision between stakes identifying a facility location. All facilities must remain properly marked until final backfilling is completed.

14.9.5 Location of Piping and Utilities

Piping and utilities must be exposed by non-destructive means before excavating. Exceptions are allowed only with special approval from the Utility Owner. Probing with pointed tools to locate underground gas and electrical facilities shall not be permitted.

14.9.6 Mechanical Excavating

Mechanical excavating will not occur within one (1) metre of the stakes until the underground services have been exposed.

Once the service is exposed, excavation with machinery may proceed to a distance of no more than 600 mm (24 inches) from the services or installation.

EXCEPTION: Mechanical excavations conducted between 600 mm and 300 mm from the services or installation will be done only under the direct supervision of the Facility Owner's Representative.

Hand excavating will be used within 300 mm of the facility.

A Spotter must be used for all excavation activities, regardless of proximity to services.

14.9.7 Methods of Stabilization

Workers may not enter any excavation until the slope stability has been confirmed by the Supervisor. If slope stability cannot be confirmed, a trench box or other engineered protective structure must be in place.

To prevent cave-ins or collapse in all excavations over four (4) feet in depth, in which workers must perform their duties, available methods of ensuring the stability of the excavation are as follows;

14.9.8 The 'Cutback' Method

The sides of the excavation may be sloped or cut back to a safe angle from the vertical, if the protection afforded to workers is equivalent to that provided by shoring.

If this method is used, the cutbacks should extend from the ground surface down to a depth such that the remaining height of vertical excavation sidewall below the cutbacks is not more than the height specified by the provincial Occupational Health and Safety Regulations (typically 1.2 to 1.5 metres).

The cutback angle will depend on the soil type. Looser, less cohesive, or weaker soils require a cutback angle of at least 45 degrees from the vertical, while hard, compact soils may need a cutback angle of only 30 degrees from the vertical (i.e. a steeper slope is allowable).

The Angle of Repose is the steepest angle at which a pile of non-cohesive soil can stand without sliding.

If, because of obstruction or excavating costs, the largest cutback angle that could be used would result in a slope with an angle steeper than the angle of repose, then workers in the excavated area must be protected by the use of either

- Temporary support structures used in combination with lower-sloped cutbacks, or
- Temporary support structures used without cutbacks.

NOTE: If the “cutback” method of slope stabilization has been used alone or in combination with any other slope stabilizing system, it is not permissible to operate heavy equipment on the back slope.

Shoring may be used alone to hold back/support the walls of an excavation.

All shoring, stringers, and bracing shall be constructed/installed using ladders, working from the top of the excavation downward.

The procedure for shoring is as follows:

- A “key” trench is cut into the bottom of the excavation, usually at a distance of less than the excavation depth from the walls.
- Bearing plates are inserted into the trench, sloping toward the walls of the excavation.
- Adjustable-length braces are pin connected to the bearing plates and to vertical plates (similar to sheeting) that transfer the supporting force from the brace into the walls of the excavation.

In trenches that are relatively narrow, bracing may simply go horizontally across the trench to keep supporting plates on either side a set distance apart, thereby preventing collapse of the trench. This bracing must be attached to vertical stiffening ribs or posts on the supporting plates or uprights, to help spread out the compressive load where it enters the plates.

14.9.9 Use of Sheeting

Sheeting is a method of supporting relatively low excavation walls against collapse by driving sheets, typically of mild steel, into the ground to a depth of specified distance past the depth of the excavation.

If the excavation walls begin to slip, the soil pressure mobilized on the side of the plate toward the excavation exceeds the soil pressure on the other side up to the elevation of the excavation bottom, creating a restoring moment (torque) on the sheeting.

The soil pressure on the outside of the sheeting above the elevation of the excavation bottom creates an overturning moment on the sheeting, and for the sheeting to be effective, this moment must not exceed the restoring moment.

A Professional Engineer shall determine the depth to which the sheeting must be driven to ensure that it will be stable.

Additional Support Structures - Cofferdams, underpinning, and sheet piles may be used at the discretion of a registered Professional Engineer.

Any worker who installs shoring, stringers, or bracing shall use a ladder and work down from the top of the trench, installing each brace in descending order and never in the reverse.

14.9.10 Design of Temporary Support

Design of any temporary support members must comply with provincial Occupational Health and Safety Regulations.

A qualified Professional Engineer licensed to practice in the locale of the work must be employed to design all temporary support structures required for the work. (This may include sheeting, shoring, bracing, and sometimes cofferdams and underpinning). The design and all supporting documents shall bear the seal of this Engineer.

14.9.11 Dismantling of Temporary Support

All shoring, stringers, or bracing shall be dismantled or removed using ladders and working from the bottom of the excavation upward.

Backfilling should be carried out in several lifts as this is done. Removal of shoring, sheeting, and bracing must never be done until the backfilling reaches the level of the bracing.

Sheeting will be pulled out of the ground in increments not greater than 200 mm (0.2 metres) until it is clear of any installations in the excavation, and thereafter in increments less than 500 mm (0.5 metres).

14.9.12 Operations Involving Equipment

During Excavation:

For constructing an excavation and before any personnel enter the excavation, machinery may approach as close as is reasonably required to the edge of the excavation. This applies also for the construction of temporary support systems.

All attempts will be made to ensure that light vehicles and heavy equipment (Excavators, skid steers, and cranes) maintain a control zone that will prevent the trench or excavation walls from degrading or sloughing due to excessive weight on the bank.

Spoil piles must be piled so that all the following apply:

- The leading edge of the pile is at least one (1) meter away from the edge of the excavation,
- The slope of any spoil pile adjacent to the excavation is at an angle of not more than 45 degrees from the horizontal, and
- Loose materials are scaled and trimmed from the spoil pile.

14.9.13 During Construction Activities

If personnel are working within any over-depth excavation, it is not advisable to have heavy equipment outside the excavation horizontally closer to the excavation bottom than one excavation depth away.

If temporary support structures alone are used and this kind of equipment loading is anticipated, then the support structures must be designed by a Professional Engineer to resist the loads.

If the “cutback method” of slope stabilization has been used alone or in combination with any other slope stabilizing system, it is not permissible to operate heavy equipment on the back slope.

Special effort will be made to minimize the chances that running equipment or idling vehicles in the excavation might cause an oxygen-deficient atmosphere inside the excavation or trench. Where is impracticable to eliminate sources of exhaust, air-quality monitoring may be conducted near the workers, to ensure they are not negatively impacted by poor quality air.

At any point where, powered mobile equipment shall approach or pass by an excavation, there shall be a high enough barrier in place to stop the equipment from sliding or rolling into the excavation.

Ensure that any vehicle, mobile equipment or pedestrian is aware of the opening and precautions are in place to protect both those on top from falling into the hole and those in the hole from anything falling on them (a good practice is to leave a berm about ½ the height of the tires on most equipment on the side where trucks, and mobile equipment operate).

After a heavy rainfall or other slope-saturating occurrence, heavy equipment should be kept away from the top of the excavation except with the permission of a Professional Engineer.

14.9.14 Equipment within the Excavation

When mobile equipment must operate within an excavation, the equipment must not be permitted to come any closer to personnel than would be considered a safe distance outside the excavation.

If a closer approach cannot be avoided, the personnel who would be too near the equipment must vacate the area of the excavation until the equipment has finished in the area.

Extreme care must be taken when operating heavy equipment close to the base of temporary support structures, as these are most likely not designed for machine impact loading.

14.9.15 Safety Equipment and Systems Required

Access to excavations:

- Only authorized workers are permitted to enter the excavation.
- Workers must use only the established access and egress points as a means of entering and leaving an excavation, tunnel, or underground shaft.
- At least two (2) entrances/exits shall be provided in any over-depth excavation, and an entrance/exit shall be provided for every 7.6 metres (25 feet) of trench.
- Where a worker is required to enter a trench that is more than 1.5 metres (5 feet) deep:
- A safe point of entering and leaving must be located not more than eight (7.6) meters (25 feet) from the worker, and
- The trench must be supported or sloped so that the worker can safely reach the safe point of entering and leaving.
- A ladder extending from the bottom of the excavation to at least 0.9 metres (3 feet) above ground level shall be provided in the immediate area where workers are employed.

Walkways giving access to excavations shall meet all the following conditions:

- Be not less than 51 cm (0.51 meters) wide, and
- Not have a rise of greater than 1 in 3, and
- Be equipped with guard rails when over 1.2 meters above grade, and
- Conform with any other applicable OH&S Regulations.

Runways into excavations that will be used by wheeled equipment shall have curbs.

The Excavation Permit must identify a means of ensuring that the excavation is kept free of an accumulation of water that may pose a hazard to workers.

14.9.16 Barricades and Fences

Any excavation or borehole left open overnight shall be guarded by the use of adequate barricades, plastic grid (“snow”) fences, or covers (if suitable), to protect workers and the public from the hazard of falling. Barriers should not be closer than one (1) metre to the edge of the excavation, to allow for passage inside.

NOTE: Ribbon or rope is not an acceptable substitute for fences or barricades.

Barricades shall be manufactured with rigid cross members and must be sufficiently secured in place.

High-visibility signage will be put in place to warn others of an open excavation. Signage must be large enough to alert heavy equipment, passenger vehicles, and any other equipment that could inadvertently encroach on the excavation.

Where a hazard to traffic exists, for example, when cars must drive on plates over trenches, then flashing lights, reflective signs, or traffic cones, etc. must be used to provide drivers with a warning of the obstacle being approached.

14.9.17 Drainage

Slopes are less stable when wet, because the effective stress between soil particles in the overburden is reduced by the pore pressure of the water in the soil.

This is especially true for granular, non-cohesive soils, which get most of their shear (slippage) resistance from mechanical interlock and friction.

Clayey soils have some cohesion and shear strength, but since the drained strength of clay is higher than its undrained strength, good drainage should also be maintained in excavations that have clayey soils.

Excavations should be kept free of ponded water using ditches and/or pumps while work is in progress.

Excavations should be protected against flooding or erosion by surface runoff using ditches, surface grade (i.e. slope the ground surface away from the excavation), or other water-diverting structures, such as a berm of earth around the top of the excavation.

Special Test Devices or Training Required – The following circumstances require special care:

If there is a load on the surface of the soil immediately adjacent to an excavation, due to the presence of machinery, preload, spoil piles, or existing structures, the tendency for the excavation to cave in is dramatically increased. Very soft or weak clays may begin to collapse when the excavation is started.

14.9.18 Daily Excavation and Trench Inspections

Before the start of each shift, as necessary during shifts, and especially after rainstorm events or any other stability-decreasing occurrence, the following shall all be inspected by a qualified person:

- The excavation,
- The surrounding areas, and
- The safety equipment, including temporary support structures.

14.9.19 Classification of Soil Types:

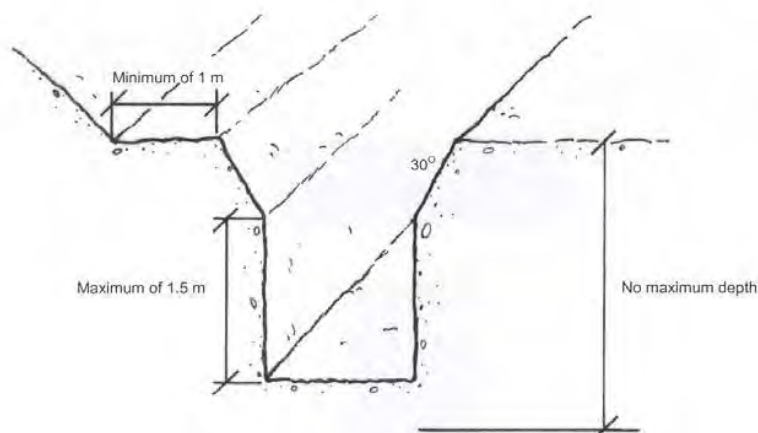
Soil Characteristics	Soil Type		
	Hard and Compact Soil	Likely to crack and crumble soil	Soft, sandy or loose soil
Consistency	Hard very dense in compactive condition	Stiff, compact in compactive condition	Firm to very soft, loose to very loose in compactive condition
Ability to Penetrate	Only with difficulty with a small, sharp object	With moderate difficulty with a small, sharp object	With ease
Appearance	Dry	Damp after it is excavated, has low to medium natural moisture content	Appears solid but flows or becomes unstable when disturbed. Can be dry, running easily into well defined conical pile, or wet.
Ability to excavate with Hand tools	Extremely difficult	Moderately difficult	With ease
Water Seepage	Shows no signs of water seepage	Shows signs of localized water seepage	
Other	Does not exclude previously excavated soil	Shows signs of surface cracking	<ul style="list-style-type: none"> • Is granular soil below the water table unless the soil has been dewatered. • Exerts substantial hydraulic pressure when support system is used.

14.9.20 Cutback Methods

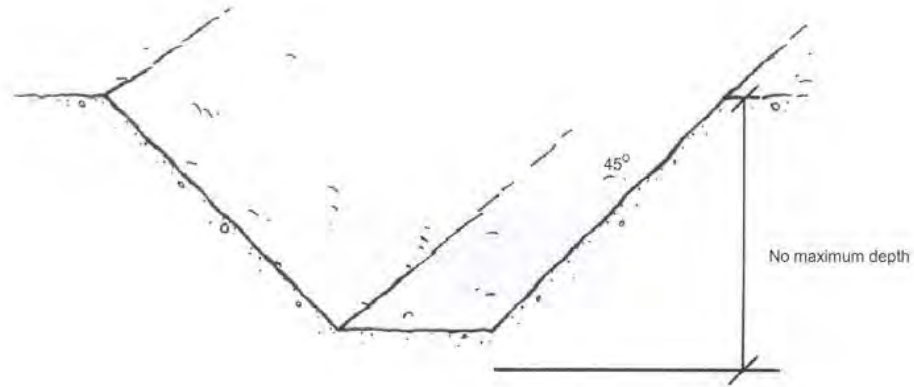
The cutback angle depends on the soil type. Loose, less cohesive, or weaker soils require a cutback angle not less than 45 degrees while hard, compact soils may need a cutback angle of only 30 degrees (i.e. steeper slope).

Soil Type		
Hard and Compact Soil	Likely to crack and crumble soil	Soft, sandy or loose soil
30 Degrees from the Vertical	45 Degrees from the Vertical	45 Degrees from the Vertical

Hard and Compact Soil – cut back of 30 deg from the VERTICAL



Likely to Crack or crumble OR Loose Sandy or Loamy soil – cut back of 45 deg from the VERTICAL



14.9.21 Reference

- *Occupational Health and Safety Act, Section 180.*

CHAPTER: 14

Codes of Practice

HSM-COP-10

SECTION: 14.10

Crystalline Silica

Rev.1 2020

THIS CODE OF PRACTICE IS APPLICABLE AT ALL TIMES
ALL SUPERVISORY PERSONNEL AND THEIR DESIGNATES ARE RESPONSIBLE FOR
IMPLEMENTATION OF THIS CODE OF PRACTICE

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14.10.1 Introduction

This Code of Practice is intended to workers and supervisors with information on chemical hazards such as Silica.

All Department employees engaged in abrasive blasting operations shall use this Code of Practice (e.g. bridge / ferry maintenance and the maintenance or repair of road maintenance equipment).

Where DTI work exposes the workforce to Silica hazards, this document will be used as a tool to build

- a Hazard Assessment

- an Exposure Control Plan

This Code of Practice contains some general “Do’s and Don’ts” while encountering or handling Silica products. When you combine this safe work practice with the DTI and/or Client specific Safety Rules, Provincial & Local Regulations, and Manufacturers Recommendations for its safe operation, this information can help you remain incident free.

14.10.2 Responsibilities

Management:

- a) To understand potential exposure to Silica hazards,
- b) Identify occupational exposure limits, and
- c) Put controls in place to eliminate or reduce exposure to within acceptable/legislated guidelines.

Supervisor:

- a) To assist in the completion of the risk assessment process prior to executing any work with or around Silica, and
- b) To observe, provide and/or facilitate safe work instruction.

Worker:

- a) Participate in the training,
- b) Demonstrate safe working behaviors,
- c) Play an active role in their personal safety as well as others, and
- d) Report any unsafe acts or conditions. Participate in the hazard assessment prior to beginning each task.

14.10.3 Hazards of Silica Exposure

Studies show that when common construction work tasks involving the sanding, drilling, chipping, grinding, cutting, sawing, sweeping, and blasting of concrete and concrete products are conducted without using dust controls, workers are exposed to airborne silica concentrations at levels far above the occupational exposure limits.

Long-term or heavy short-term exposures to airborne silica dust can cause a disabling, sometimes fatal lung disease called silicosis. Crystalline silica dust (e.g., quartz dust) is also a carcinogen.

14.10.4 What Is Silica?

Silica is the second most common mineral on earth and makes up nearly all of what we call “sand” and “rock.” Silica exists in many forms—one of these, “crystalline” silica (including quartz), is the most abundant and poses the greatest concern for human health. Some common materials that contain silica include

- Rock and sand
- Topsoil and fill
- Concrete, cement, and mortar
- Masonry, brick, and tile
- Granite, sandstone, and slate
- Asphalt (containing rock and stone)
- Fibrous-cement board containing silica

Silica is so common that many workplace activities that create dust can expose workers to airborne silica. Occupational Health and Safety Regulation has established occupational exposure limits (OELs) for five different forms of silica; three of these are amorphous, and two are crystalline (quartz and cristobalite). **The form most likely to cause serious problems for worker health is quartz.**

14.10.5 Common Sources of Exposure

Silica is a primary component of many common construction materials, and silica-containing dust can be generated during many construction activities, including

- Abrasive blasting (e.g., of concrete structures)
- Jackhammering, chipping, or drilling rock or concrete
- Cutting brick or tiles
- Sawing or grinding concrete
- Tuck point grinding
- Road construction
- Loading, hauling, and dumping gravel
- Demolition of structures containing concrete
- Sweeping concrete dust

Unprotected workers performing these activities, or working in the vicinity, can be exposed to harmful levels of airborne silica.

14.10.6 Responsibilities

The employer is responsible for

- Ensuring that the materials (e.g., tools, equipment, personal protective equipment) and other resources (i.e., worker training materials) required to fully implement and maintain this exposure control plan (ECP) are readily available where and when they are required.
- Providing a job-specific Exposure Control Plan (ECP) for each project, which outlines in detail the work methods and practices that will be followed on each site.

Considerations will include

- Availability and delivery of all required tools/equipment
- Scope and nature of grinding work to be conducted
- Control methods to be used
- Level of respiratory protection required
- Coordination plan
- Conducting a periodic review of the effectiveness of the ECP. This would include a review of the available dust-control technologies to ensure these are selected and used when practical.
- Initiating sampling of worker exposure to concrete dust when there are non-standard work practices for which the control methods to be used have not been proven to be adequately protective.
- Ensuring that all required tools, equipment, and personal protective equipment are readily available and used as required by the ECP.
- Ensuring supervisors and workers are educated and trained to an acceptable level of competency.
- Maintaining records of training, fit-test results, crew talks, and inspections (equipment, PPE, work methods/practices).
- Coordinating the work with the prime contractor and other employers to ensure a safe work environment.

The supervisor is responsible for:

- Obtaining a copy of the ECP from the employer and making it available at the worksite.
- Selecting, implementing, and documenting the appropriate site-specific control measures.
- Providing adequate instruction to workers on the hazards of working with silica-containing materials (e.g., concrete) and on the precautions specified in the job-specific plan covering hazards at the location.
- Ensuring that workers are using the proper respirators and have been fit-tested, and that the results are recorded.

- Directing the work in a manner that ensures the risk to workers is minimized and adequately controlled.
- Communicating with the prime contractor and other sub-contractors to ensure a safe work environment.

The worker is responsible for

- Knowing the hazards of silica dust exposure.
- Using the assigned protective equipment in an effective and safe manner.
- Setting up the operation in accordance with the site-specific plan.
- Following established work procedures as directed by the supervisor.
- Reporting any unsafe conditions or acts to the supervisor.
- Knowing how and when to report exposure incidents.

14.10.7 Risk Assessment and Control Measures

Preventing exposure to Silica is the best way to protect health. Options that should be considered include the following, listed in order of preference:

- Use of less hazardous substitutes
- Use of engineering controls
- Changes in work practices to reduce exposure (administrative controls)
- Use of personal protective equipment

Use of Less Hazardous Substitutes:

Where possible, less hazardous substances must be substituted for Silica.

14.10.8 Worker Exposure Measurements

The Occupational Health and Safety Regulation lists an occupational exposure limit (OEL) for respirable crystalline silica (including quartz) of 0.025 milligrams per cubic meter (mg/m³). This is a concentration to which nearly all workers could be exposed for eight hours a day, five days a week, without adverse health effects. However, as a suspected carcinogen, crystalline silica is also an ALARA substance, and exposures must be reduced to levels as low as reasonably achievable below the OEL.

Each Project Specific Exposure Control Plan must identify jurisdictional specific minimum Silica OEL. No OEL shall be higher than the government legislated requirements.

14.10.9 Site-Specific Silica Exposure Control Plans

If there is a risk of silica exposure, a site-specific exposure control plan must be developed.

This plan would include the following:

- Contractor name, address, and contact information (names and phone numbers)
- Worksite information (project name, location, and site contacts)
- Scope of work and list of tasks
- Site-specific hazards and risk assessment
- Dust (and other) control procedures and equipment
- Safe work procedures
- Worker training checklist

Use the following table to assist in the identification of hazardous conditions, affected workers and control measures.

Control Plan Element	Issues for Consideration
Identify workers that are at risk of Exposure	Workers who finish concrete.
Amount of Exposure	Published resources are available that provide air sampling data and compare silica dust levels from various construction activities.
Duration of Exposure	Workers who grind concrete for a full shift would be at greater risk than a worker jackhammering for an hour.
Work Activities that may generate airborne silica dust	For silica, the route of exposure is through the inhalation of airborne dust. The employer should have a qualified person review the planned work activities to identify those that may generate airborne silica

14.10.10 Engineering Controls

Effective control options must be used to eliminate or reduce the risk to workers from the hazards of silica dust exposure. The following hierarchy of control measures must be followed:

- Elimination/substitution (e.g., using products with less silica or using work methods that would eliminate the need for surface grinding)
- Engineering controls (e.g., water, local exhaust ventilation, enclosure)
- Administrative controls (e.g., coordination of tasks with subcontractors, signage)

- Personal protective equipment (e.g., coveralls, respiratory protection)

Effective engineering controls such as HEPA vacuum attachments and wetting methods, which control silica dust at its source, these controls have been proven to reduce airborne dust levels significantly when selected and operated in accordance with best practices. Engineering controls alone do not reduce airborne silica to safe levels; so, in most cases other control measures, including respiratory protection, will be necessary.

14.10.11 Elimination and Substitution

We recognize the importance of planning the work to minimize the amount of silica dust generated.

- During the project planning phase, we will advocate for the use of methods that reduce the need for cutting, grinding, or drilling of concrete surfaces (e.g., formwork planning).
- Whenever possible, we will schedule work when concrete is still wet, because we know that much less dust is released at that time.

Formwork – Reasonable efforts must be taken to identify all practical approaches to eliminate or reduce the need for surface grinding. Means used to reduce surface grinding could include

- Selecting better grades of concrete that are less susceptible to imperfection
- Using better design and grades of formwork
- Using realistic architectural standards
- Using a system to identify problem formwork and ensure action taken to correct
- Planning work so that concrete grinding can be completed when wet so that dust release can be significantly reduced

14.10.12 Engineering Control of Dust

Selecting an appropriate control measure depends on the specifics of the operation. In some cases, local exhaust ventilation (LEV) is more effective at controlling exposure (e.g., during grinding operations) than wetting methods. In a different application, wetting may be more effective (e.g., during cutting operations) than LEV. However, using LEV may reduce the amount of final cleaning required, as the silica dust is captured.

The following Table of Dust Control Systems/Techniques may be considered.

- Local exhaust ventilation (LEV)
- Wet dust suppression (WDS)
- Restricting or isolating the work activity with barriers or full enclosures (this may be the only option where LEV or WDS is not practical or effective)

Many of the tools used in concrete finishing can be fitted with wetting attachments. These grinders generally have smaller grinding surfaces that can be used in unique work locations such as window casements.

Water spray systems are available for both stationary and portable masonry and other concrete- or block-cutting tools (e.g., saws).

Work surfaces can also be wetted manually or using a water “mister” (e.g., during concrete chipping and jackhammering). A separate water supply system would have to be available on site from a plumbed facility or a portable pressurized tank.

Note Water spray can effectively reduce exposure levels but is not feasible in many applications (e.g., tuck point grinding and cutting fibrous cement board) because water can result in material discoloration and expansion, building damage, and waste water disposal problems.

Use of water spray controls presents potential safety hazards, which include electrocution, slipping, and potentially hypothermia.

14.10.13 Local Exhaust Systems

These systems include a shroud (a suction casing that surrounds the wheel/stone), a hose attachment, and a vacuum system. The dust-laden air is collected within the shroud, drawn into the hose attachment, and conveyed the length of the corrugated hose to the vacuum, where it is filtered and discharged.

Many grinders can be purchased with LEV dust control attachments, which are uniquely designed for the equipment and the work activity (e.g., there are specific grinders with LEV manufactured for tuck point grinding). Where a shroud cannot be purchased for a grinder, shrouds can be custom fabricated for grinders of all different sizes. For example, shrouds for corner and 90-degree areas can be fabricated or purchased.

Silica dust is very abrasive to LEV equipment, which must be regularly inspected for damage and properly maintained.

When LEV is used we will employ the following systems and safe work practices:

- Vacuum attachment systems to capture and control the dust at its source whenever possible.
- Dust control systems (used regularly and well maintained).
- Grinding wheels operated at the manufacturers’ recommended rpm (operating in excess of this can generate significantly higher airborne dust levels).
- Retrofit shrouds or exhaust cowlings for corner grinding; use manufacturer-specified rpm speeds and a well-maintained HEPA vacuum.
- Diamond stone grinders, which allow for the use of a more efficient suction casing on the grinder, whenever practicable.

- HEPA or good quality, multi-stage vacuum units approved for use with silica dust. [The vacuum units should be capable of creating a target airflow of at least 70 cfm. This should achieve a face velocity at the shroud of about 1.3 m/s (260 fpm)—the higher the face velocity, the more dust captured at source.]
- Work planning, so that concrete grinding can be completed when wet (dust release can be significantly reduced).
- Good housekeeping work practices (for example, use vacuums with high-efficiency particulate air (HEPA) filters, or use wet sweeping).
- Train workers and supervisors on how to properly use and maintain the equipment.

14.10.14 Water Spray Systems

These systems are designed to apply water to the cutting or grinding surface to wet the surface and prevent the resulting dust from becoming airborne. Many construction tools/equipment types can be purchased with wet spray attachments. Water can also be manually applied to the concrete surface before and during the work (grinding, drilling, cutting, etc).

Wetting is very effective at reducing dust release at the source and, in fact, may be more effective than local exhaust ventilation for slab and masonry cutting. A drawback to this method of dust control is that the dust is not collected—the wet slurry must be cleaned up so that the dust does not dry and become airborne.

Many of the tools used in concrete finishing can be fitted with wetting attachments. These grinders generally have smaller grinding surfaces that can be used in unique work locations such as window casements.

Water spray systems are available for both stationary and portable masonry and other concrete- or block-cutting tools (e.g., saws).

Work surfaces can also be wetted manually or using a water “mister” (e.g., during concrete chipping and jackhammering). A separate water supply system would have to be available on site from a plumbed facility or a portable pressurized tank.

Note Water spray can effectively reduce exposure levels but is not feasible in many applications (e.g., tuck point grinding and cutting fibrous cement board) because water can result in material discoloration and expansion, building damage, and waste water disposal problems.

Use of water spray controls presents potential safety hazards, which include electrocution, slipping, and potentially hypothermia.

When water spray systems are used in our work, we will follow these safe work practices:

- Pneumatic grinders will be used instead of electric-powered grinders if water is the method of control.

- Pressure and flow rate of water will be controlled in accordance with tool manufacturers' specifications (for cutting saws, a minimum of 0.5 liters of water per minute [0.13 gallons/minute] should be used).
- When sawing concrete or masonry, we will use only saws that provide water to the blade.
- Wet slurry will be cleaned from work surfaces when the work is completed, using a wet vacuum or wet sweeping.

14.10.15 Barriers and Enclosures

Barriers are used to isolate the work area from the rest of the project and to prevent entry by unauthorized workers. They do not prevent dust drift and should only be used where natural ventilation is enough and dust release is controlled. Barriers will be constructed to notify other workers that concrete grinding work is underway and access to the immediate work zone is restricted to authorized personnel.

Enclosures can contain a dusty atmosphere. They can consist of a partial structure (poly draping or partial plywood hoarding) or a full enclosure equipped with some capacity for maintaining a lower than ambient pressure inside (negative pressure). For partial enclosures, airflow in the enclosure could be created by setting up a ventilating (blower) fan where the dusty air would be discharged to an unoccupied outdoor location. This option should only be used when dust levels are low or to supplement LEV or wet methods such as in stairwells.

Full enclosures can be fitted with a negative air unit that pumps air from inside the structure. Negative air units draw dusty air through a large HEPA filter panel before the air is discharged outside the enclosure. Another option to create airflow in the enclosure is to set up ventilating (blower) fans where the dusty air can be discharged to an unoccupied outdoor location.

Commercially available, collapsible (pop-up) enclosure structures are readily available in various sizes.

When barriers or enclosures are used in our work, we will follow these safe work practices:

- The site foreman will determine the type and design of barrier or enclosure (based on the work activity and the work area) and ensure it is constructed in accordance with the workplan. Barriers may be simple hazard-flagging ribbon or more restrictive hoarding.
- We will use commercially available negative air units when constructing a full enclosure.

14.10.16 Administrative Controls

Administrative controls involve activities that are not directly related to the actual physical work but are important strategies to support the exposure control plan and ensure that all workers are protected from exposure to silica dust. Examples of administrative controls include

- Posting warning signs
- Rescheduling grinding at different times than other work

- Relocating unprotected workers away from dusty work

Exposure control plans and the site risk assessment/workplan will be submitted to the general contractor prior to the start of work.

The supervisor will establish procedures for housekeeping, restricting work areas, personal hygiene, worker training, and supervision.

As part of project planning, we will assess when silica dust may be generated and plan ahead to eliminate or control the dust at the source. We recognize that awareness and planning are key factors in the prevention of silicosis.

Warning signs will be posted to warn workers about the hazards of silica and to specify any protective equipment required (for example, respirators).

Work schedules will be posted at the boundaries of work areas contaminated with silica dust. Work that generates silica dust will be conducted after hours, when access to other unprotected workers cannot be restricted.

14.10.17 Personal Protective Equipment

Respirators:

- Respirators should not be relied on as a primary means of preventing or minimizing exposure to silica dust.
- Select respiratory protective equipment (RPE) very carefully, as different types can give widely varying levels of protection. Employers may be able to rely on available exposure data to select the appropriate respiratory protection. Improper selection can result in serious worker exposure.
- A review of several research reports indicates that when effective engineering controls (e.g., LEV and wet methods) are used, a half-face air purifying respirator may be adequate to protect workers from harmful exposure to silica dust. When engineering controls are not feasible, it is likely that powered air purifying or air-line respirators will be required for worker protection.
- Guidance on the selection and use of RPE is contained in the WorkSafeBC publication *Breath Safer*. Further information can be obtained from respirator manufacturers. Occupational hygienists can provide information on approval and suitability.
- The Occupational Health and Safety Regulation requires the development of a respiratory protection program that sets out in detail how respiratory protective equipment will be selected, supervised, and maintained. Resource materials are available from WorkSafeNB and from safety supply firms that supply respirators.

Respiratory Protection:

- All workers who wear respirators will do so in adherence with our respirator program.
- Respiratory protection will be selected based upon the site-specific risk assessment.

- Only NIOSH-approved respirators will be used.
- Workers who wear respirators will be clean-shaven. Filtering facepiece respirators give little or no protection to workers with beards, and even a minor growth of stubble can severely reduce the effectiveness of respiratory protection.
- All workers who wear respirators will be fit-tested.
- Workers will be properly trained in the use of respirators, and a high standard of supervision, inspection, and maintenance will be followed.

Protective clothing:

- Workers will wear protective clothing as specified in our task-specific safe work procedures to prevent contamination of worker clothing.
- Workers will not use compressed air to clean themselves, their clothing, or their equipment.

14.10.18 Training

Specialized training will be provided to affected workers that are potentially exposed to airborne silica dust in the following:

- Hazards associated with exposure to silica dust
- The risks of exposure to silica
- Signs and symptoms of silica disease
- Safe work procedures to be followed (e.g., setup of enclosures, disposal of silica waste, personal decontamination)
- Use of respirators and other personal protective equipment (e.g., donning and doffing of personal protective equipment, and cleaning and maintenance of respirators)
- Use of control systems (e.g., LEV and wet methods)
- How to seek first aid (for example, the location and use of eyewash stations)
- How to report an exposure to silica dust

Records of training will be kept, as specified in the Occupational Health and Safety Regulation.

14.10.19 Silica Risk Table

Task	Control methods	Personal protective equipment	Comments
<p style="text-align: center;">Grinding</p>	<p>Concrete interior/exterior walls, ceilings, and other flat surfaces</p> <ul style="list-style-type: none"> • Barrier or enclosure systems are required to restrict access to the work area. • Local exhaust ventilation (LEV)—use concrete grinders with HEPA vacuum attachments. • Grinding using wet method of dust control may be an option for specific circumstances. These circumstances must be listed on the site workplan. • Personal protective equipment. 	<ul style="list-style-type: none"> • Half-mask air purifying respirator equipped with 100 series HEPA filters. • Full-face air purifying respirator or powered air purifying respirator (PAPR) with P100 series HEPA filters, when heavy work and poor dilution ventilation in work area. • Disposable coveralls are recommended for all grinding work and are required for stairwell and similar work. • Eye protection should be worn when using a half-face respirator. 	<ul style="list-style-type: none"> • Vacuum systems equipped with HEPA filtration are the best control options for flat surface grinding. Ensure they are well designed for this type of work. A variety of suitable systems are readily available. • Very little visible dust should be present in the air. • Inspect the LEV unit frequently to ensure it is operating properly and the filters are not overloaded. • Hearing protection should be worn when using powered equipment. • When LEV and wet grinding systems cannot be used, dry grinding is permitted, provided a full enclosure system is constructed. Workers should wear full-face respirators and disposable coveralls.

	<p>Window casements and other working areas with space or other constraints</p>	<ul style="list-style-type: none"> • Barrier or enclosure systems are required to restrict access to and contain the work area. • Local exhaust ventilation (LEV) should be used when practical and effective. • Wetting methods of control can be used to supplement LEV or when LEV methods are not practical or effective. • Personal protective equipment. 	<ul style="list-style-type: none"> • Half-face or full-face air purifying respirator or powered air purifying respirator (PAPR) with P100 series HEPA filters. • Eye protection should be worn when using a half-face respirator. 	<ul style="list-style-type: none"> • Due to space constraints, it may not be possible to use an LEV-equipped grinder. • Water flow and the rpm of the grinder should be properly adjusted for the material being worked on. • Caution—water may produce a slipping hazard. • Hearing protection should be worn when using powered equipment. • Electric shock hazards need to be assessed and controlled when using wet methods (pneumatic grinders may be a another option).
	<p>Tuck point grinding</p>	<ul style="list-style-type: none"> • Barrier or enclosure systems are required to restrict access to and contain the work area. • Local exhaust ventilation (LEV)—use specially designed tuck point grinders with HEPA vacuum attachments. • A specially designed oscillating tool is available for mortar removal. The tool can be purchased with an LEV attachment. • When LEV cannot be used, construct an enclosure including a negative air unit for dilution ventilation. • Personal protective equipment. 	<ul style="list-style-type: none"> • Full-face air purifying respirator equipped with 100 series HEPA filters. • For challenging jobs where LEV or wetting control cannot be used, full-facepiece supplied-air respirators operated in pressure-demand mode or full-facepiece supplied air respirators operated in continuous-flow mode will be required. • Disposable coveralls should be worn for tuck point grinding work. 	<ul style="list-style-type: none"> • Hearing protection should be worn.

	<p>Enclosed areas (e.g., stairwells, elevator shafts)</p>	<ul style="list-style-type: none"> • Full enclosure systems are required to restrict access to and contain the work area. • LEV—use concrete grinders with HEPA vacuum attachments. • Have dedicated grinders available with corner and flat-end shrouds. • Some wet grinding may be acceptable—the approved tasks must be listed on the site workplan. • Personal protective equipment. 	<ul style="list-style-type: none"> • Full-face air purifying respirator or powered air purifying respirator (PAPR) with P100 series HEPA filters. • If effective dilution ventilation within the work area enclosure cannot be established, then full-facepiece supplied-air respirators operated in pressure-demand mode or full-facepiece supplied air respirators operated in continuous-flow mode will be required. • Disposable coveralls must be worn • Hearing protection should be worn. 	<ul style="list-style-type: none"> • LEV attachments for concrete grinders are not effective for certain non-flat grinding surfaces; therefore, full-facepiece supplied-air respirators operated in pressure-demand mode or full-facepiece supplied air respirators operated in continuous-flow mode will be required. • HEPA filters should be checked routinely throughout the work shift to ensure they are not clogged with silica dust.
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<p>Drilling</p>	<p>Walls, floors, and ceilings</p>	<ul style="list-style-type: none"> • Barriers to restrict access to the work area. • Dust capture tool (e.g., a dust cap, LEV, or wetting method). • Personal protective equipment. 	<ul style="list-style-type: none"> • Half-mask air purifying respirator equipped with P100 series HEPA filters. • Eye protection should be worn when using a half-face respirator. • Waterproof equipment where appropriate. • Hearing protection should be considered when using powered equipment. 	<ul style="list-style-type: none"> • Hammer drills (variety of sizes) are available. Some units are equipped with local exhaust ventilation attachments (with HEPA filters). • A “dust cap” is a dust-capturing device that fits between the drill and the working surface (on the end of the drill). This is useful for overhead ceiling and wall drilling. A few different types are available. • When water is used as a dust control, the slipping hazard must be considered and managed. • Large concrete drills can be purchased that are equipped with a water spray attachment. Any wet slurry must be cleaned up when the work is completed.
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<p>Chip hammering and jackhammering</p>	<p>Walls, floors, and ceilings</p>	<ul style="list-style-type: none"> • Barriers must routinely be established to restrict access to these work areas. Enclosure systems must be constructed when controls are not effective at reducing visible airborne dust. • Local exhaust ventilation (see comment) when practical. • Wet methods can be used and are often very effective for floor hammering. • Personal protective equipment. 	<ul style="list-style-type: none"> • Half-face or full-face air purifying respirator or powered air purifying respirator (PAPR) with P100 series HEPA filters, depending on the effectiveness of the controls. • Disposable coveralls should be worn when using full-face respirators. Waterproof PPE (and clothing) required when wetting methods are used. • Eye protection should be worn when using a half-face respirator. • Hearing protection should be considered when using powered equipment. 	<ul style="list-style-type: none"> • LEV could include a negative air unit or HEPA vacuum positioned near the working surface. These controls may be practical when chip hammering walls or other vertical surfaces or locations where water cannot be used. • Wet methods could include a portable airless sprayer, air mister, or hose sprayer. Slurry should be cleaned up when the work is completed to avoid secondary dust exposure hazard. • Caution—water may produce electrocution and slipping hazards.
<p>Cleanup</p>	<p>Vacuum bag/filter changing and maintenance of LEV</p>	<ul style="list-style-type: none"> • Barrier to restrict access to the work area. Signage marking an area removed from other workers may be adequate. 	<ul style="list-style-type: none"> • Half-face air purifying respirator with P100 series HEPA filters. • Eye protection should be worn when using a half-face respirator. 	<ul style="list-style-type: none"> • Safe work procedures must be established and followed. • Many vacuums are designed to collect the dust in a bag (rather than loose in the canister) that can be tied and disposed without generating airborne dust. Any new vacuum systems purchased should have this design feature.

<p>Cutting fibrous cement board</p>		<ul style="list-style-type: none"> • A variety of dust control options are acceptable: <ul style="list-style-type: none"> ○ Fibre cement shears ○ Score and snap knife ○ Dust-reducing saws (circular and jig) equipped with HEPA vacuum ○ Wetting method if practical 	<ul style="list-style-type: none"> • Half-face air-purifying respirator with N100 series HEPA filters when using saws. • N95 dust mask when using fibre cement shears indoors. 	<ul style="list-style-type: none"> • A number of equipment manufacturers make saws (and saw blades) specially designed for cutting fibre cement board that can be purchased with HEPA. <p>Carbide score and snap knives have been shown to be an efficient and productive means of cutting fibrous cement board.</p>
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14.10.20 Site-Specific Silica Exposure Control Plan						
Date control plan completed:						
Contractor:				Superintendent:		
Project manager:				First aid attendant:		
Project:			Address:			
On-site supervisor(s):						
Worker(s):						
Scope of work to be completed:						
Work start date:				Duration: <input type="checkbox"/> Days <input type="checkbox"/> Months <input type="checkbox"/> Years		
Employer responsible for:						
Supervisor responsible for:						
Worker responsible for:						
HAZARDS IDENTIFIED (other than silica dust)			CONTROL MEASURE(S)			
<input type="checkbox"/> Falls						
<input type="checkbox"/> Slipping						
<input type="checkbox"/> Confined space						
<input type="checkbox"/> Workers above						
<input type="checkbox"/> Workers below						
<input type="checkbox"/> Noise						
<input type="checkbox"/> Electrical						
Workers trained in (training records must be available for review):						
Proper use of grinding equipment			Y <input type="checkbox"/> N <input type="checkbox"/>	Proper use of admin controls		Y <input type="checkbox"/> N <input type="checkbox"/>
Proper use of engineering controls			Y <input type="checkbox"/> N <input type="checkbox"/>	Proper use of PPE		Y <input type="checkbox"/> N <input type="checkbox"/>
Proper disposal methods			Y <input type="checkbox"/> N <input type="checkbox"/>	Other (fall protection, swing stages, etc)		Y <input type="checkbox"/> N <input type="checkbox"/>
Respirators						
Required: Y <input type="checkbox"/> N <input type="checkbox"/>			Available: Y <input type="checkbox"/> N <input type="checkbox"/>		Fit-tested: Y <input type="checkbox"/> N <input type="checkbox"/>	
PPE required for scope of work (other than respirator)						
<input type="checkbox"/> Coveralls <input type="checkbox"/> Gloves <input type="checkbox"/> Rubber boots <input type="checkbox"/> Eye protection <input type="checkbox"/> Reflective vest <input type="checkbox"/> Hearing protection						
Documents to be attached to control plan (<input checked="" type="checkbox"/> if present)						
<input type="checkbox"/> Exposure control program <input type="checkbox"/> Respiratory protection program <input type="checkbox"/> Training records <input type="checkbox"/> SWP (tools and equipment)						
Task/risk management matrix (relating to silica dust) use table 1 for codes, separate with a comma (.)						
#	Date/Duration	Task	Controls		PPE	Supplies/ Equipment
			Engineering	Administrative		

Notes (For task/risk management matrix above. Use # to indicate which task the note relates to.)

14.3.20 SITE INSPECTION CHECKLIST (complete pre-work & periodically during project)

Engineering controls		Problem noted (DETAIL)	Problem corrected (DETAIL)
Available at site	Y <input type="checkbox"/>		
Operating correctly	Y <input type="checkbox"/>		
Used appropriately	Y <input type="checkbox"/>		
Effective in dust control	Y <input type="checkbox"/>		
Administrative controls			
Available at site	Y <input type="checkbox"/>		
Used appropriately	Y <input type="checkbox"/>		
In place before work start	Y <input type="checkbox"/>		
Effective	Y <input type="checkbox"/>		
Cleanup			
Vacuum used properly	Y <input type="checkbox"/>		
Large pieces picked up	Y <input type="checkbox"/>		
Vacuum capacity maintained	Y <input type="checkbox"/>		
Pre-filters in place	Y <input type="checkbox"/>		
Vacuum attachments used	Y <input type="checkbox"/>		
Collection bags in place	Y <input type="checkbox"/>		
Waste properly disposed of	Y <input type="checkbox"/>		

TABLE 1 (Codes for task/risk management matrix)

Engineering controls		Administrative controls		PPE		Supplies/Equipment	
1	Exhaust fan	1	Signage	1	Respirator	1	Hand grinder
2	LEV	2	After hours work	2	Gloves	2	Ceiling grinder
3	Wetting	3	Scheduling	3	Coveralls	3	Floor grinder
4	Partial enclosure			4	Hearing protection	4	Disposal bags
5	Full enclosure			5	Eye protection	5	HEPA filter (vacuum)
6	Shroud			6	Reflective vest	6	HEPA filter (respirator)
7	Barriers			7	Rubber boots (CSA)	7	Shovel
				8	Fall arrest	8	Lifeline

Print supervisor's name

Supervisor's signature

CHAPTER: 14	Codes of Practice	HSM-COP-11
SECTION: 14.11	Hazardous products	Rev.1 2021

THIS CODE OF PRACTICE IS APPLICABLE AT ALL TIMES

ALL SUPERVISORY PERSONNEL AND THEIR DESIGNATES ARE RESPONSIBLE FOR IMPLEMENTATION OF THIS CODE OF PRACTICE

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14.11.1 Introduction

The rules below have been established to prevent injuries and illnesses that may occur as a result of exposure to a hazardous product. Tasks and responsibilities covered include safe handling, use, storage, and disposal of products. Following these rules may also prevent fires, explosions or spills that could cause injuries, property damage or environmental damage.

Hazardous substances are mainly regulated under WHMIS regulations as controlled or hazardous products. WHMIS stands for “Workplace Hazardous Materials Information System”. WHMIS is a series of complementary federal and provincial legislations designed to provide information on the safe use of hazardous materials used in the Canadian workplace. Information is provided by means of product labels, safety data sheets and worker education programs.

The following rules apply to all Department employees, but more specifically, to employees who work with a hazardous product or who may be exposed to a hazardous product.

In this document, “Controlled” and “Hazardous” products are the same as “WHMIS products”.

14.11.2 WHMIS

Federal and provincial WHMIS legislations have changed. The new version of WHMIS incorporates elements and principles of the “Globally Harmonized System” to improve the

system for all stakeholders. WHMIS will provide more consistent hazard information, make administering and enforcement more efficient, and make compliance easier for suppliers.

Under the ‘Hazardous Products Act’, some products are not regulated under WHMIS. These include: wood products; manufactured articles and tobacco products. These products have or may have their own separate legislations. However, some products, such as pest control products and consumer products, are regulated by WHMIS and other legislations.






Other noncontrolled products which may be considered hazardous are regulated under the OHS Act and the OHS regulation 91-191 (See reference section below).





Products which fall under WHMIS follow the “Transportation of Dangerous Goods Act and Regulations” while they are in transport (shipment).

To keep its safety data sheets up to date, the Department is using a “safety data sheet management system” operated by an outside service provider.

14.11.3 WHMIS 2015

Hazardous products regulated under WHMIS are those classified as hazardous product under the federal ‘Hazardous Products Act’ adopted in 2015. The names of classes for WHMIS are listed in the table below.

WHMIS Pictograms		
Pictogram Names	Pictograms	Corresponding Classes
Gases under pressure		<ul style="list-style-type: none"> • Gases under pressure
Flame		<ul style="list-style-type: none"> • Flammables • Self-reactive • Pyrophoric • Self-Heating • In contact with water, emits flammable gases • Organic peroxides
Oxidizer		<ul style="list-style-type: none"> • Oxidizing classes
Corrosive		<ul style="list-style-type: none"> • Corrosive to metals • Skin corrosion • Serious eye damage
Exploding Bomb		<ul style="list-style-type: none"> • Self-reactive substances & mixtures, • Organic peroxides

Skull & Crossbones		<ul style="list-style-type: none"> • Acute Toxicity (fatal or toxic)
Health Hazard (New)		<ul style="list-style-type: none"> • Carcinogenicity • Respiratory Sensitization • Reproductive Toxicity • Specific Target Organ T. • Germ Cell Mutagenicity • Aspiration Hazard
Exclamation Mark		<ul style="list-style-type: none"> • Irritation • Skin Sensitization • Acute toxicity (harmful) • Specific Target Organ Toxicity
Biohazardous		<ul style="list-style-type: none"> • Biohazardous infectious materials

14.11.4 General Measures

- Employees are to be trained or instructed in the safe handling, use, storing, or disposing of a hazardous product they work with or in conjunction with.
- All hazardous products must be properly labeled from the supplier.
- Adequate information must be available for the safe use of all hazardous products.
- Safety data sheets must be available for WHMIS products.
- Information from all hazardous products is used to protect employee's health and safety.
- A safety data sheet and a supplier label is required for each hazardous product onsite before being distributed or used.

14.11.5 Responsibilities

Employer/Supervisor Responsibilities

Ensure

- Management controls the products brought into the facilities by periodically checking products onsite.
- Employees receive WHMIS training and are instructed on specific hazardous products they are using.
- A safety data sheet and a supplier label are acquired for each WHMIS product onsite before being distributed or used.
- Information on hazards is obtained for WHMIS exempt products (i.e. Consumer products, pest control products).

- Appropriate PPE is provided and used by employees according to safety data sheets, or information on hazards.
- Elimination or substitution of a hazardous products with a less hazardous one is done when possible (elimination or reduction of exposures can sometimes be done by using engineering controls).
- Employees understand hazard information and apply prevention information obtained from labels, (material) safety data sheets, or from other sources.
- Information about new hazardous products used is given to the safety data sheet coordinator for your work site (refer to section 2.12 for more details).
- Safety Data sheets in binders are the most current versions.

Employee Responsibilities

- Immediately report to your supervisor any exposure, spill or incident with a hazardous product.
- Use only products (Hazardous Substances) provided by the employer.
- Participate in WHMIS education and training specified by your supervisor.
- Wear or use personal protective equipment when using WHMIS products.
- Read, understand and follow instructions on labels and SDS.
- Follow other prescribed procedures.
- Label a new container when a hazardous product is transferred or decanted.
- Participate in identifying and controlling hazards.

14.11.6 Safety Data Sheet/ Material Safety Data Sheet

The Department uses a management system called “Paratox Express” to manage and maintain its Safety Data Sheets. The system provides up-to-date information and enables users to search, consult and print sheets at their worksite from one central database. The system is owned and operated by a company called Maerix.

Up-to-date information is essential to safely handle, use, store or dispose of hazardous products. A safety data sheet will be required to be updated when the supplier becomes aware of any "significant new data.

Managing and maintaining safety data sheets is required under the “Workplace Hazardous Materials Information System” (WHMIS) regulations.

14.11.7 Employees Using Paratox Express

Paratox Express can be accessed by all personnel from the Department’s intranet site. Original SDS sheets can be viewed and printed by all personnel having access to the internet.

To find out how to access Paratox Xpress, click on the following link:

<http://internal.dot.gnb.ca/hr/Safety/whmis-e.asp>

While searching for products, if an employee determines that a product is missing from a site or the general database, he should contact the Branch/District site coordinator for that site so that the site and/or product can be added to the database (see site coordinators below).

Searching in Paratox Xpress

All employees have the ability to search the database with the option of using one or several search criteria. You can find them on the search page which includes: product number; product name or synonym; state (i.e. discontinued); manufacturer; reference; CAS number; ingredient name; site; department (sub site).

List of Products by Site in Paratox Xpress

To find all the products for a site:

1. Go to the “**Search Screen**” by clicking on the “Search Button” at the top right of the screen and select from the scroll down menus the “Site” and the “Department” (subsite). A few seconds are required for the site or the Department fields to load.
2. Click on the “**Perform Search**” button at the bottom of the screen.
3. If a product is missing in the site, search in the “**General List**” to find out if the product is in the general database (see below).
4. Contact your site coordinator to let him know so the site and/or product can be added.

General List of Products in Paratox Xpress

To find a product in the database:

1. Click on the “**Search button**” at the top right of the screen. This will bring up the “Search Screen”.
2. **Enter** the product information (Name, synonym, manufacturer, etc.) in the appropriate criteria field. The fewer criterions you use the longer the list of products will be.
3. Click on the “**Perform search**” button at the bottom of the screen.
4. If you still cannot find it, contact your site coordinator to let him know so the product can be added.

14.11.8 Site Coordinators – Maintenance of Paratox Xpress

The database is divided into 12 major sites which are further divided into numerous sub-sites (Department and/or sector). Each site has a Departmental **SDS site coordinator** who’s responsible to provide information to Maerix on new products and corresponding sites on a timely basis.

The 12 sites are:

- District 1
- District 2
- District 3
- District 4
- District 5
- District 6
- VMA
- Radio Communication
- Sign Shop
- Central Lab
- Buildings Group
- Head Office – Kings Place

When a new hazardous product is purchased, the product information (name, CAS number, manufacturer, or SDS, and sites) must be supplied to a District/Branch MSDS site coordinator. Once they receive the information, coordinators forward it to Maerix so that it can be added to the system. For existing products, site coordinators can change the sites corresponding to a product.

14.11.9 Availability of SDSs

DTI is responsible to make SDSs readily available to all employees who work with or who may be exposed to a hazardous product. This is accomplished by providing:

1. Access to Paratox Xpress through computers, **or**
2. Access to a SDS binder for a specific worksite, **or**
3. A combination of the first two options.

The solution to how employees access SDS information should be based on the number and location of computers **and** on what is most practical for the employees at that work location.

Paratox Xpress is the main source for up-to-date information on SDSs. If a SDS binder is used in addition to or instead of Paratox Xpress, the DTI employee responsible for keeping the SDS binder updated will use Paratox Xpress to obtain and/or replace SDS's on an on-going basis.

In the event that Paratox Xpress becomes unavailable because of a local problem (i.e. power failure), a SDS can be obtained by:

- Accessing information on an emergency USB key.
- Asking stockrooms if they have a printed copy of the SDS;
- Asking other DTI offices if they have a printed copy of the SDS;
- Accessing Paratox Xpress through a smart phone;
- Asking other DTI offices if they have access through a computer.

However, it will not be possible to obtain a SDS with the last two options above, if the problem originates from the service provider.

14.11.10 Workplace Labels

Only SDS coordinators have the ability to prepare and print labels from the system. To obtain labels, please contact your Branch/District SDS site coordinator.

14.11.11 References

- Occupational Health and Safety Regulation 91-191, sections 2 and 58 to 79.
- Occupational Health and Safety Regulation 2016-6 (and 88-221), *Workplace Hazardous Materials Information System Regulation- Occupational Health and Safety Act*.
- *Occupational Health and Safety Act*, section 42, Toxic Substances.

Accident Prevention – a set of precautionary, measures taken to avoid possible bodily harm.

ANSI – American National Standards Institute.

Audit – a method for assessing the quality of a company’s existing safety compliance efforts. Following each mock audit, an in-depth written report is prepared and submitted to the client in a timely manner. This is performed to identify and correct potential safety compliance issues.

Audit – an assessment of a safety and health program’s documentation and or a physical location to ensure regulation compliance by a trained safety professional.

Authority: A power or right to enforce obedience; delegated power.

Authorized person – A person approved or assigned by the employer to perform a specific type of duty or duties or to be at a specific location or locations at the jobsite. See *designated person*.

Benchmark – any standard or reference by which others can be measured or judged.

C.I.H. – Certified Industrial Hygienist.

Catastrophic: Any unexpected and sudden event or loss of equipment which exceeds the capacity of the workplace to function normally, causing great damage and distress, would be considered catastrophic (from WorkSafeNB, Questions & answers, Legislative amendments, June 2014).

Certified – Equipment is “certified” if it (a) has been tested and found by a nationally recognized testing laboratory to meet nationally recognized standards or to be safe for use in a specified manner; or (b) is of a kind whose production is periodically inspected by a nationally recognized testing laboratory; and (c) it bears a label, tag, or other record of certification.

Competent -qualified, because of such factors as knowledge, training and experience, to do assigned work in a manner that will ensure the health and safety of persons, knowledgeable about the provisions of the Act and the regulations that apply to the assigned work, and knowledgeable about potential or actual danger to health or safety connected with the assigned work;

Compliance – conforming to mandatory and voluntary regulations and standards; accident and injury histories; the courts; and custom and practice.

Consultation – The act or process of consulting, a conference at which advice is given or views exchanged.

Consulting – acting as an advisor on professional matters.

Control zone- area between an unguarded edge and a warning line which represents a safe distance from the edge

Corrective Actions – is a change implemented to address a weakness identified in a management system. Normally corrective actions are instigated in repose to a customer complaint.

Dangerous goods – Also referred to as hazardous materials. Any solid, liquid, or gas that can harm people, other living *organisms*, property, or the environment.

Designated person – See *Authorized person*.

Due Diligence – is a term used for a number of concepts involving either the performance of an investigation of a business or person, or the performance of an act

with a certain standard of care. The process through which a potential acquirer evaluates a target company or its assets for acquisition.

Employee a person employed at or in a place of employment, or a person at or in a place of employment for any purpose in connection therewith; A person employed with the Department in a student, casual, seasonal or full time position. It may also include trades people (electrician, plumbers)

Employer – person who employs one or more employees or the person's agent;

Equivalent – Alternative designs, materials, or methods to protect against a hazard which the employer can demonstrate will provide an equal or greater degree of safety for employees than the methods, materials or designs specified in the standard.

Ergonomics – The applied science of equipment design, as for the workplace, intended to maximize productivity by reducing operator fatigue and discomfort.

Ethics These are the moral principles that a person or group uses to set standards of right or wrong conduct.

ferry, a train and any vehicle used or likely to be used by an employee

Foreseeability The preparation for risks which a reasonably thoughtful person would foresee.

Hazard – A chance, an accident, a chance of being injured or harmed, danger, a possible source of danger to life, to health, property, or environment.

Hazard Any source of potential damage, harm or adverse health effects on something or someone under certain conditions at work.

Hazard Elimination – To get rid of, remove, a chance, an accident, and a chance of being injured or harmed.

Hazard Recognition – The act of recognizing or condition of being recognized, a chance of being injured or harmed -acceptance or acknowledgement.

Hazardous substance – A substance which, by reason of being explosive, flammable, poisonous, corrosive, oxidizing, irritating, or otherwise harmful, is likely to cause death or injury.

Hazmat – abbreviation for hazardous material. Also referred to as dangerous goods. Any solid, liquid, or gas that can harm people, other living organisms, property, or the environment.

Incident An event which could or does result in unintended harm to people, damage to property or loss to process.

Industrial Hygiene – May be involved with the assessment and control of chemical, physical or biological hazards in the workplace that could cause disease or discomfort. Also called upon to communicate effectively regarding hazard, risk, and appropriate protective procedures, and to manage people and program for the preservation of health and wellbeing of those who enter the workplace.

Injury Damage or harm done to a person's body.

Inspection – The act of inspecting, official examination or review, an organized examination, or formal evaluation exercise.\

Internal Responsibility System A system in which every individual in an organization is responsible and accountable for health and safety.

Investigation – of, relating to, or located within the limits or surface, inner detailed inquiry or systematic examination.

Job Hazard Assessment – is a common term used in construction or jobsite environment by Field Personal or Project Mangers, breaks down a job into its components and identifies hazards and risks of each component.

Jurisdiction Legal or other authority for a given territory.

Legal Charter A legal document granting rights by a sovereign or legislature.

Legislation The collective laws of a specific jurisdiction.

Likelihood The probability that something may happen; to be reasonably expected to happen.

Litigation To contest a point of law.

Manager An individual in an organization responsible for the job performance of others.

Near-miss Type of incident that, under different circumstances, could have resulted in unintended harm to people, damage to property or loss to process

Occupational disease Means any disease or illness or departure from normal health arising out of employment.

Officer an occupational health and safety officer appointed under section 5 NBOH&S Act

OH&S system This is the collective set of integrated components that proactively reduce workplace risks to employee health and safety and risks to the environment.

OHS Occupational Health and safety – A government agency in the department of Labor to maintain a safe and health work environment.

Organization A group of people working together to achieve a common purpose.

Owner a trustee, receiver, mortgagee in possession or a tenant or a person for whose direct benefit on completion work is being done, but does not include a landlord who, under the terms of the lease, has transferred all responsibility for risks in relation to a place of employment

Personal Protective Equipment means any piece of equipment or clothing designed to be used to protect the health or safety of an employee

Place of Employment any building, structure, premises, water or land where work is carried on by one or more employees, and includes a project site, a mine, a

Powered Industrial Trucks – Commonly called forklifts, or lift trucks, are used in many industries. primarily to remove materials.

Program Development – System analysis involves creating a formal model of the problem to be solved.

project site any building, structure, premises, water or land where construction is carried on;

Qualified Person – One who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training, and experience, has successfully demonstrated his ability to solve or resolve problems relating to the subject matter, the work, or the project.

Reasonable care High standards of health, safety and environmental awareness, judgment, care, prudence and determination at all levels of the organization.

Registered Professional Engineer –

Risk assessment the process of identifying, quantifying, and controlling hazards and risks.

Risk The chance or probability that a person will be harmed or experience an adverse health effect if exposed to a hazard. It may also apply to situations with property or equipment loss.

Safe Job Procedure A step by step description of action or activity which must be followed.

Safety factor – The ratio of the ultimate breaking strength of a member or piece of material or equipment to the actual working stress or safe load when in use.

Safety Strategy – The act of being safe, understand how strategy affects structure and how the choice of structure affects efficiency and effectiveness.

Six Sigma Quality – is a set of practices originally developed by Motorola to systematically improve processes by eliminating defects.

Supervisor a person who is authorized by an employer to supervise or direct the work of the employer's employees

Task A piece of work to be done.

Temporary staffing – provide short term to long term experienced professionals to companies in an efficient and productive process.

Unsafe act – Actions that will lead to potential injury, loss of time, or property damage.

Unsafe Condition- conditions that will lead to potential injury, loss of time, or property damage

Worker's Compensation – (colloquially known as *workers' comp* in North American English provides insurance to cover medical care and compensation for employees who are injured in the course of employment, in exchange for mandatory relinquishment of the employee's right to sue their employer for the **tort** of negligence.

Acronyms

AED – automated external defibrillator

AHJ – authority having jurisdiction

APF – assigned protection factor

APR – air purifying respirator

CCOHS – Canadian Centre for Occupational Health and Safety

CEV – ceiling exposure value

CGA – Compressed Gas Association

CSA – Canadian Standards Association

dB – decibels

dB(A) decibels, a-weighting

dB(C) decibels, c-weighting

EBA – escape breathing apparatus

ECGs – electrocardiograms

eLearning – online training

ELSI – end-of-service-life indicator

ESEW – emergency showers and eyewashes

FF – fit factor

Fit testing – the practice of measuring how effective the seal of a respirator is on a person.

FR – fire resistant/retardant

GHS – Globally Harmonized System of Classification and Labeling of Chemicals

HEPA – high-efficiency particulate adsorber

HR – hazard ratio

HHR – highest hazard ratio

IAQ – indoor air quality

IDLH – immediately dangerous to life or health

JHA – job hazard assessment

LC – Labour Canada

LEL – low explosive limit

LFL – lower flammable limit

LFFV – loose-fitting facepiece/visor

LMS – learning management system

LOTO – lock out, tag out
MUC – maximum use concentration
N95 – filter rated at 95 per cent efficiency and not for use in oil atmospheres
NFPA – National Fire Protection Association
NIOSH – National Institute for Occupational Safety and Health
OEL – occupational exposure limit
OHSA – Occupational Health and Safety Act (Ontario)
PAPR – powered air purifying respirator
PEL – permissible exposure limit
PPE – personal protective equipment
QLFT – qualitative fit testing
QNFT – quantitative fit testing
SaaS – software as a service
SAR – supplied-air respirator
SCBA – self-contained breathing apparatus
SDS – safety data sheet
SPCC – spill prevention, control and countermeasures
SRD – self-retracting device
SRL – self-retracting lifeline
STEL – short term exposure limit
SWPF – simulated workplace protection factor
TC – Transport Canada
TLV – threshold limit value
TRIF – total recordable incident frequency
TRIR – total recordable incident rate
TWA – time weight average
UEL – upper exposure limit
UFL – upper flammable limit
UL/ULC – Underwriters Laboratories / Underwriters Laboratories Canada
VFSS – vehicle fire suppression system
WEEL – workplace environmental exposure limit
WHMIS – Workplace Hazardous Materials Information System
WPF – workplace protection factor