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Part 1 Definitions and General Application

Definitions

1.1 In these regulations, the following definitions apply,

A

“abate” means to encapsulate, enclose or remove asbestos-containing material;

“abnormal audiogram” means an audiogram that indicates

- (a) the threshold in either ear is more than 25 dB at 500, 1000 and 2000 Hz,
- (b) the threshold in either ear is more than 60 dB at 3000, 4000 or 6000 Hz, or
- (c) there is one-sided hearing loss with the difference in hearing threshold level between the better and the poorer ear exceeding the average of 30 dB at 3000, 4000 and 6000 Hz;

“abnormal shift” means a threshold shift, in either ear, of 15 dB at two consecutive test frequencies from 1000 Hz up to and including 6000 Hz when compared to the baseline test;

“Act” means the *Safety Act*;

“actuated fastening tool” means a tool that uses a pneumatic, hydraulic, explosive or electric source of energy to bring about its action;

“acute illness or injury” means a physical injury or sudden occurrence of an illness that results in the need for immediate care;

“advanced first aider” means a person who holds a certificate in advanced first aid from an approved training agency;

“aerial device” means a telescoping or articulating unit used for positioning a personnel-carrying basket, bucket, platform or other device at an elevated work location;

“all-terrain vehicle” means a wheeled or tracked motor vehicle designed primarily for travel on unprepared surfaces such as open country and marshland, but does not include a snow vehicle, or farming, ranching or construction machinery;

“anchor point” or “anchor plate” means a point or plate to which equipment may be securely attached;

“ANSI” means American National Standards Institute;

“API” means American Petroleum Institute;

“approved” in relation to a type of equipment and a named organization or standard, means it is approved or certified by a nationally accredited independent third-party organization as meeting those standards or specifications that are applicable to that type of equipment or if applicable, the named standard;

“approved training agency” means a person or organization that enters into an agreement with the Chief Safety Officer;

“asbestos waste” means material that is discarded because there is a reasonable chance that asbestos might be released from it and become airborne, including protective clothing that is contaminated with asbestos;

“ASME” means American Society of Mechanical Engineers;

“ASTM” means American Society for Testing and Materials;

“audiometer” means a device meeting the specifications of an audiometer described in ANSI Standard S3.6-1996, *Specification for Audiometers*;

“audiometric technician” means a person who has passed an audiometric technician course approved by the Chief Safety Officer, or has been approved by the Chief Safety Officer as having the equivalent of an approved audiometric technician course and, in either case, has passed a re-qualification examination when requested to do so by the Chief Safety Officer;

“AWG” means, with respect to electrical conductors, American Wire Gauge;

B

“biohazardous material” means a pathogenic organism, including a blood-borne pathogen, that, because of its known or reasonably believed ability to cause disease in humans, would be classified as Risk Group 2, 3 or 4 as defined by the Medical Research Council of Canada, or any material contaminated with such an organism;

“boatswain’s chair” means a seat that is suspended from ropes from which one person works;

“boom” means the part of a structure that is attached to a crane or lifting device superstructure and used to support the upper end of the hoisting tackle;

“boom truck” means a truck that is equipped with a hydraulically driven structure or device that

- (a) is mounted on a turret that is secured to a truck,
- (b) is supported to provide stability, and
- (c) is equipped with a boom that
 - (i) is telescoping or articulating, and
 - (ii) can swing or hoist or raise and lower its load;

“BSI” means British Standards Institute;

“buddy system” in diving means a system in which

- (a) 2 divers in the water at a dive site remain in visual or physical contact with each other at all times, and
- (b) both divers surface immediately if they lose contact with each other;

“building shaft” means an enclosed vertical opening in a building or structure extending to 2 or more floors or levels, including an elevator, a ventilation shaft, a stairwell or a service shaft;

“bulk shipment” with respect to a controlled product means a shipment of the controlled product that is contained, without intermediate packaging, in

- (a) a vessel with a water volume of more than 454 litres,
- (b) freight container, a road vehicle, a railway vehicle, a portable tank, a freight container carried on a road or railway vehicle, ship or aircraft or a portable tank carried on a road vehicle or railway vehicle, ship or aircraft,
- (c) the hold of a ship, or
- (d) a pipeline;

“buried facility” means anything buried or constructed below ground level respecting electricity, communications, water, sewage, oil, gas or other substances including, but not limited to, the pipes, conduits, ducts, cables, wires, valves, manholes, catch basins and attachments to them;

C

“Canadian Electrical Code” means CSA Standard C22.1-02, *Canadian Electrical Code, Part 1, Safety Standard for Electrical Installations*;

“CANMET” means the Canadian Explosives Atmospheres Laboratory, Canadian Centre for Mineral and Energy Technology, Natural Resources Canada;

“cantilever hoist” means a hoist in which the car travels on rails that may be an integral part of a vertical mast and on a vertical plane out-board from the mast;

“carabiner” means a connecting component that

- (a) generally consists of a trapezoidal or oval body with a self-locking gate that requires at least 2 consecutive, deliberate actions to open to permit the body to receive an object and that, when released, automatically closes and locks to prevent unintentional opening, and
- (b) has an ultimate tensile strength of at least 22.2 kilonewtons;

“CEN” means European Committee for Standardization;

“certified by a professional engineer” means stamped and signed by a professional engineer as described in section 3.3;

“CGSB” means Canadian General Standards Board;

“chief safety officer” means the Chief Safety Officer appointed by the Workers Compensation Board pursuant to the *Safety Act*;

“chimney hoist” means a hoist used to lift workers, materials or equipment during the construction of a chimney;

“close work site” means a work site that is not more than 20 minutes travel time from a health care facility under normal travel conditions using available means of transportation;

“combustible dust” means a dust that can create an explosive atmosphere when it is suspended in air in ignitable concentrations;

“combustible liquid” means a liquid that has a flash point at or above 37.8OC;

“competent” in relation to a person, means adequately qualified, suitably trained and with sufficient experience to safely perform work without supervision or with only a minimal degree of supervision;

“conductor” means a wire, cable or other metal component installed for the purpose of conveying electric current from one piece of equipment to another or to ground;

“confined space” means an enclosed or partially enclosed space that is not designed or intended for continuous human occupancy with a restricted means of entry or exit and may become hazardous to a worker entering it because

- (a) of its design, construction, location or atmosphere,
- (b) of the work activities, materials or substances in it,
- (c) the provision of first aid, evacuation, rescue or other emergency

response service is compromised, or
(d) of other hazards relating to it;

“construction” means erection, alteration, repair, dismantling, demolition, structural maintenance, painting, land clearing, earth moving, grading, excavating, trenching, digging, boring, drilling, blasting or concreting, and the installation of any machinery;

“consultation” means direct and meaningful involvement;

“container” means a bag, barrel, bottle, box, can, cylinder, drum, storage tank or similar package or receptacle;

“contaminant” means a chemical, biological or radiological material in a concentration that will likely endanger the health and safety of a worker if it is inhaled, ingested or absorbed;

“contaminated” means affected by the presence of a harmful substance on workers or at the work site in a quantity sufficient to pose a risk to health;

“contaminated environment” means a work site that contains or may contain a contaminant;

“contamination reduction zone” means the area in which divers dress and undress, into which workers transfer from the exclusion zone, and where personnel and equipment are decontaminated;

“control system” means a manual, remote, automatic or partially automatic system for controlling the operation of equipment;

“control system isolating device” means a device that physically prevents activation of a system used for remotely controlling the operation of equipment;

“controlled product” means a product, material or substance specified by the regulations made under paragraph 15(1)(a) of the *Hazardous Products Act (Canada)* to be included in any of the classes listed in Schedule II to the *Hazardous Products Act (Canada)*;

“control zone” means the area within 2 metres of an unguarded edge of a level, elevated work surface;

“CPSC” means Consumer Products Safety Commission;

“crane” means equipment that is designed to lift loads, lower loads, and move loads horizontally when they are lifted;

“CSA” means Canadian Standards Association;

D

“3 decibel exchange rate” means that when the sound energy doubles, the decibel level increases by 3;

“dBA” means a measure of sound level in decibels using a reference sound pressure of 20 micropascals when measured on the A-weighting network of a sound level meter;

“demolition” means the tearing down, destruction, breaking up or razing of the whole or part of a building or structure;

“designated signaller” means a person designated to give signals in accordance with section 16.12;

“direct supervision” means that a competent worker

- (a) is personally and visually supervising the worker who is not competent, and
- (b) is able to communicate readily and clearly with the worker who is not competent;

“distant work site” means a work site that is more than 20 minutes, but less than 40 minutes, travel time from a health care facility under normal travel conditions using available means of transportation;

“dive plan” means the dive plan prepared by a dive supervisor under Part 30;

“diving equipment” includes breathing apparatus, compressor, compressed gas cylinder, gas control valve, pressure gauge, reserve supply device, piping, helmet, winch, cable, diving bell or stage and every other accessory necessary for a safe diving operation;

E

“electrical equipment” includes machinery, plant, works, wires, pipes, poles, conduits, apparatus, appliances and equipment, designed or used, or intended for use, for or in connection with generation, transmission, supply, distribution or use of electrical energy for any purpose;

“electrical worker” means a person who meets the requirements of the *Electrical Protection Act* for installing, altering or maintaining electrical equipment;

“electrofishing” means the capture or control of fish by the use of electrical equipment;

“electrical vault” means an isolated enclosure, either above or below ground, with fire-resisting walls, ceilings and floors for the purpose of housing transformers and other electrical equipment;

“electromagnetic radiation” includes radiation used or found in association with

- (a) broadcasting,
- (b) mobile communications systems,
- (c) remote control signal stations,
- (d) television and radio transmitters,
- (e) industrial radiofrequency heaters,
- (f) equipment used for geophysical surveys,
- (g) radar,
- (h) atmospheric electrical storms, and
- (i) cellular telephone systems;

“emergency first aider” means a person who holds a certificate in emergency first aid from an approved training agency;

“emergency response plan” means the emergency response plan required under Part 9;

“emergency stop circuit” with respect to a robot means a circuit that uses hardware-based components to override all other robot controls, shut off energy to a robot and stop all moving parts of a robot;

“employer” means every partnership, group of persons, corporation, owner, principal contractor, sub-contractor, manager or other authorized person having charge of an establishment in which one or more workers are engaged in work;

“employer member” means a person appointed to a joint work site health and safety committee;

“end-effector” with respect to a robot, means an accessory device or tool specifically designed to be attached to a robot wrist or tool-mounting plate to enable the robot to perform the robot’s intended task;

“equipment” means a thing used to equip workers at a work site and includes tools, supplies, material, machinery and sanitary facilities;

“excavation” means a dug out area of ground but does not include a tunnel, underground shaft or open pit mine;

“excess noise” means noise that exceeds the limits specified in section 6.1 to 6.3

“exclusion zone” means the work site at the surface from which divers are tended during a dive in a contaminated environment;

“explosive” means a chemical compound or mixture that by fire, friction, impact, percussion or detonation may cause a sudden release of gases at a pressure capable of producing destructive effects to adjacent objects or of killing or injuring a person;

“explosive atmosphere” means an atmosphere

- (a) that contains a substance in a mixture with air, under atmospheric conditions and at a concentration between the substance’s lower explosive limit and upper explosive limit, and
- (b) that is capable of producing destructive effects to adjacent objects or of killing or injuring a person;

“exposed worker” means a worker who may reasonably be expected to work in a restricted area at least 30 work days in a 12-month period;

F

“fall arresting device” means a part of a worker’s personal protective equipment that stops the worker’s fall and does not allow the worker to fall farther;

“fall protection system” means

- (a) a personal fall arrest system,
- (b) a travel restraint system,
- (c) a safety net,
- (d) a control zone, or
- (e) another system approved by the Chief Safety Officer;

“fall restrict equipment” means a component of a fall restrict system that, when combined with other subcomponents and elements, allows the climber of a wood pole to remain at his or her work position with both hands free, and that performs a limited fall arrest function when the climber loses contact between his or her spurs and the pole;

“fall restrict system” means a combination of a work positioning system and fall restrict equipment;

“fibre” means a particulate material with

- (a) a diameter equal to or less than 3 micrometres,
- (b) a length equal to or more than 5 micrometres, and
- (c) a length to diameter ratio equal to or more than 3 to 1;

“fire chief” means the highest ranking person in charge of a fire department or industrial fire brigade,

“fire department” means a fire brigade operated as a public service by an employer or municipality;

“firefighter” means any worker or volunteer employed or engaged in fire fighting, fire inspection, fire investigation, the maintenance of fire fighting equipment, the training for and direction of those activities, or other similar duties;

“fire fighting vehicle” means an emergency vehicle used for fire fighting, but does not include personal or private vehicles when used by fire fighters to respond to alarms;

“fire ground safety officer” means an individual appointed or assigned by the Incident Commander to monitor other fire fighters to ensure their safety at the scene of an incident;

“first aid” means the immediate and temporary care given to an injured or ill person at a work site using available equipment, supplies, facilities or services, including treatment to sustain life, to prevent a condition from becoming worse or to promote recovery;

“first aider” means an emergency first aider, standard first aider or advanced first aider designated by an employer to provide first aid to workers at a work site;

“fixed ladder” means a ladder that is permanently fixed to a supporting structure in a vertical position or at an angle of not more than 15 degrees from vertical and does not lean back;

“flammable liquid” means a liquid with

- (a) a flash point below 37.8OC, and
- (b) a vapour pressure of not more than 275.8 kilopascals (absolute), as determined by ASTM Standard D323-99, *Standard Test Method for Vapour Pressure of Petroleum Products (Reid Method)*;

“flammable substance” means

- (a) a flammable gas or liquid,
- (b) the vapour of a flammable or combustible liquid,
- (c) dust that can create an explosive atmosphere when suspended in air in ignitable concentrations, or
- (d) ignitable fibres;

“flash point” means the minimum temperature at which a liquid in a container gives off vapour in sufficient concentration to form an ignitable mixture with air near the surface of the liquid;

“fly form deck panel” means a temporary supporting structure used as a modular falsework that is intended to be, and capable of being, moved from floor to floor and re-used during a construction project;

“forest fire” means an uncontrolled fire, fuelled by and spreading through vegetation, and may or may not threaten structures,

“free fall distance” means the vertical distance between the point from which a worker falls to the point at which deceleration begins because of the action of a personal fall arrest system;

“fugitive emission” means a substance that leaks or escapes from process equipment, a container, emission control equipment or a product;

“full body harness” means a body support consisting of connected straps designed to distribute force over at least the thighs, shoulders and pelvis to which a lanyard or lifeline or connecting component can be attached;

G

“grinder accessory” means an abrasive wheel, cutting disc, wire wheel, buffing or polishing disc, or other similar product;

“GVW” means the manufacturer’s rated gross vehicle weight;

H

“hand expose zone” means the strip of land

- (a) 1 metre wide on each side of the locate marks for a buried facility other than a high pressure pipeline, a direct bury trunk or toll fibre optic cable, or
- (b) 5 metres wide on each side of the locate marks for a high pressure pipeline, a direct bury trunk or toll fibre optic cable;

“hand tool” means hand held equipment that depends on the energy of the worker for its direct effect and it does not have a pneumatic, hydraulic, electrical or chemical energy source for its operation;

“hardwired” means the electrical connection of components within a system by means of electrical conductors so that the only way the system can be modified is by changing the connections;

“hazard” means a situation, condition or thing that may be dangerous to the safety or health of workers;

“hazard assessment” means an assessment made in accordance with section 2.1 or section 4.6;

“hazard information” means information on the correct and safe use, storage, handling and manufacture of a controlled product, including information relating to its toxicological properties;

“hazardous location” means a place where fire or explosion hazards may exist due to flammable gases or vapours, flammable or combustible liquids, combustible dust or ignitable fibres or flyings, as described in the *Canadian Electrical Code*;

“hazardous waste” means a controlled product that is intended for disposal, or is sold for recycling or recovery;

“health care facility” means a hospital, medical clinic or physician’s office that can dispense emergency medical treatment during the time the workers are at the work site;

“heavy duty scaffold” means a scaffold that

- (a) is designed to support the equivalent of an evenly distributed load of more than 122 kilograms per square metre but not more than 367 kilograms per square metre, and
- (b) has planks with a span of not more than 2.3 metres;

“high hazard work” means work described in Schedule 2, Table 3;

“high pressure pipeline” means a pipeline operating at a pressure of 700 kilopascals or greater;

“high voltage” means a potential difference (voltage) of more than 750 volts between conductors or between a conductor and ground;

“highway” means a road, place, bridge or structure whether publicly or privately owned, that the public is ordinarily entitled or permitted to use for the passage of vehicles and includes

- (a) privately or publicly owned area that is designed and primarily used for the parking of vehicles, other than the driveway of a private dwelling,
- (b) where a plan of survey or other instrument establishes a highway, the area between the boundary lines of the highway shown on the plan of survey or instrument,
- (c) a sidewalk, pathway, ditch or shoulder adjacent to and on either side of the travelled portion of the road between the sidewalk, pathway, ditch or shoulder of the travelled portion of the road, place, and
- (d) a frozen body of water or water course or a road that can be used for only a portion of a year; (*route*)

“hoist” means equipment that is designed to lift and lower loads;

“horizontal lifeline system” means a system composed of a synthetic or wire rope, secured horizontally between 2 or more anchor points, to which a worker attaches a personal fall arrest system or travel restraint system;

“hot tap” means a process of penetrating through the pressure-containing barrier of a pipeline, line, piping system, tank, vessel, pump casing, compressor casing or similar facility that has not been totally isolated, depressurized, purged and cleaned;

“hot work” means work in which a flame is used or sparks or other sources of ignition may be produced, including

- (a) cutting, welding, burning, air gouging, riveting, drilling, grinding, and chipping,
- (b) using electrical equipment not classified for use in a hazardous location, and
- (c) introducing a combustion engine to a work process;

“hours of darkness” means the period from 30 minutes after sunset to 30 minutes before sunrise, or any time when, because of insufficient light or unfavourable atmospheric conditions, persons or vehicles cannot be seen at a distance of 150 metres;

I

“IDLH” means “Immediately Dangerous to Life or Health”; a high hazard atmosphere where the concentration of oxygen or flammable or toxic air contaminants would cause a worker without respiratory protection to be fatally injured or would have irreversible and incapacitating effects on that worker’s health;

“IEC” means International Electrotechnical Commission;

“immediately dangerous to life or health (IDLH)” means circumstances in which the atmosphere is deficient in oxygen or the concentration of a harmful substance in the atmosphere

- (a) is an immediate threat to life,
- (b) may affect health irreversibly,
- (c) may have future adverse effects on health, or

(d) may interfere with a worker's ability to escape from a dangerous atmosphere;

"incident" means a specific emergency operation of a fire department or industrial fire brigade;

"Incident Commander" means the firefighter in overall command of an incident;

"incombustible dust" means a pulverized inert mine material of light colour,
(a) 100 percent of which passes through a 20 mesh sieve,
(b) not less than 70 percent by weight of which passes, when dry, through a 200 mesh sieve, and
(c) that does not contain more than 5 percent combustible matter or 4 percent of free and combined silica;

"industrial fire brigade" means an organization established by an employer to protect the employer's premises where the nature of the business creates specific hazards for which specialized training and equipment is required;

"inerting" means to intentionally flood the atmosphere inside a confined space with an inert gas to eliminate the hazard of igniting flammable vapours;

"interlock barrier" with respect to a robot means a physical barrier around a work envelope that is equipped with gates and interlocks designed to stop all automatic operations of a robot and robot system when any gate within the barrier is opened;

"ionizing radiation" in section 288 means high-energy electromagnetic radiation that is capable of disrupting the structure of atoms or molecules;

"ISO" means International Organization for Standardization;

"isolated" means that normal sources of energy have been disconnected by opening and securing all associated switches, and that mechanical equipment has been rendered and secured non-operative by disconnecting, stopping, depressurizing, draining, venting or other effective means;

"isolated work site" means a work site that is 40 minutes or more travel time from the work site to a health care facility under normal travel conditions using available means of transportation;

J

"jib" means an extension to a boom that is attached to the boom tip to provide additional boom length;

"joint work site health and safety committee" means a joint work site health and safety committee, if any, established at a work site pursuant to an order under section 7 of the Act;

L

"Lex" means the level of a worker's total exposure to noise in dBA, averaged over the entire workday and adjusted to an equivalent 8 hour exposure measured in accordance with section 6.3 and based on a 3 decibel exchange rate;

"label" includes a mark, sign, device, stamp, seal, sticker, ticket, tag or wrapper;

"laboratory sample" means a sample of a controlled product that is intended solely to be tested in a laboratory, but does not include a sample that is to be used

(a) by the laboratory for testing other products, materials or substances, or

(b) for educational or demonstration purposes;

“ladderjack scaffold” means a scaffold erected by attaching a bracket to a ladder to support the scaffold planks;

“lanyard” means a flexible line of webbing or synthetic or wire rope that is used to secure a full body harness or safety belt to a lifeline or anchor point;

“life jacket” means personal protective equipment capable of supporting a person with the head above water in a face-up position without the direct effort of the person wearing the equipment;

“lifeline” means a synthetic or wire rope, rigged from one or more anchor points, to which a worker’s lanyard or other part of a personal fall arrest system is attached;

“light duty scaffold” means a scaffold that

- (a) is designed to support the equivalent of an evenly distributed load of not more than 122 kilograms per square metre, and
- (b) has planks with a span of not more than 3 metres;

“lock out” means to isolate all energy sources from equipment or components of that equipment, to dissipate any residual energy in a system or component, and

to secure the isolation by a locking device that

- (a) is operated by a key or other similar device, and
- (b) is attached to the equipment’s energy isolating device;

“lower explosive limit” means the lower value of the range of concentrations of a substance, in a mixture with air, at which the substance may ignite;

“low hazard work” means work described in Schedule 2, Table 1;

“low voltage” means a potential difference (voltage) from 31 to 750 volts inclusive, between conductors or between a conductor and the ground;

“lumber” means wood that is spruce-pine-fir (S-P-F) or better, of Number 2 grade or better and, if referred to by dimensions, meets the requirements of CSA Standard CAN/CSA-O141-91 (R1999), *Softwood Lumber*, or the requirements of the NLGA Standard, *Standard Grading Rules for Canadian Lumber* (1991);

M

“machinery” means a combination of mechanical parts that transmits from one part to another, or otherwise modifies, force, motion or energy that comes from hydraulic, pneumatic, chemical or electrical reactions or from other sources, and includes vehicles;

“manufacturer’s rated capacity” means the maximum capacity, speed, load, depth of operation or working pressure, as the case may be, recommended by the specifications of the manufacturer of the equipment for the operation of the equipment under the circumstances prevailing at the time it is operated;

“manufacturer’s specifications” means the written specifications, instructions or recommendations, if any, of the manufacturer of equipment or supplies, that describes how the equipment or supplies are to be erected, installed, assembled, started, operated, handled, stored, stopped, calibrated, adjusted, maintained, repaired or dismantled, including a manufacturer’s instruction, operating or maintenance manual or drawings for the equipment;

“material hoist” means a hoist that is not designed to lift people;

“material safety data sheet” means a document disclosing the information referred to in paragraph 13(a) of the *Hazardous Products Act* (Canada);

“medium hazard work” means work that is neither low hazard work nor high hazard work;

“mimic display” means a symbolic representation of the configuration and status of all or part of a power system, complete with device designations;

“mobile crane” means a crane, other than a boom truck, that

- (a) incorporates a power driven drum and cable or rope to lift, lower or move loads,
- (b) is equipped with a lattice or telescoping boom capable of moving in the vertical plane, and
- (c) is mounted on a base or chassis, either crawler or wheel mounted, to provide mobility;

“mobile equipment” means equipment that is

- (a) capable of moving under its own power or of being pulled or carried, and
- (b) not intended to be secured to land or a structure;

“musculoskeletal injury” means an injury to a worker of the muscles, tendons, ligaments, joints, nerves, blood vessels or related soft tissues that are caused or aggravated by work and includes overexertion injuries and overuse injuries;

N

“NFPA” means National Fire Protection Association;

“NIOSH” means National Institute for Occupational Safety and Health;

“NLGA” means National Lumber Grades Authority;

“noise” means sound energy at a work site;

O

“occupational exposure limit (OEL)” in respect of a substance, means the occupational exposure limit established in Schedule 1, Table 2 for that substance;

“operate” with respect to machinery or equipment includes using or handling the machinery or equipment;

“operator” means, with respect to a piece of machinery, device or equipment, a person who has

- (a) care and control of it,
- (b) demonstrated competency in the safe operation of it to the employer,
- (c) appropriate certification or licence, if so required, and
- (d) been authorized by the employer to use the machinery, device or equipment;

“OSHA” means Occupational Safety and Health Administration;

“outrigger scaffold” means a supported scaffold that consists of a platform resting on outrigger beams (thrustouts) projecting beyond the wall or face of the building or structure, with inboard ends secured inside the building or structure;

P

“particulate not otherwise regulated” means insoluble particulate composed of substances that do not have an occupational exposure limit;

“permanent” when referring to a structure, process, or action, means that it is intended to last indefinitely;

“permanent suspension powered work platform” means a suspension powered work platform that is a permanent part of a building or structure;

“pendant” with respect to a robot means a portable control device that permits an operator to control a robot from within the work envelope of the robot;

“personal fall arrest system” means personal protective equipment that will stop a worker’s fall before the worker hits a surface below the worker;

“personal flotation device” means personal protective equipment capable of supporting a person with the head above water without the direct effort of the person wearing the equipment;

“personal protective equipment” means equipment or clothing worn by a person for protection from health or safety hazards associated with conditions at a work site;

“pipeline” has the meaning assigned to it by the *Pipeline Act*;

“portable ladder” means any ladder that is not a fixed ladder;

“power system” means all plant and equipment essential to the generation, transmission or distribution of electricity, including any plant or equipment that is out of service, being constructed or being installed;

“powered mobile equipment” means a self-propelled machine or combination of machines, including a prime mover or a motor vehicle, designed to manipulate or move material or to provide a powered aerial device for workers;

‘prime contractor’ or ‘principal contractor’ means a person who signs an agreement to undertake a project for an owner, and may include an owner who undertakes all or part of a project themselves or by one or more employers.

“product identifier” in respect of a controlled product, means the brand name, code name or code number specified by a supplier or the product’s chemical name, common name, generic name, or trade name;

“professional engineer” means a person who is registered and licenced as a professional engineer under the Northwest Territories Association of Professional Engineers, Geologists & Geophysicists (NAPEGG);

“project” means a construction project whether, public or private, including

- (1) the construction of a building, bridge, structure, industrial establishment, mining plant, shaft, tunnel, caisson, trench, excavation, highway, ice road, railway, street, runway, parking lot, cofferdam, conduit, sewer, watermain, service connection, telegraph, telephone or electrical line, tower, pipe line, duct or well, any other similar thing, and any combination thereof,
- (2) any work or undertaking or any lands or appurtenances used in connection with construction, and
- (3) a mining development;

“pulmonary function technician” means a pulmonary function technician referred to in section 7.25;

“purge” means removing a substance by displacing it with another substance;

R

“radiofrequency transmitter” includes radio towers, television towers, portable two-way radio base stations and repeaters, portable two-way radios and cellular telephones;

“residential construction” means construction work at fall heights of not more than 6 metres using the construction materials, methods, and procedures that are essentially those used for typical single and multiple family dwellings;

“respirable particulate” means airborne particulate collected and analyzed using NIOSH Method 0600 (Particulates Not Otherwise Regulated, Respirable);

“restricted area” means an area of a work site where there is a reasonable chance that the airborne concentration of asbestos, silica, coal dust or lead exceeds or may exceed the occupational exposure limit for one or more of them;

“restricted work envelope” with respect to a robot, means the portion of a work envelope to which a robot is restricted by limiting devices that establish limits that cannot be exceeded if the robot or the robot’s control fails;

“robot” means a reprogrammable multi-functional manipulator designed to move material, parts, tools or specialized devices through variable programmed motions to perform a variety of tasks;

“robot system” includes a robot and all accessories required for the robot’s operation, including end-effectors, pendants, devices, sensors, safeguards, power and control panels and communication interfaces to sequence and monitor the robot;

S

“SAE” means Society of Automotive Engineers;

“safeguard” means a guard, shield, guardrail, fence, gate, barrier, toe board, protective enclosure, safety net, handrail or other device designed to protect workers operating equipment or machinery, but does not include personal protective equipment;

“safety belt” means a body support consisting of a strap with a means for securing it about the waist and attaching it to other components;

“safety officer” means a health and safety officer designated under the *Safety Act*, and includes the chief safety officer;

“safety protection guarantee” means an assurance that a power system or part of the power system is isolated and will remain isolated;

“safety watcher” means a qualified person whose sole task is to observe the activity when equipment, vegetation or material will be moved relative to energized electrical equipment or conductors, and signal in a clear and predetermined manner to stop the movement whenever contact with electrical equipment, conductors or guarding appears probable, or whenever conditions prevent the watcher from having a clear view of the movement relative to the electrical equipment;

“scaffold” means a temporary work platform and its supporting structure used for supporting workers or materials, or both, but does not include suspended cages, permanent suspension powered work platforms, boatswain’s chairs, elevating platforms, aerial devices, fork-mounted work platforms, temporary supporting structures and fly form deck panels;

“service room” means a room or space in a building provided to accommodate building service equipment, and meeting the requirements of cities, towns and villages or other applicable legislation;

“sharps” means needles, knives, scalpels, blades, scissors and other items that can cut or puncture a person that may also be contaminated with a biohazardous material;

“shock absorber” means a device intended to reduce the force on a worker when a personal fall arrest system is operating;

“slide guard” means a device constructed of roof brackets and planks that are not less than 50 millimetres thick and are made of lumber, or a material that possesses equal or greater properties than those of lumber;

“slow speed” with respect to a robot, means a mode of operation in which the speed of any part of the robot does not exceed 250 millimetres per second;

“snow vehicle” means a motor vehicle designated or intended to be driven exclusively or chiefly on snow or ice;

“specifications” other than manufacturer’s specifications, includes the written instructions, procedures, drawings or other documents of a professional engineer or employer relating to equipment, supplies, a work process or an operation;

“spoil pile” means waste material excavated from an excavation, tunnel or underground shaft;

“standard first aider” means a first aider who holds a certificate in standard first aid from an approved training agency;

“structure” means, with reference to fire fighting, a building, vehicle, vessel or similar enclosed location.

“supervisor” means a competent person who

- (a) has charge of a worksite or worksites;
- (b) instructs, directs, controls or monitors workers in the performance of their duties; and
- (c) has been authorized by an employer to take managerial action on behalf of an employer;

“supplier” with respect to a controlled product, means a manufacturer, processor or packager of the controlled product or a person who, in the course of business, imports or sells controlled products;

“supplier label” means the label provided by the supplier of a controlled product under the *Hazardous Products Act* (Canada);

“supplier’s material safety data sheet” means the material safety data sheet provided by the supplier of a controlled product under the *Hazardous Products Act* (Canada);

“support zone” means the area where support procedures are performed during a diving operation, including the area where diving equipment is cleaned or disposed of;

“suspended scaffold” means a work platform suspended from above;

T

“tagged” means a worker has attached, on each of the equipment’s energy isolating devices locked out during a lock out procedure, a warning tag that

- (a) has a warning directing workers not to start or operate the equipment,
- and
- (b) is marked with the date the tag was attached;

“tailboard/tailgate meeting” means a short meeting held at a worksite for the purpose of informing workers of safety related issues of relevance to the work at hand;

“teach” with respect to a robot, means to generate and store a series of positional data points by moving a robot arm through a path of intended motions;

“temporary” with respect to a structure, process, or action, means that it is not intended to last indefinitely;

“temporary protective structure” means a structure or device designed to provide protection to workers in an excavation, tunnel or underground shaft from cave ins, collapses or sliding or rolling materials and includes shoring, bracing, piles, planking or cages;

“temporary supporting structures” means falsework, forms, fly form deck panels, shoring, braces or cables that are used to support a structure temporarily or to stabilize materials or earthworks until they are self-supporting or their instability is otherwise overcome, and includes a thrustout materials landing platform;

“total fall distance” means the vertical distance from the point at which a worker falls to the point where the fall stops after all personal fall arrest system components have extended;

“total particulate” means airborne particulate collected and analyzed using NIOSH Method 0500 (Particulates Not Otherwise Regulated, Total);

“tower crane” means a crane that

- (a) is designed to incorporate a power driven drum and cable, a rope and a vertical mast or a tower and jib,
- (b) is of the travelling, fixed, or climbing type, and
- (c) is not used to lift people;

“tower hoist” means a hoist

- (a) with a tower that is an integral part of it or supports it,
- (b) that travels between fixed guides, and

(c) that is not used to lift people;

“travel restraint system” means a type of fall protection system, including guardrails or similar barriers, that prevents a worker from travelling to the edge of a structure or to a work position from which the worker could fall;

“trench” means a long narrow dug out area of ground that is deeper than its width at the bottom;

“tunnel” in means an underground passage with an incline of less than 45 degrees from the horizontal;

U

“ULC” means Underwriters’ Laboratories of Canada;

“underground shaft” means an underground passage with an incline of 45 degrees or more from the horizontal, including a drilled or bored pile or caisson, that is used primarily for the transportation of workers or materials;

V

“variance” means an accepted modification to the provision of the regulations as permitted by section 1.3 of the regulations;

“vehicle” means a device in, on or by which a person or thing may be transported or drawn and includes a combination of vehicles;

“violence” whether at a work site or work related, means the threatened, attempted or actual conduct of a person that causes or is likely to cause physical injury;

W

“work area” means a place at a work site where a worker is, or may be, during work or during a work break;

“work envelope” with respect to a robot, means the volume of space enclosing the maximum designed reach of a robot, including the end-effector, and the material, part, tool or specialized device that the robot is designed to manipulate;

“work site” means a location where a worker is, or is likely to be, engaged in work, or a thing at, on, in or near which a worker is, or is likely to be, engaged in work;

“work site label” with respect to a controlled product means a label that discloses

- (a) a product identifier that is identical to that found on the material safety data sheet for the product,
- (b) information for the safe handling of the controlled product, and
- (c) reference to the material safety data sheet for the controlled product;

“work positioning system” means a system used to support a worker so that the worker’s hands are free when he or she reaches the work position;

“worker” means a person engaged in work for an employer, whether working with or without remuneration;

“worker member” means a person elected to a joint work site health and safety committee;

“working face” means the surface from which material, overburden or waste material is being removed;

Extended application of these Regulations

1.2(1) A prime contractor must comply with these regulations as if the prime contractor were the employer, where a provision of the regulations imposes a duty on an employer

(a) with respect to the design, construction, erection or installation of equipment, and

(b) where the equipment is erected or installed by or on behalf of a prime contractor.

(2) Subsection (1) does not relieve the employer or prime contractor from fulfilling other responsibilities under these regulations.

Variations

1.3 (1) Where a person wishes to vary a provision of these regulations, written acceptance of the variance must be obtained from the Chief Safety Officer, prior to implementing the variance.

(2) An application to vary a provision of the regulations must be made to the Chief Safety Officer in writing and the acceptance, denial or amendment of the variance will be provided to the person in writing.

(3) An application for variance must clearly illustrate to the satisfaction of the Chief Safety Officer that the variance provides for an equal or greater level of worker safety than required by the regulations.

(4) The application must indicate the sections of the regulations that are being referred to, the reasons for the request for variance, and details of the proposed variance.

(5) The Chief Safety Officer may require the person requesting the variance to provide a report from a professional engineer or other expert, confirming the safety or appropriateness of the request for variance.

(6) If a variance is granted by the Chief Safety Officer, it may be for a specific time, place, matter or thing, or may have other limitations, terms or conditions assigned to it.

(7) A person who receives a variance must ensure that the limitations, terms and conditions of the variance are complied with at the work site.

Adoption of standards

1.4(1) The following are adopted for the purposes of these regulations:

ANSI Standards

A10.11-1989 (R1998), *Construction and Demolition Operations – Personnel and Debris Nets*

A14.1-2000, *American National Standard for Ladders — Wood — Safety Requirements*

A14.2-2000, *American National Standard for Ladders — Portable Metal — Safety Requirements*

A14.5-2000, *American National Standard for Ladders — Portable Reinforced*

Plastic — Safety Requirements

A92.3-1990, Manually Propelled Elevating Work Platforms

A92.5-1992, Boom-Supported Elevating Work Platforms

A92.6-1999, Self-Propelled Elevating Work Platforms

A92.8-1993 (R1998), Vehicle-Mounted Bridge Inspection and Maintenance Devices

A92.9-1993, Mast-Climbing Work Platforms

ALCTV-1998, American National Standard for Automotive Lifts — Safety Requirements for Construction, Testing and Validation

ALOIM-2000, Automotive Lifts — Safety Requirements for Operation, Inspection and Maintenance

S1.25-1991 (R1997), Specification for Personal Noise Dosimeters

S1.43-1997, Specifications for Integrating-Averaging Sound Level Meters

S3.6-1996, Specification for Audiometers

Z26.1 (1996), Safety Glazing Material for Glazing Motor Vehicles and Motor Vehicle Equipment Operating on Land Highways — Safety Standard

Z87.1-1989, Practice for Occupational Health and Educational Eye and Face Protection.

Z89.1-1997, American National Standard for Industrial Head Protection

Z90.4-1984, American National Standard for Protective Headgear for Bicyclists

ANSI Z358.1-2004, Emergency Eyewash and Shower Equipment

Z359.1-1992, Safety Requirements for Personal Fall Arrest Systems, Subsystems and Components

ASME Standard

B30.9-1996, Slings

B56.1-2000, Safety Standard for Low Lift and High Lift Trucks

ASTM Standards

C478-02, Standard Specification for Reinforced Concrete Manhole Sections

D323-99, Standard Test Method for Vapour Pressure of Petroleum Products

F1447-02, Standard Specification for Helmets Used in Recreational Bicycling or Roller Skating

BSI Standards

BS 6658:85, Specification for Protective Helmets for Vehicle Users

BS 6863:1989, Specification for Pedal Cyclists' Helmets

CEN Standards

EN 361:2002, *Personal protective equipment against falls from a height — Full body harnesses*

EN 813:1997, *Personal protective equipment for prevention of falls from a height. Sit harnesses*

EN 1078:1997, *Helmets for Pedal Cyclists and for Users of Skateboards and Roller Skates*

CGSB Standards

CAN/CGSB 65.7-M88, *Lifejackets, Inherently Buoyant Type*

CAN/CGSB 65.11-M88, *Personal Flotation Devices*

CSA Standards

CAN/CSA-B167-96 (R2002), *Safety Standard for Maintenance and Inspection of Overhead Cranes, Gantry Cranes, Monorails, Hoists and Trolleys*

B352.0-95 (R1999), *Rollover Protective Structures (ROPS) for Agricultural, Construction, Earthmoving, Forestry, Industrial and Mining Machines — Part 1: General Requirements*

B352.1-95 (R1999), *Rollover Protective Structures (ROPS) for Agricultural, Construction, Earthmoving, Forestry, Industrial and Mining Machines — Part 2: Testing Requirements for ROPS on Agricultural Tractors*

B352.2-95 (R1999), *Rollover Protective Structures (ROPS) for Agricultural, Construction, Earthmoving, Forestry, Industrial and Mining Machines — Part 3: Testing Requirements for ROPS on Construction, Earthmoving, Forestry, Industrial, and Mining Machines*

B376-M1980 (R1998), *Portable Containers for Gasoline and Other Petroleum Fuels*

C22.1-02, *Canadian Electrical Code, Part 1, Safety Standard for Electrical Installations*

C22.2 No. 33-M1984 (R1999), *Construction and Test of Electric Cranes and Hoists*

CAN/CSA-C225-00, *Vehicle-Mounted Aerial Devices*

CAN/CSA-D113.2-M89 (R2002), *Cycling Helmets*

CAN/CSA-M423-M87 (R1995), *Fire-Resistant Hydraulic Fluids*

CAN/CSA-M427-M91 (R2001), *Fire-Performance and Antistatic Requirements for Ventilation Materials*

O121-M1978 (R1998), *Douglas Fir Plywood*

CAN/CSA-O141-91 (R1999), *Softwood Lumber*

O151-M1978 (R1998), *Canadian Softwood Plywood*

S269.1-1975 (R1998), *Falsework for Construction Purposes*

CAN/CSA-S269.2-M87 (R1998), *Access Scaffolding for Construction Purposes*

W117.2-01, *Safety in Welding, Cutting and Allied Processes*

CAN3-Z11-M81 (R2001), *Portable Ladders*

CAN/CSA-Z94.1-92 (R1998), *Industrial Protective Headwear*

Z94.2-02, *Hearing Protection Devices – Performance, Selection, Care, and Use*

Z94.3-02, *Eye and Face Protectors*

Z94.3-99, *Industrial Eye and Face Protectors*

Z94.4-02, *Selection, Use and Care of Respirators*

Z-96-02 *High Visibility Safety Apparel*

Z107.56-94 (R1999), *Procedures for the Measurement of Occupational Noise Exposure*

CAN/CSA-Z150-98, *Safety Code on Mobile Cranes*

Z180.1-00, *Compressed Breathing Air and Systems*

CAN/CSA-Z185-M87 (R2001), *Safety Code for Personnel Hoists*

Z195-02, *Protective Footwear*

Z195-M92 (R2000), *Protective Footwear*

Z248-1975 (R2000), *Code for Tower Cranes*

CAN/CSA-Z256-M87 (R2001), *Safety Code for Material Hoists*

CAN/CSA-Z259.1-95 (R1999), *Safety Belts and Lanyards*

CAN/CSA-Z259.2.1-98, *Fall Arresters, Vertical Lifelines, and Rails*

CAN/CSA-Z259.2.2-98, *Self-Retracting Devices for Personal Fall-Arrest Systems*

CAN/CSA-Z259.2.3-99, *Descent Control Devices*

Z259.3-M1978 (R2001), *Lineman's Body Belt and Lineman's Safety Strap*

CAN/CSA-Z259.10-M90 (R1998), *Full Body Harnesses*

CAN/CSA-Z259.11-M92 (R1998), *Shock Absorbers for Personal Fall-Arrest Systems*

Z259.12-01, *Connecting Components for Personal Fall Arrest Systems (PFAS)*

Z259.14-01, *Fall Restrict Equipment for Wood Pole Climbing*

CAN/CSA-Z271-98, *Safety Code for Suspended Elevating Platforms*

CAN/CSA-Z275.1-93 (R1998), *Hyperbaric Facilities*

CAN/CSA-Z275.2-92 (R1999), *Occupational Safety Code for Diving Operations*

CAN/CSA-Z275.4-02, *Competency Standard for Diving Operations*

CAN/CSA-Z321-96, *Signs and Symbols for the Workplace*

Z434-03, *Industrial Robots and Robot Systems – General Safety Requirements*

CAN3-B354.1-M82 (R2000), *Elevating Rolling Work Platforms*

CAN/CSA-B354.2-01, *Self-Propelled Elevating Work Platforms*

CAN/CSA-B354.4-02, *Self-Propelled Boom-Supported Elevating Work Platforms*

CPSC Standard

Title 16 Code of U.S. Federal Regulations Part 1203, *Safety Standard for Bicycle Helmets*

IEC Standards

61672-1 (2002), *Electroacoustics – Sound Level Meters – Part 1: Specifications*

61672-2 (2003), *Electroacoustics – Sound Level Meters – Part 2: Pattern evaluation tests*

ISO Standards

3450:1996, *Earth-moving machinery — Braking systems of rubber-tyred machines — Systems and performance requirements and test procedures*

3471:1994, *Earth-moving machinery – Roll-over protective structures – Laboratory tests and performance requirements*

6165:1997, *Earth-moving machinery — Basic types — Vocabulary*

NLGA Standard

Standard Grading Rules for Canadian Lumber (1991)

Natural Resources Canada

Blasting Explosives and Detonators — Storage, Possession, Transportation, Destruction and Sale (M82-8/1983), Revised 1993

Storage Standards for Industrial Explosives (M81-7/2001E)

NFPA Standards

1123, *Code for Fireworks Display*, 2000 Edition

1126, *Standard for the Use of Pyrotechnics Before a Proximate Audience*, 2001 Edition

1901, *Automotive Fire Apparatus*, 2003 Edition.

1904, *Aerial Ladder and Elevating Platform Fire Apparatus*, 1991 Edition.

1914, *Testing Fire Department Aerial Devices*, 2002 Edition

1931, *Manufacturer's Design of Fire Department Ground Ladders*, 2004 Edition

1932, *Use, Maintenance, and Service Testing of In-Service Fire Department Ground Ladders*, 2004 Edition.

1971, *Protective Ensemble for Structural Fire Fighting*, 2000 Edition

1975, *Standard for Station/Work Uniforms for Fire and Emergency Services*, 2004 Edition.

1977, *Protective Clothing and Equipment for Wildland Fire Fighting*, 1998 Edition

1981, *Standard on Open-Circuit Self-Contained Breathing Apparatus for Fire and Emergency Services*, 2002 Edition

1982, *Personal Alert Safety Systems (PASS) for Fire Fighters*, 1998 Edition

1983, *Standard on Fire Service Life Safety Rope, Harness and Hardware*, 2001 Edition.

OSHA Standard

1928.52, *Protective Frames for Wheel-type Agricultural Tractors – Tests, Procedures and Performance Requirements*

PIP Standard

STF05501 (February 2002), *Fixed Ladders and Cages*, published by the Construction Industry Institute

SAE Standards, Recommended Practices and Reports

J167 (2002), *Overhead Protection for Agricultural Tractors – Test Procedures and Performance Requirements*

J209 JAN87, *Instrument Face Design and Location for Construction and Industrial Equipment*

J386 (1997), *Operator Restraint System for Off-Road Work Machines*

J1029 (1996), *Lighting and Marking of Construction, Earthmoving Machinery*

J1042 (2003), *Operator Protection for General - Purpose Industrial Machines*

J1084-APR80, *Operator Protective Structure Performance Criteria for Certain Forestry Equipment*

J1194 (1999), *Rollover Protective Structures (ROPS) for Wheeled Agricultural Tractors*

J1511 FEB94/ISO 5010, *Steering for Off-Road, Rubber-Tired Machines*

J2042 June 1996, *Clearance, Sidemarker, and Identification Lamps for Use on Motor Vehicles 2032 mm or More in Overall Width*

J2292 (2000), *Combination Pelvic/Upper Torso (Type 2) Operator Restraint Systems for Off-Road Work Machines*

J/ISO 3449 (1998), *Earthmoving Machinery — Falling-Object Protective Structures — Laboratory Tests and Performance Requirements*

Snell Memorial Foundation

B-90, *1990 Standard for Protective Headgear for Use with Bicycles*

B-95, *1995 Standard for Protective Headgear for Use with Bicycles*

M2000, *2000 Standard for Protective Headgear for Use with Motorcycles and Other Motorized Vehicles*

N-94, *1994 Standard for Protective Headgear For Use in Non-Motorized Sports*

Standards Australia/Standards New Zealand

AS/NZS 2063:1996, *Pedal Cycle Helmets*

Transportation Association of Canada

Manual of Uniform Traffic Control Devices for Canada (1998)

ULC Standard

C30-1995, *Containers, Safety*

U.S.A. Federal Motor Vehicle Safety Standard

FMVSS 218 *Motorcycle Helmets* 1993 OCT

- (2) Where a code of rules or standards established by any association, person or body of persons is referred to in these regulations, that code is deemed to be adopted, as amended for time to time, for the purposes of these regulations.

Repeal

- 1.5 The following regulations are repealed: **we will have to put NT/NU regs here.....**

First Aid Regulation (AR 48/2000);

General Safety Regulation (AR 448/83);

Joint Work Site Health and Safety Committee Regulation (AR 197/77);

Noise Regulation (AR 314/81);

Ventilation Regulation (AR 326/84).

Coming into force

- 1.6 These regulations come into force on **April 30, 2020** **need date later...**

Part 2 - Hazard Assessment, Elimination and Control

Hazard assessment

- 2.1(1)** An employer must assess a work site and identify existing and potential hazards before work begins at the work site.
- (2)** An employer must prepare a report of the results of a hazard assessment and the methods used to control or eliminate the hazards identified.
- (3)** An employer must ensure that the date on which the hazard assessment is prepared or revised is recorded on it.
- (4)** An employer must ensure that the hazard assessment is repeated
 - (a) at reasonably practicable intervals to prevent the development of unsafe and unhealthy working conditions,
 - (b) when a new work process is introduced,
 - (c) when a work process or operation changes,
 - (d) before the construction of a new work site, or
 - (e) before additions, alterations or modifications are begun at a work site.
- (5)** An employer must ensure that where daily tailboard/tailgate meetings are used as a method of assessing the hazards at the work site, they are documented and records are kept available for review throughout the project or work.

Worker participation

- 2.2(1)** An employer must involve affected workers in the hazard assessment and in the control or elimination of the identified hazards.
- (2)** An employer must ensure that workers affected by the hazards identified in a hazard assessment report are informed of the hazards and the methods used to control or eliminate the hazards.

Hazard elimination and control

- 2.3(1)** Where an existing or potential hazard to workers is identified during a hazard assessment, an employer must take measures in accordance with this section to
 - (a) eliminate the hazards, or
 - (b) where elimination is not reasonably practicable, use other measures to control the hazard.
- (2)** Where reasonably practicable, an employer must eliminate or control a hazard through the use of engineering controls.
- (3)** Where a hazard cannot be eliminated or controlled as per subsection (2), the employer must use administrative controls that control the hazard to a level as low as reasonably achievable.
- (4)** Where the hazard cannot be eliminated or controlled under subsections (2) or (3), an employer must ensure that the appropriate personal protective equipment is used by workers affected by the hazard.
- (5)** Where the hazard cannot be eliminated or controlled under subsections (2), (3) or (4), an employer may use a combination of engineering controls, administrative controls or personal protective equipment if there is a greater level of worker safety achieved by the use of a combination of controls.

Emergency control of hazard

- 2.4** If emergency action is required to control or eliminate a hazard that is dangerous to the safety or health of workers,
- (a) only those workers competent in correcting the condition, and the minimum number necessary to correct the condition, may be exposed to the hazard, and
 - (b) every reasonable effort must be made to control the hazard while the condition is being corrected.

Health and safety plan

- 2.5** An employer must prepare and implement a health and safety plan that includes policies, procedures and plans to prevent work site incidents and occupational diseases at the work site.

Part 3 - Specifications and Certifications

Following specifications

- 3.1** An employer must ensure that
- (a) equipment is of sufficient size, strength, design and made of suitable materials to withstand stresses imposed on it during its operation and to perform the function for which it is intended or was designed,
 - (b) the rated capacity or other limitations on the operation of the equipment, or any part of it, or supplies as described in the manufacturer's specifications or specifications certified by a professional engineer, are not exceeded,
 - (c) modifications to equipment that may affect its structural integrity or stability are performed in accordance with the manufacturer's specifications or specifications certified by a professional engineer, and
 - (d) equipment and supplies are erected, installed, assembled, started, operated, handled, stored, serviced, tested, adjusted, calibrated, maintained, repaired and dismantled in accordance with the manufacturer's specifications or the specifications certified by a professional engineer.

Manufacturer's and professional engineer's specifications

- 3.2(1)** Where these regulations require anything to be done in accordance with a manufacturer's specification, an employer may, instead of complying strictly with the manufacturer's specifications, comply with modified specifications certified by a professional engineer.
- (2)** Where these regulations require anything to be done in accordance with manufacturer's specifications and they are not available or do not exist, an employer must
- (a) develop and comply with procedures that are certified by a professional engineer as designed to ensure the thing is done in a safe manner, or
 - (b) have the equipment certified as safe to operate by a professional engineer at least every 12 calendar months.

Certification by a professional engineer

- 3.3(1)** Where these regulations require that procedures or specifications be certified by a professional engineer, the certification must
- (a) be in writing, and
 - (b) be stamped and signed by the professional engineer.
- (2)** Unless the document states otherwise, certification by a professional engineer implies that the procedures or specifications certified are fit and safe for the workers affected by them.

Approved equipment

- 3.4** Where these regulations require equipment to be approved by a named organization, an employer must use best efforts to ensure that the seal, stamp, logo or similar identifying mark of that organization is on the equipment and legible.

Availability of Safety Act and Regulations

- 3.5** An employer must ensure that at least one copy of the Safety Act and regulations are readily available for workers to reference.

Supervisor's certificate

- 3.6(1)** An employer must ensure that a supervisor is in possession of a Supervisor's Certificate where the work is being conducted at a work site classed as high hazard work in Schedule 2 Table 3.
- (2)** A Chief Safety Officer may issue a Supervisor's Certificate to a person who
- (a) successfully passes an examination on sections of the Safety Act and regulations that are relevant to the persons occupation; and
 - (b) holds a valid Standard First Aid certificate.
- (3)** An employer may issue a Provisional Supervisor's Certificate only to a person who
- (a) has applied to a Chief Safety Officer for a Supervisor's Certificate;
 - (b) holds a valid Standard First Aid certificate; and
 - (c) demonstrates to the employer's satisfaction an adequate knowledge of the Safety Act and regulations that are relevant to the person's occupation.
- (4)** An employer must ensure that a copy of every Provisional Supervisor's Certificate issued by the employer is sent to a Chief Safety Officer without delay.
- (5)** Where a Provisional Supervisor's Certificate is issued, an employer must ensure that the term is fixed, stated on the Certificate and does not exceed 90 days. The employer must not issue more than one Provisional Supervisor's Certificate to a person.
- (6)** Despite subsection (5), on application from a person, a Chief Safety Officer may extend the term of a Provisional Supervisor's Certificate.

Suspension or cancellation of Supervisor's Certificate

- 3.7(1)** A safety officer may suspend a person's Supervisor's Certificate where the safety officer believes the person
- (a) has contravened or failed to comply with provisions of the Safety Act or regulations; or
 - (b) is unfit to carry out supervisory duties by reason of incompetence or neglect of duty.
- (2)** Where a Supervisor's Certificate is suspended in accordance with subsection (1) a safety officer must
- (a) report the circumstances to the person's employer;
 - (b) provide the person and the employer with written notice of the suspension; and
 - (c) provide a written report of the matter to a Chief Safety Officer.
- (3)** Where a Supervisor's Certificate is suspended in accordance with subsection (1) a person may appeal the decision in writing to a Chief Safety Officer within 14 days of receipt of the written notice of suspension.
- (4)** Upon receipt of a written notice of appeal, in accordance with subsection (3), a Chief Safety Officer must
- (a) investigate the circumstances of the suspension;
 - (b) give interested or affected parties the opportunity to present evidence and make representation;
 - (c) confirm, vary or cancel the suspension or cancel the Supervisor's Certificate; and
 - (d) provide a written copy of the decision made under subsection (c) to the person affected and the employer within 14 days of the appeal.

Part 4 - Personal Protective Equipment

Duty to use personal protective equipment

- 4.1(1) Where a hazard assessment or these regulations indicate a need for personal protective equipment, an employer must ensure that
- (a) workers wear personal protective equipment that is correct for the hazard and protects workers,
 - (b) workers properly use and wear the personal protective equipment,
 - (c) the personal protective equipment is in a condition to perform the function for which it was designed, and
 - (d) workers are trained in the correct use, care, limitations and assigned maintenance of the personal protective equipment.
- (2) A worker must
- (a) use and wear properly the appropriate personal protective equipment specified in these regulations in accordance with the training and instruction received,
 - (b) inspect the personal protective equipment before using it, and
 - (c) not use personal protective equipment that is unable to perform the function for which it is designed.
- (3) An employer must ensure that the use of personal protective equipment does not itself endanger the worker.

Clothing

- 4.2 A worker must
- (a) provide and wear clothing to protect themselves from the elements,
 - (b) ensure the clothing being worn does not create a hazard to the worker, and
 - (c) ensure that clothing, jewelry and hair are close fitting or confined where there is danger of contact with moving objects or other similar hazards.

Eye Protection

Compliance with standards

- 4.3(1) If a worker's eyes may be injured or irritated at a work site, an employer must ensure that the worker wears properly fitting eye protection equipment that
- (a) is approved to
 - (i) CSA Standard Z94.3-99, *Industrial Eye and Face Protectors*, or
 - (ii) CSA Standard Z94.3-92, *Industrial Eye and Face Protectors*, or
 - (iii) CSA Standard Z94.3-02, *Eye and Face Protectors*, and
 - (b) is appropriate to the work being done and the hazard involved.
- (2) If eye protection is required to be worn by a worker at a work site, prescription eyewear may be worn if it complies with subsection (1).
- (3) Where there is danger of impact, an employer and a worker must ensure that prescription safety eyewear having bifocal or trifocal glass lenses are worn behind equipment meeting the requirements of subsection (1).
- (4) Where the use of plastic prescription lenses is impractical and there is no danger of impact, a worker may wear lenses made of treated safety glass meeting the requirements of

- (a) ANSI Standard Z87.1-1989, *Practice for Occupational and Educational Eye and Face Protection*, or
- (b) ANSI Standard Z87.1-2003, *Practice for Occupational and Educational Eye and Face Protection*,

- (5) If a worker must wear a full face piece respirator and the face piece is intended to prevent materials striking the eyes, an employer must ensure that the face piece
 - (a) meets the requirements of CSA Standard Z94.3-02, *Eye and Face Protectors*, or
 - (b) meets the impact and penetration test requirements of section 9 of ANSI Standard Z87.1-1989, *Practice for Occupational Health and Educational Eye and Face Protection*.

Contact lenses

- 4.4(1) An employer must ensure that, if wearing contact lenses poses a hazard to a worker's eyes during work, the worker is advised of the hazards and the alternatives to wearing contact lenses.
- (2) A worker must ensure that the employer is advised that the worker is wearing contact lenses where there are dusts, fumes, mists or other irritants in the work place.
- (3) Where there is a danger of injury to the eyes from wearing contact lenses, a worker must not wear contact lenses at a work place.

Electric arc welding

- 4.5 A worker must not perform electric arc welding if it is reasonably possible for another worker to be exposed to radiation from the arc unless the other worker is wearing suitable eye protection or is protected by a screen.

Flame resistant clothing

- 4.6(1) If a worker may be exposed to a flash fire or electrical equipment flashover, an employer must ensure that the worker wears flame resistant outerwear and uses other protective equipment appropriate to the hazard.
- (2) A worker must ensure that clothing worn beneath flame resistant outerwear and against the skin is made of flame resistant fabrics or natural fibres that will not melt when exposed to heat.

Foot Protection

- 4.7(1) An employer must ensure that a worker uses footwear that is appropriate to the hazards associated with the work being performed and the work site.
- (2) If the hazard assessment identifies that protective footwear needs to have toe protection, a puncture resistant sole, metatarsal protection, electrical protection, chainsaw protection or any combination of these, the employer must ensure that the worker wears protective footwear that is approved to
 - (a) CSA Standard CAN/CSA-Z195-M92 (R2000), *Protective Footwear*, or
 - (b) CSA Standard Z195-02, *Protective Footwear*.
- (3) Despite subsection (2), if a worker is likely to be exposed to a hazard other than those referred to in subsection (2), the employer must ensure that the worker uses footwear appropriate to the hazard.

- (4) If a worker is unable, for medical reasons, to wear protective footwear that complies with subsection (2), the worker may substitute external safety toecaps if the employer ensures that
- (a) the safety toecaps meet the impact force requirements of CSA Standard Z195-02, *Protective Footwear*,
 - (b) metatarsal protection is not needed to protect the feet from injury,
 - (c) the hazard assessment confirms that the worker will not be exposed to any sole penetration hazards, and
 - (d) wearing the safety toecaps does not itself create a hazard for the worker.
- (5) An employer must ensure that a fire fighter wears safety footwear that is approved to
- (a) CSA Standard CAN/CSA- Z195-M92 (R2000), *Protective Footwear*,
 - (b) CSA Standard Z195-02, *Protective Footwear*,
 - (c) NFPA Standard 1971, *Protective Ensemble for Structural Fire Fighting*, 2000 Edition, or
 - (d) NFPA Standard 1977, *Protective Clothing and Equipment for Wildland Fire Fighting*, 1998 Edition.

Head protection

Industrial headwear

- 4.8(1) Subject to sections 4.9, 4.10 and 4.11, if there is a foreseeable danger of injury to a worker's head at a work site and there is a significant possibility of lateral impact to the head, an employer must ensure that the worker wears industrial protective headwear that is appropriate to the hazards and meets the requirements of
- (a) CSA Standard CAN/CSA-Z94.1-92 (R1998), *Industrial Protective Headwear*,
 - (b) ANSI Standard Z89.1-1997, *American National Standard for Industrial Head Protection* for Type II head protection, or
 - (c) ANSI Standard Z89.1-2003, *American National Standard for Industrial Head Protection* for Type II head protection.
- (2) Subject to sections 4.9, 4.10 and 4.11, if there is a foreseeable danger of injury to a worker's head at a work site and the possibility of lateral impact to the head is unlikely, an employer must ensure that the worker wears industrial protective headwear that is appropriate to the hazard and meets the requirements of
- (a) CSA Standard CAN/CSA-Z94.1-92 (R1998), *Industrial Protective Headwear*,
 - (b) ANSI Standard Z89.1-1997, *American National Standard for Industrial Head Protection*, or
 - (c) ANSI Standard Z89.1-2003, *American National Standard for Industrial Head Protection* for Type II head protection.
- (3) Where a worker is required to wear protective headwear, an employer must ensure that the worker is provided with
- (a) chin straps or other effective devices where there is a likelihood of the headwear falling or being blown off the workers head, and
 - (b) winter liners for use in cold weather.

Bicycles and skates

- 4.9 An employer must ensure that a worker who is riding a bicycle or using in-line skates or a similar means of transport wears a safety helmet
- (a) that is approved to one of the following standards for bicycle safety helmets in effect on the date on which the helmet was manufactured:
 - (i) CSA CAN/CSA-D113.2-M89 (R2002), *Cycling Helmets*,

- (ii) CPSC, Title 16 Code of U.S. Federal Regulations Part 1203, *Safety Standard for Bicycle Helmets*,
 - (iii) Snell Memorial Foundation B-90, *1990 Standard for Protective Headgear for Use with Bicycles*,
 - (iv) Snell Memorial Foundation B-95, *1995 Standard for Protective Headgear for Use with Bicycles*,
 - (v) Snell Memorial Foundation N-94, *1994 Standard for Protective Headgear in Non-Motorized Sports*,
 - (vi) ASTM F1447-02, *Standard Specification for Helmets Used in Recreational Bicycling or Roller Skating*,
 - (vii) CEN Standard EN 1078:1997, *Helmets for Pedal Cyclists and for Users of Skateboards and Roller Skates*,
 - (viii) BSI BS 6863:1989, *Specification for Pedal Cyclists' Helmets*,
 - (ix) Standards Australia/Standards New Zealand AS/NZS 2063:1996, *Pedal Cycle Helmets*,
 - (x) ANSI Z90.4-1984, *American National Standard for Protective Headgear for Bicyclists*, and
- (b) that is free of damage or modification that would reduce its effectiveness.

All-terrain vehicles, snow vehicles, motorcycles

- 4.10(1)** An employer must ensure that a worker riding an all-terrain vehicle, snow vehicle, motorized trail bike or motorcycle at a work site wears a safety helmet approved to one of the following standards
- (a) U.S.A. Federal Motor Vehicle Safety Standard FMVSS 218 *Motorcycle Helmets* 1993 OCT;
 - (b) BSI Standard BS 6658:85, *Specification for Protective Helmets for Vehicle Users*;
 - (c) the Snell Memorial Foundation Standard M2000, *2000 Standard for Protective Headgear for Use With Motorcycles and Other Motorized Vehicles*;
 - (d) CSA CAN 3-D230-M85
 - (e) DOT FMVSS 218 of the US Dept. of Transportation
- (2)** Protective headwear in good condition that meets the requirements of an earlier version of a standard listed in subsection (1) may be used unless it is damaged.
- (3)** Subsection (1) does not apply if the vehicle is equipped with rollover protective structures that comply with section 19.20 and seat belts or restraining devices that comply with section 19.21.
- (4)** A worker who wears protective headwear under subsection (1) and who uses an all-terrain vehicle, snow vehicle, motorized trail bike or motorcycle to travel to a remote work site may continue to wear that protective headwear while working at the work site if
- (a) the work does not subject the worker to potential contact with exposed energized electrical sources, and
 - (b) the work is done for a short period of time.

Fire fighters

- 4.11** Despite section 4.8, an employer may permit a fire fighter to wear protective headwear that meets the requirements of the following standards considering the nature of the hazard:
- (a) NFPA Standard 1971, *Protective Ensemble for Structural Fire Fighting*, 2000 Edition;
 - (b) NFPA Standard 1977, *Protective Clothing and Equipment for Wildland Fire Fighting*, 1998 Edition.

Bump hat

- 4.12** Despite section 4.8, an employer may permit a worker to wear a bump hat at the work site if the danger of injury is limited to the worker's head striking a stationary object.

Exemption from wearing headwear

- 4.13(1)** Despite section 4.8, if it is impractical for a worker to wear industrial protective headwear during a particular work process,
- (a) the employer must ensure that the worker's head is protected using an adequate alternative means of protection during the work process, and
 - (b) the worker may conduct the work while the alternative means of protection is in place.
- (2) A worker must wear industrial protective headwear if the foreseeable danger of injury to the worker's head persists immediately after completing the work process referred to in subsection (1).

Life Jackets and Personal Flotation Devices

Compliance with standards

- 4.14(1)** An employer must ensure that a life jacket is approved to CGSB Standard CAN/CGSB 65.7-M88, *Lifejackets, Inherently Buoyant Type*, and any amendments for approved small vessel life jackets.
- (2) An employer must ensure that a personal flotation device is approved to CGSB Standard CAN/CGSB 65.11-M88, *Personal Flotation Device*, and any amendments for personal flotation devices, type 1 (inherently buoyant).

Use of jackets and flotation devices

- 4.15(1)** An employer must ensure that a worker who could be exposed to the hazard of drowning is provided with and wears a life jacket.
- (2) Subsection (1) does not apply if other safety measures are in place that will protect workers from the hazard of drowning.
- (3) Despite subsections (1) and (2), if a worker performs work from a boat for an extended period of time, the worker may wear a personal flotation device if the employer ensures that there is also a life jacket readily accessible to each worker on the boat.

Limb, Skin and Body Protection

Limb and body protection

- 4.16** If there is a danger that a worker's hand, arm, leg or torso may be injured, an employer must ensure that the worker wears properly fitting hand, arm, leg or body protective equipment that is appropriate to the work, the work site and the hazards identified.

Skin protection

- 4.17** An employer must ensure that a worker's skin is protected from exposure to
- (a) a harmful substance that may injure the skin on contact or may adversely affect a worker's health if it is absorbed through the skin, and

(b) a substance or condition that may puncture, abrade, burn, corrode, electrically shock or otherwise adversely affect the skin.

Respiratory Protective Equipment

Respiratory dangers

- 4.18(1)** An employer must determine the degree of danger to a worker at a work site and whether the worker needs to wear respiratory protective equipment if
- (a) a worker is or may be exposed to an airborne contaminant or a mixture of airborne contaminants in a concentration exceeding their occupational exposure limits, or
 - (b) the atmosphere has or may have an oxygen concentration of less than 19.5 percent by volume.
- (2)** In making a determination under subsection (1), the employer must consider
- (a) the nature of any contaminants,
 - (b) the concentration or likely concentration of any airborne contaminants,
 - (c) the duration or likely duration of the worker's exposure,
 - (d) the toxicity of the contaminants,
 - (e) the percentage of oxygen,
 - (f) the warning properties of the contaminants, and
 - (g) the need for emergency escape.
- (3)** Based on a determination under subsection (1), the employer must provide and ensure the availability of the appropriate respiratory protective equipment and training in its use, care and limitations to the worker at the work site.
- (4)** A worker must use the appropriate respiratory equipment provided by the employer under subsection (3).

Safe work practice/procedure

- 4.19(1)** Where respiratory protective equipment is used at a work site, an employer must prepare a written safe work practice and procedure governing the selection, maintenance, fitting and use of respiratory protective equipment.
- (2)** An employer must ensure that written safe work procedures meet the requirements of CSA Standard Z94.4-02, Selection, Use and Care of Respirators, or other standard acceptable to the board.

Approval of equipment

- 4.20** An employer must ensure that respiratory protective equipment required at a work site is approved
- (a) by NIOSH, or
 - (b) by another standards setting and equipment testing organization, or combination of organizations, approved by a Chief Safety Officer.

Selection of equipment

- 4.21** An employer must ensure that respiratory protective equipment used at a work site is selected in accordance with CSA Standard Z94.4-02, *Selection, Use and Care of Respirators*.

Storage and use

- 4.22(1)** An employer must ensure that respiratory protective equipment kept ready to protect a worker is
- (a) stored in a readily accessible location,
 - (b) stored in a manner that prevents its contamination,
 - (c) maintained in a clean and sanitary condition,
 - (d) inspected before and after each use to ensure it is in satisfactory working condition, and
 - (e) used, maintained and serviced in accordance with the manufacturer's specifications with records kept of all work.
- (2)** An employer must ensure that respiratory protective equipment that is not used routinely but is kept for emergency use is inspected at least once every calendar month by a competent worker
- (a) to ensure it is in satisfactory working condition, and
 - (b) who maintains record of the inspections and work performed on the equipment.

Quality of breathing air

- 4.23** An employer must ensure that air used in a self-contained breathing apparatus or an air line respirator
- (a) is of a quality that complies with Table 1 of CSA Standard Z180.1-00, *Compressed Breathing Air and Systems*, and
 - (b) does not contain a substance in a concentration that exceeds 10 percent of its occupational exposure limit.

Effective facial seal

- 4.24(1)** An employer must ensure that respiratory protective equipment that depends on an effective facial seal for its safe use is correctly fit tested in accordance with
- (a) CSA Standard Z94.4-02, *Selection, Use and Care of Respirators*, or
 - (b) a method approved by a Chief Safety Officer.
- (2)** An employer and worker must ensure that, if a worker is or may be required to wear respiratory protective equipment and the effectiveness of the equipment depends on an effective facial seal, the worker is clean shaven where the face piece of the equipment seals to the skin of the face.

Equipment for immediate danger

- 4.25** If an employer determines under section 4.18 that breathing conditions at a work site are or may become immediately dangerous to life or health, the employer must ensure that a worker wears self-contained breathing apparatus or an air line respirator that
- (a) is of a type that will maintain positive pressure in the face piece,
 - (b) has a capacity of at least 30 minutes unless the employer's hazard assessment indicates the need for a greater capacity,
 - (c) provides full face protection in situations where contaminants may irritate or damage the eyes,
 - (d) in the case of an air line respirator, is fitted with an auxiliary supply of respirable air of sufficient quantity to enable the worker to escape from the area in an emergency, and
 - (e) in the case of a self-contained breathing apparatus, has an alarm warning of low pressure.

Equipment - no immediate danger

- 4.26** An employer must ensure that a worker wears self-contained breathing apparatus or an air line respirator having a capacity of at least 30 minutes if
- (a) the employer determines under section 4.18 that conditions at the work site are not or cannot become immediately dangerous to life or health but
 - (i) the oxygen content of the atmosphere is or may be less than 19.5 percent by volume, or
 - (ii) the concentration of airborne contaminants exceeds or may exceed that specified by the manufacturer for air purifying respiratory equipment, and
 - (b) the complete equipment required by section 4.25 is not provided.

Air purifying equipment

- 4.27** An employer may permit workers to wear air purifying respiratory protective equipment if
- (a) the oxygen content of the air is, and will continue to be, 19.5 percent or greater by volume,
 - (b) the air purifying equipment used is designed to provide protection against the specific airborne contaminant, or combination of airborne contaminants, present, and
 - (c) the concentration of airborne contaminants does not exceed the maximum concentration specified by the manufacturer for the specific type of air purifying equipment, taking into consideration the duration of its use.

Emergency escape equipment

- 4.28(1)** Despite sections 4.25 and 4.26, if normal operating conditions do not require the wearing of respiratory protective equipment but emergency conditions may occur requiring a worker to escape from the work area, the employer may permit the escaping worker to wear
- (a) a mouth bit and nose-clamp respirator if
 - (i) the respirator is designed to protect the worker from the specific airborne contaminants present, and
 - (ii) the oxygen content of the atmosphere during the escape is 19.5 percent or greater by volume, or
 - (b) alternative respiratory protective equipment that can be proven to give the worker the same or greater protection as the equipment referred to in clause (a).
- (2)** Before permitting a worker to use the equipment referred to in subsection (1), the employer must consider the length of time it will take the worker to escape from the work area and ensure it will provide adequate time to escape.

Abrasive blasting operations

- 4.29** Where a worker is performing abrasive blasting, the employer must ensure that the worker wears a hood specifically designed for abrasive blasting supplied with clean respirable air that is at a positive pressure of not more than 140 kilopascals and at a temperature that is comfortable for the worker.

Part 5 - Fall Protection

Rescue personnel exemption

- 5.1(1)** Rescue personnel involved in training or in providing emergency rescue services may use equipment, practices and procedures other than those specified in this Part.
- (2)** The employer must ensure that all practices, procedures and equipment used for emergency rescue or training for rescue meet current industry standards for the type of work being performed.

General protection

- 5.2(1)** An employer must ensure that workers are provided with and use a fall protection system at a temporary or permanent work area if
- (a) a worker is working at an elevation of 3 metres or more above grade or floor level, or
 - (b) there is an unusual possibility of injury if a worker falls less than 3 metres.
- (2)** For the purposes of this section, there is an unusual possibility of injury if the injury may be worse than an injury from landing on a solid, flat surface.
- (3)** 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 metres and less than 3 metres.
- (4)** Despite subsection (3), if the use of a guardrail is not reasonably practicable, an employer must ensure that a worker uses a travel restraint system or other equally effective means that protects the worker from falling.
- (5)** Despite subsection (4), if the use of a travel restraint system is not reasonably practicable, an employer must ensure that a worker is provided with and uses an equally effective means that protects the worker from falling.
- (6)** A worker must use or wear the fall protection system the employer requires the worker to use or wear in compliance with these regulations.

Fall protection plan

- 5.3(1)** An employer must develop procedures in a fall protection plan for a work site if a worker at the work site is working at an elevation of 3 metres or more above grade or floor level and workers are not protected by guardrails.
- (2)** A fall protection plan must specify
- (a) the fall hazards at the work site,
 - (b) the fall protection system to be used at the work site,
 - (c) the procedures used to assemble, maintain, inspect, use and disassemble the fall protection system, and
 - (d) the rescue procedures to be used if a worker falls, is suspended by a personal fall arrest system or safety net and needs to be rescued.
- (3)** The employer must ensure that the fall protection plan is available at the work site before work with a risk of falling begins.

Instruction of workers

- 5.4** An employer must ensure that a worker is trained in the fall protection plan and the safe use of the fall protection system before allowing the worker to work in an area where a fall protection system must be used.

Anchor points

- 5.5** A worker must ensure that when a personal fall arrest system or a travel restraint system is used, the worker safely secures it to an anchor point or plate that meets the requirements of this Part.

Special protection

- 5.6(1)** An employer must ensure that a worker on an elevating work platform or aerial device uses a personal fall arrest system.
- (2)** Subsection (1) does not apply to a worker on a scissor lift, or an elevating work platform with similar characteristics, that is operating on a firm, substantially level surface with all the manufacturer's guardrails and chains in place.
- (3)** If a fork-mounted work platform is elevated to a height of 3 metres or more above the ground, an employer must ensure that a worker on the platform uses a full body harness and lanyard secured to an anchor point specified by the manufacturer or in the specifications certified by a professional engineer.
- (4)** Despite subsections (1) and (3), if a worker's movement cannot be adequately restricted in all directions, the employer must ensure that the worker uses a personal fall arrest system.
- (5)** An employer must ensure that a worker who is being raised or lowered in a man basket uses a personal fall arrest system.
- (6)** An employer must ensure that a worker who is working from a portable ladder referred to in section 21.21 uses a personal fall arrest system.

Water danger

- 5.7** Despite section 4.15, if a fall protection system prevents a worker from falling into water, a life jacket need not be worn.

CSA and ANSI standards

- 5.8(1)** An employer must ensure that a full body harness is approved to CSA Standard CAN/CSA Z259.10-M90 (R1998), *Full Body Harnesses*.
- (2)** An employer must ensure that a safety belt is approved to CSA Standard CAN/CSA-Z259.1-95 (R1999), *Safety Belts and Lanyards*.
- (3)** An employer must ensure that a lanyard is approved to CSA Standard CAN/CSA-259.1-95 (R1999), *Safety Belts and Lanyards*.
- (4)** An employer must ensure that, if a shock absorber or shock absorbing lanyard is used as part of a personal fall arrest system, it is approved to CSA Standard CAN/CSA-Z259.11-M92 (R1998), *Shock Absorbers for Personal Fall-Arrest Systems*.

- (5) An employer must ensure that connecting components of a fall arrest system consisting of carabiners, D-rings, O-rings, oval rings, self-locking connectors and snap hooks meet the requirements of CSA Standard Z259.12-01, *Connecting Components for Personal Fall Arrest Systems (PFAS)*.
- (6) An employer must ensure that
 - (a) fall arresting devices, such as rope grabs, meet the requirements of CSA Standard Z259.2.1-98, *Fall Arresters, Vertical Lifelines, and Rails*,
 - (b) self-retracting devices used with personal fall arrest systems are approved to CSA Standard Z259.2.2-98, *Self-Retracting Devices for Personal Fall-Arrest Systems*, and
 - (c) automatic and manual descent control devices used with personal fall arrest systems meet the requirements of CSA Standard Z259.2.3-99, *Descent Control Devices*.
- (7) An employer must ensure that a vertical lifeline used in a fall protection system meets the requirements of CSA Standard CAN/CSA-Z259.2.1-98, *Fall Arresters, Vertical Lifelines, and Rails*.
- (8) An employer must ensure that fall restrict equipment used by a worker when the worker works on or from a wood pole is approved to CSA Standard Z259.14-01, *Fall Restrict Equipment for Wood Pole Climbing*.
- (9) An employer must ensure that a lineman's body belt is approved to CSA Standard Z259.3-M1978 (R2001), *Lineman's Body Belt and Lineman's Safety Strap*.
- (10) Subsections (8) and (9) do not apply to fall restrict equipment or a lineman's body belt in use before April 30, 2004.

Wood pole climbing

- 5.9(1) An employer must ensure that a worker working on or from a wood pole uses fall restrict equipment that is approved to CSA Standard Z259.14-01, *Fall Restrict Equipment for Wood Pole Climbing*, in combination with
 - (a) a lineman's body belt that is approved to CSA Standard Z259.3-M1978 (R2001), *Lineman's Body Belt and Lineman's Safety Strap*, or
 - (b) a full body harness that is approved to CSA Standard CAN/CSAZ259.10-M90 (R1998), *Full Body Harnesses*.
- (2) Subsection (1) does not apply to fall restrict equipment or a lineman's body belt in use before April 30, 2004.

Lanyards and safety belts

- 5.10(1) An employer must ensure that a lanyard or safety strap used by a worker is made of wire rope or other material appropriate to the hazard if a tool or corrosive agent that could sever, abrade or burn a lanyard or safety strap is used in the work area.
- (2) An employer must ensure that a worker uses a safety belt only as part of a travel restraint system or as part of a fall restrict system.
- (3) Despite subsection (1), if a worker works near an energized conductor or in a work area where a lanyard made of conductive material cannot be used safely, the employer must ensure that the worker uses another effective means of fall protection.
- (4) A worker must ensure that the vertical distance of a fall is limited by

- (a) selecting the shortest length lanyard that will still permit unimpeded performance of the worker's duties,
- (b) using only a single lanyard between the worker and the anchor point, except as required by subsection (3), and
- (c) securing the lanyard to an anchor point no lower than the worker's shoulder height.

- (5) If a shoulder height anchor point required by subsection (4) (c) is not available, a worker must secure the lanyard to an anchor point that is as high as reasonably practicable.

Shock absorbers

- 5.11(1) The employer must ensure that a personal fall arrest system consists of a full body harness and a lanyard equipped with a shock absorber or similar device.
- (2) Despite subsection (1), the personal fall arrest system must not include a shock absorber if wearing or using one could cause a worker to hit the ground or an object or level below the work area.
- (3) Despite subsection (1), a shock absorber is required with a fixed ladder fall arrest system only if it is required by the manufacturer of the system.
- (4) The employer must ensure that if a worker uses a shock absorber in a personal fall arrest system, allowance is made for the potential increase in the total fall distance.

Full body harness

- 5.12(1) An employer must ensure that a worker who is using a personal fall arrest system wears and uses a full body harness.
- (2) A worker using a personal fall arrest system must wear and use a full body harness.

Free fall limits — maximum arresting force

- 5.13(1) An employer must ensure that a personal fall arrest system is arranged and limits a worker's free fall distance to 1.2 metres and does not allow the worker to hit the ground or level below the work area.
- (2) An employer must ensure that a personal fall arrest system with a shock absorber limits a worker's free fall distance to 2 metres, or the limit specified in the manufacturer's specifications, whichever is less.
- (3) An employer must ensure that a personal fall arrest system limits the maximum arresting force on a worker to 8 kilonewtons.

Anchor plate

- 5.14 An employer must ensure that an anchor plate with multiple attachment points designed to support combinations of suspension lines, tie-back lines and lifelines is certified in writing by a professional engineer.

Travel restraint anchors — temporary

- 5.15(1) An employer must ensure that a temporary anchor point used in a travel restraint system
- (a) has an ultimate load capacity of at least 3.5 kilonewtons per worker attached in any direction in which the load may be applied, and

(b) is installed, used and removed according to the manufacturer's specifications.

- (2) An employer must ensure that the temporary travel restraint anchor point described in subsection (1) is
- (a) permanently marked as being for travel restraint only, and
 - (b) removed from use on the earliest of
 - (i) the date the work project for which it is intended is completed, or
 - (ii) the time specified by the manufacturer.

Travel restraint anchors — permanent

- 5.16(1)** An employer must ensure that a permanent anchor point used in a travel restraint system associated with a construction project involving typical methods of constructing wood-framed, sloped-roof structures
- (a) has an ultimate load capacity of at least 8.75 kilonewtons per worker attached in any direction in which the load may be applied,
 - (b) is installed and used according to the manufacturer's specifications, and
 - (c) is permanently marked as being for travel restraint only.
- (2) An employer must ensure that a permanent anchor point used in a travel restraint system associated with applications other than those described in subsection (1)
- (a) has an ultimate load capacity of at least 22.2 kilonewtons per worker attached in any direction in which the load may be applied, and
 - (b) is installed and used according to the manufacturer's specifications.

Fall arrest anchors

- 5.17(1)** An employer must ensure that anchor points to which a personal fall arrest system is attached have an ultimate load capacity of at least 22.2 kilonewtons per worker attached, in any direction in which the load may be applied.
- (2) Subsection (1) does not apply to anchor points installed before April 30, 2004.
- (3) Subsection (1) does not apply to the anchor points of horizontal lifeline systems that must meet the requirements of section 5.19(1).
- (4) If the structure to which the anchor point is attached is not capable of withstanding a 22.2 kilonewtons force without damage, the employer may use an anchor point designed, installed and used as part of a fall protection system that is capable of withstanding twice the maximum arresting force that the anchor point is subjected to.
- (5) The employer must ensure that the anchor point described in subsection (4) is designed, installed and used
- (a) in accordance with the manufacturer's specifications, or
 - (b) specifications certified by a professional engineer.
- (6) Subject to section 5.13, an employer must ensure that anchor points to which a personal fall arrest system is attached are not part of an anchor used to support or suspend a platform.

Vertical lifelines

- 5.18(1)** An employer must ensure that a vertical lifeline used in a personal fall arrest system is secured to an anchor point that is designed and installed solely for that purpose and not used to support any thing else.

- (2) An employer must ensure that a vertical lifeline has a nominal breaking load specified by the manufacturer of not less than 27 kilonewtons.
- (3) An employer must ensure that a vertical lifeline extends downward to within 1.2 metres of ground level or another safe lower surface.
- (4) An employer must ensure that a vertical lifeline is free of knots or splices except for a stopper knot at its lower end.
- (5) An employer must ensure that only one worker is attached to a vertical lifeline at any one time unless
 - (a) the vertical lifeline is part of the fall arrest system of a fixed ladder, or
 - (b) the manufacturer's specifications or specifications certified by a professional engineer allow for the attachment of more than one worker to the same vertical lifeline.
- (6) An employer must ensure that a vertical lifeline
 - (a) is effectively protected to prevent abrasion by sharp or rough edges, and
 - (b) is made of wire rope or other material appropriate to the hazard if a tool or chemical agent is used that could sever, abrade or burn the vertical line.
- (7) Despite subsection (6)(b), the employer must ensure that a different effective means of fall protection is used if a worker is working near an energized electrical conductor or in a work area where a lifeline made of conductive materials cannot be safely used.
- (8) An employer must ensure that a vertical lifeline is installed and used in a manner that minimizes the hazards of swinging if a worker falls.

Prusik and similar knots

- 5.19** An employer must ensure that a Prusik or similar knot is used in place of a rope grab only during emergency situations or during training for emergency situations and only by a competent worker.

Horizontal lifeline systems

- 5.20(1)** An employer must ensure that a flexible horizontal lifeline meets the requirements of
 - (a) CSA Standard Z259.13-04, *Flexible Horizontal Lifeline Systems*, or
 - (b) the applicable requirements of CSA Standard Z259.16-04, *Design of Active Fall Protection Systems*.
- (2) An employer must ensure that a rigid horizontal lifeline system used is designed, installed and used in accordance with
 - (a) the manufacturer's specifications, or
 - (b) specifications certified by a professional engineer.
- 5.21** An employer must ensure that before a horizontal lifeline system is used, a professional engineer, the manufacturer or a competent person authorized by the manufacturer or a professional engineer certifies that the system has been properly installed according to the manufacturer's specifications or to the specifications certified by a professional engineer.

Inspection and maintenance

- 5.22** An employer must ensure that the equipment used as part of a fall protection system is

- (a) inspected by the worker as required by the manufacturer before it is used on each work shift,
- (b) kept free from substances and conditions that could contribute to deterioration of the equipment, and
- (c) re-certified as specified by the manufacturer.

Removal from service

- 5.23(1)** An employer must ensure that equipment used as part of a fall protection system is removed from service and either returned to the manufacturer or destroyed if it is defective.
- (2)** An employer must ensure that after a personal fall arrest system has stopped a fall, the system is removed from service and is not returned to service unless a professional engineer or the manufacturer certifies that the system is safe to use.

Control zones

- 5.24(1)** Where a control zone is used in a work area where a worker can fall from a surface having a slope no greater than 4 degrees, an employer must ensure that the control zone is at least 2 metres wide when measured from the unguarded edge.
- (2)** An employer must not use a control zone to protect workers from falling from a skeletal structure that is a work area.
- (3)** If a worker will at all times remain further from the unguarded edge than the width of the control zone, no other fall protection system need be used.
- (4)** Despite section 5.2, a worker is not required to use a fall protection system when crossing the control zone to enter or leave the work area.
- (5)** When crossing a control zone referred to in subsections (3) and (4), to get to or from the unguarded edge, a worker must follow the most direct route.
- (6)** An employer must ensure that a control zone is clearly marked with an effective raised warning line or other equally effective method if a worker is working within 2 metres of the control zone.
- (7)** An employer must ensure that a worker who has to work within a control zone uses
 - (a) a travel restraint system, or
 - (b) an equally effective means that prevents the worker from getting to the unguarded edge.
- (8)** A worker who is not directly required for the work at hand must not be inside a control zone.

Part 6 - Noise Exposure

Duty to reduce

- 6.1(1)** An employer must ensure that all reasonably practicable measures and methods are used to reduce the noise to which workers are exposed in areas of the work site where workers may be present.
- (2)** An employer must ensure that all reasonable steps are taken to reduce the noise to which workers are exposed by
- (a) engineering design;
 - (b) substituting or modifying equipment or processes;
 - (c) installing sound proof enclosures or acoustic baffles; or
 - (d) a combination of the above.

Noise control design

- 6.2(1)** An employer must ensure that the following are designed and constructed in such a way that the continuous noise levels generated are not more than 85 dBA or are as low as reasonably practicable:
- (a) a new work site;
 - (b) significant physical alterations, renovations or repairs to an existing work site or work area;
 - (c) a new work process is introduced to the work site or work area;
 - (d) significant equipment is introduced to the work site or work area.
- (2)** Subsection (1) does not apply to alterations, renovations or repairs begun or work processes or equipment introduced before April 30, 2006.

Worker exposure to noise

- 6.3** An employer must ensure that a worker's unprotected exposure to noise does not exceed
- (a) the noise exposure limits in Schedule 3, Table 1, and
 - (b) 85 dBA Lex.

Noise exposure assessment

- 6.4(1)** If workers are, or may be, exposed to noise at a work site in excess of 82 dBA Lex and the noise exposure limits in Schedule 3, Table 1, an employer must do a noise exposure assessment under section 2.1.
- (2)** A person who assesses noise exposure at a work site must measure the noise in accordance with CSA Standard Z107.56-94 (R1999), *Procedures for the Measurement of Occupational Noise Exposure*.
- (3)** A person who measures noise exposure at a work site must use
- (a) a sound level meter meeting the requirements for a Type 2 instrument as specified by ANSI Standard S1.4-1983 (R2001), *Specification for Sound Level Meters*,
 - (b) a noise dosimeter meeting the requirements for a Type 2 instrument as specified by ANSI Standard S1.25-1991 (R1997), *Specification for Personal Noise Dosimeters*, and set at
 - (i) a criterion level of 85 dBA with a 3 dB exchange rate,
 - (ii) a threshold level at or below 80 dBA or "off", and
 - (iii) slow response,

(c) an integrating sound level meter meeting the requirements as specified by ANSI Standard S1.43-1997, Specifications for *Integrating- Averaging Sound Level Meters*, or IEC Standard 61672-1 (2002), *Electroacoustics – Sound Level Meters – Part 1: Specifications* and IEC Standard 61672-2 (2003), *Electroacoustics – Sound Level Meters – Part 2: Pattern evaluation tests*, or
(d) equipment approved by a Chief Safety Officer.

- (4) An employer must ensure that a noise exposure assessment is
- (a) conducted and interpreted by a competent person, and
 - (b) updated if a change in equipment or process affects the noise level or the length of time a worker is exposed to noise.

Results recorded

6.5(1) An employer must ensure that results of noise exposure measurements are recorded and include

- (a) the dates of measurements,
- (b) the workers or occupations evaluated,
- (c) the type of measuring equipment used,
- (d) the sound level readings measured, and
- (e) the work location evaluated.

- (2) An employer must ensure that
- (a) a copy of the results of the noise exposure assessment is available on request to an affected worker or a safety officer, and
 - (b) the record of the noise exposure assessment is retained for as long as the employer operates the business.

Noise management program

6.6(1) If a noise exposure assessment confirms that workers are exposed to excess noise at a work site, the employer must develop and implement a noise management program that includes policies and procedures.

- (2) The employer must ensure that the noise management program includes the following:
- (a) a plan to educate workers in the hazards of exposure to excess noise and train workers in the correct use of control measures and hearing protection;
 - (b) the methods and procedures to be used when measuring or monitoring worker exposure to noise;
 - (c) the posting of suitable warning signs in any work area where the noise level exceeds 85 dBA;
 - (d) the methods of noise control to be used;
 - (e) the selection, use and maintenance of hearing protection devices to be worn by workers;
 - (f) requirements for audiometric testing and the maintenance of test records; and
 - (g) an annual review of the policies and procedures to address
 - (i) the effectiveness of the education and training plan,
 - (ii) the need for further noise measurement, and
 - (iii) the adequacy of noise control measures.
- (3) A worker who is subject to noise management must cooperate with the employer in implementing the policies and procedures.

Hearing protection

- 6.7(1)** An employer must ensure that where engineering or administrative controls or substitution of equipment or machinery, in accordance with section 6.1, has not resulted in adequate lowering of the noise levels at a work site, hearing protection is provided to the workers.
- (2)** An employer must ensure that hearing protection equipment provided to workers exposed to excess noise
- (a) meets the requirements of CSA Standard Z94.2-02, *Hearing Protection Devices – Performance, Selection, Care, and Use*; and
 - (b) is of the appropriate class and grade described in Schedule 3, Table 2.
- (3)** An employer must
- (a) provide workers with training in the selection, use and maintenance of hearing protection equipment required to be used at a work site in accordance with the manufacturer's specifications, and
 - (b) ensure that affected workers wear the hearing protection equipment required to be used.
- (4)** Workers who are provided with hearing protection equipment must wear and use the equipment in accordance with the training provided by the employer.

Audiometric testing

Note: Despite any other reference to an effective date of these regulations, section 6.8 comes into effect on January 2, 2008.

- 6.8(1)** An employer must provide, at the employer's expense, the following audiometric tests for a worker exposed to excess noise:
- (a) an initial baseline test as soon as practicable, but not later than 6 months after the worker is employed or within 6 months after a worker is exposed to excess noise because of a change in the worker's duties or process conditions,
 - (b) not more than 12 months after the initial baseline test, and
 - (c) at least every second year after the test under clause (b).
- (2)** An employer must ensure that audiometric tests are administered by an audiometric technician who must
- (a) work in consultation with a physician, audiologist or occupational health nurse designated by the employer,
 - (b) maintain a log book for each audiometer being used that
 - (i) contains the audiometer's written calibration records, and
 - (ii) remains with the audiometer throughout its useful lifetime,
 - (c) conduct the tests in a location where background noise levels do not exceed those specified in Schedule 3, Table 3,
 - (d) record the results of the audiometric tests,
 - (e) provide a copy of the test results to the worker,
 - (f) retain the records of the audiometric tests for a period of not less than 10 years, and
 - (g) ensure that the medical history information is under the sole control of the person designated under subsection (2)(a).
- (3)** If the results of an audiometric test indicate an abnormal audiogram or show an abnormal shift, the audiometric technician must
- (a) advise the worker of the test results,
 - (b) request the worker to provide, and the worker must provide, relevant medical history information, and

(c) forward the results that indicate an abnormal audiogram or an abnormal shift, the medical history information and a baseline audiogram to a physician or audiologist designated by the employer to receive this information.

- (4) If the physician or audiologist designated by the employer confirms the audiogram as abnormal or the abnormal shift, the physician or audiologist must
- (a) advise the worker to that effect within 30 days,
 - (b) with the written consent of the worker, provide results of the audiometric tests to the worker's physician,
 - (c) advise the employer as to the effectiveness of the noise management program in place at the work site, and
 - (d) retain the records of the audiometric test for a period of not less than 10 years.
- (5) A person must not release records of audiometric tests conducted on a worker or medical history information received from a worker as required by this section to any person without the worker's written permission except in accordance with this section.

Credit of time

- 6.9 If it is not reasonably practicable for a worker to undergo audiometric testing during the worker's normal working hours, the employer must
- (a) credit the time the worker spends to get the test as time at work, and
 - (b) ensure that the worker does not lose any pay or other benefits because the worker was tested.

Part 7 - Chemical Hazards, Biological Hazards and Harmful Substances

Worker exposure to harmful substances

- 7.1(1) An employer must ensure that a worker's exposure to any substance listed in Schedule 1, Table 2 is kept as low as reasonably practicable, and does not exceed its occupational exposure limit.
- (2) If no occupational exposure limit is established for a harmful substance present at a work site, an employer must ensure that all reasonably practicable steps are taken to keep each worker's exposure to that harmful substance as low as reasonably practicable in accordance with acceptable industry best practices.
- (3) If a worker is exposed to a substance listed in Schedule 1, Table 2, at a concentration that exceeds its 8-hour occupational exposure limit but is less than its 15-minute occupational exposure limit, the employer must ensure that
- (a) each 15-minute period of exposure is followed by a period of at least 60 minutes during which the airborne concentration of the substance is at or below its 8-hour occupational exposure limit,
 - (b) the worker is not subjected to more than 4 of the 15-minute periods of exposure in a continuous 24-hour period, and
 - (c) the 8-hour occupational exposure limit is not exceeded during the remainder of the 24 hour period.
- (4) An employer must ensure that a worker is not exposed to a substance listed in Schedule 1, Table 2, at a concentration exceeding the ceiling limit at any time.
- (5) If no 15-minute occupational exposure limit or ceiling occupational exposure limit is listed for a substance in Schedule 1, Table 2, the employer must
- (a) comply with the 8-hour occupational exposure limit, and
 - (b) ensure that a worker's exposure to that substance does not exceed 3 times the 8-hour occupational exposure limit at any time.

Exposure to multiple substances

- 7.2 An employer must take all reasonably practicable steps to ensure that, if a worker is exposed to more than one substance listed in Schedule 1, Table 2 during a single work shift and the toxicological effects have similar modes of toxic action, the value of D in the formula

$$D = \frac{C_1}{T_1} + \frac{C_2}{T_2} + \dots + \frac{C_n}{T_n}$$

does not exceed 1, where C₁, C₂,...C_n refer to the airborne concentrations during exposure to contaminants 1, 2,...n, and T₁, T₂,...T_n are their respective occupational exposure limit values expressed in the same units as C_n.

Exposure during shifts longer than 8 hours

- 7.3(1) Subject to subsection (3), if a worker is exposed to a substance listed in Schedule 1, Table 2 during a single work shift that is longer than 8 hours, the employer must ensure that equivalent protection from adverse health effects is achieved by adjusting the 8-hour exposure limit using the following formulas:

adjusted exposure limit = 8-hour occupational exposure limit x daily reduction factor,
where daily reduction factor

$$= \left\{ \frac{8}{h} \times \left(\frac{24-h}{16} \right) \right\}, \text{ and}$$

h = hours worked per day.

- (2) Subsection (1) does not apply to a substance for which the number “3” appears in the “Substance Interaction” column of Schedule 1, Table 2.
- (3) An employer may adjust the 8-hour exposure limit by another method that uses recognized scientific principles that is approved by the Chief Safety Officer.

Review of exposure limits

- 7.4(1) A person may apply to the Chief Safety Officer to request a review of the occupational exposure limit of a substance.
- (2) An application under subsection (1) must be in writing and include reasons for the review, proposed changes and information that supports the request.
- (3) On receipt of a request for a review of an occupational exposure limit, the Chief Safety Officer will study the request, review the occupational exposure limit and respond in accordance with the findings.

Airborne concentration measurements

- 7.5(1) If a person measures the airborne concentration of a harmful substance for the purposes of complying with the occupational exposure limits as required by these regulations, the person must make the measurement
 - (a) in accordance with the NIOSH Manual of Analytical Methods, 4th Edition (August 1994), published by the United States Department of Health and Human Services, as amended up to and including the 2nd supplement (January 15, 1998), or
 - (b) using methods or procedures that are approved by the Chief Safety Officer.
- (2) Despite subsection (1), an employer may use a continuous reading direct reading instrument to measure concentrations of contaminants in the air if the instrument is used, calibrated and maintained according to the manufacturer’s specifications.
- (3) When counting asbestos fibres, the person must apply NIOSH Method 7400 and only to particles that meet the size criteria for fibres.
- (4) An employer must record the results of the measurements and keep them for 3 years from the date on which the measurements were taken.

Potential worker exposure

- 7.6(1) If a worker may be exposed to a harmful substance at a work site, an employer must identify the health hazards associated with the exposure and assess the worker’s exposure.

- (2) The employer must ensure that a worker who may be exposed to a harmful substance at a work site
 - (a) is informed of the health hazards associated with exposure to that substance,
 - (b) is informed of measurements made of airborne concentrations of harmful substances at the work site, and
 - (c) is trained in procedures developed by the employer to minimize the worker's exposure to harmful substances and understands the procedures.
- (3) A worker who is provided with training under subsection (2) must use the procedures appropriately and apply the training.

Worker overexposure

- 7.7(1) Where a worker may be exposed to an airborne concentration that is more than the occupational exposure limit of a substance, the employer must conduct measurements of the concentrations of that substance at the work site.
- (2) If a worker is exposed to more than the occupational exposure limit of a substance, the employer must immediately
 - (a) identify the cause of the overexposure,
 - (b) protect the worker from any further exposure,
 - (c) control the situation so that no other workers are exposed to the substance at airborne concentrations that are more than the occupational exposure limit, and
 - (d) explain to the worker the nature and extent of the overexposure.
- (3) As soon as reasonably practicable, an employer must inform the joint work site health and safety committee, if there is one, in writing, that a worker has been exposed to more than the occupational exposure limit of a substance and the steps taken to control the overexposure.

Worker decontamination

- 7.8 If a worker may be contaminated by a harmful substance at a work site, the employer must provide the facilities, including showers, the worker needs to remove the contamination before the worker leaves the work site.

Emergency baths, showers, eye wash equipment

- 7.9(1) If a worker is present at a work site where chemicals harmful to the eyes or skin are used, the employer must ensure that the worker has immediate access at the work site to emergency baths, showers, eye wash equipment or other equipment appropriate for the potential level of exposure.
- (2) An employer must assess the level of risk presented by chemicals at the work place assess and ensure that emergency facilities required by subsection (1) are in sufficient number and located so as to provide an appropriate level of protection to workers.
- (3) An employer must ensure that emergency facilities required by subsection (1) are
 - (a) provided with tempered water where chemicals pose the risk of irreversible harm to the eyes or skin,
 - (b) protected from freezing, and
 - (c) used, installed, located, inspected, tested and maintained in accordance with
 - (i) *ANSI Z358.1-2004, Emergency Eyewash and Shower Equipment*, or
 - (ii) the manufacturers specifications.

Prohibited activities

- 7.10(1)** An employer must ensure that workers do not eat, drink or smoke tobacco in a part of a work site contaminated by a harmful substance.
- (2)** A worker must not eat, drink or smoke tobacco in a part of a work site contaminated by a harmful substance.

Safe Work Procedures

- 7.11(1)** An employer must have a safe work procedure governing the storage, handling, use and disposal of a substance listed in Schedule 1, Table 1 that is present at a work site
- (a) as pure substance in an amount exceeding 10 kilograms, or
 - (b) in a mixture in which the amount of the substance is more than 10 kilograms and at a concentration of 0.1 percent by weight or more.
- (2)** An employer must ensure that the safe work procedure includes measures to be used to prevent the uncontrolled release of the substance and the procedures to be followed if there is an uncontrolled release.

Storage of harmful substances

- 7.12** An employer must ensure that a harmful substance used or stored at a work site
- (a) is clearly identified, or its container is clearly identified, and
 - (b) is used and stored in such a way that the use or storage is not a hazard to workers.

General provisions for asbestos, silica, and lead

- 7.13(1)** An employer must ensure that safe work procedures are developed and implemented for any work activities related to asbestos or asbestos-containing materials using the Safe Work Procedure for Asbestos developed by the Workers' Compensation Board as a minimum standard.
- (2)** Prior to conducting any work activity that includes asbestos, an employer must ensure the procedures developed in accordance with subsection (1) have been submitted to and accepted by the Chief Safety Officer.
- (3)** An employer must
- (a) minimize the release of asbestos, silica, and lead into the air as far as reasonably practicable,
 - (b) keep the work site clear of unnecessary accumulations of asbestos, silica, and lead and waste materials containing any of these substances, and
 - (c) ensure that the methods used to decontaminate the work area, workers, equipment and protective clothing prevent, as much as is reasonably practicable, the generation of airborne asbestos, silica, or lead.

Restricted area

- 7.14(1)** An employer must ensure that only a person authorized by the employer or by law to do so enters a restricted area.
- (2)** An employer must identify and mark the boundaries of a restricted area with barricades, fences, warning tape, or similar means and post signs that clearly indicate that
- (a) asbestos, silica, or lead are present in the area,

- (b) only authorized persons may enter the area, and
 - (c) eating, drinking and smoking are prohibited in the area.
- (3) Signs posted under subsection (2) must
- (a) be in a conspicuous location at the entrances to and on the periphery of each restricted area, as appropriate, and
 - (b) remain posted until the area is no longer a restricted area.
- (4) An employer must
- (a) provide workers in a restricted area with protective clothing that protects other clothing worn by the worker from contamination by asbestos, silica, or lead,
 - (b) ensure that workers' street clothing is not contaminated by asbestos, silica, or lead, and
 - (c) ensure that a worker does not leave a restricted area until the worker has been decontaminated.
- (5) Subsection (4) does not apply in an emergency situation where the health or safety of a worker requires the worker to leave a restricted area without being decontaminated.

Protective clothing used in restricted areas containing asbestos or lead

- 7.15(1) If clothing used in a restricted area containing asbestos or lead is reused and not discarded, the employer must have the clothing laundered in the appropriate manner and at appropriate intervals to ensure
- (a) the clothing is decontaminated, and
 - (b) there is no cross-contamination of other clothing by asbestos or lead.
- (2) The employer must ensure that clothing contaminated with asbestos or lead that is to be laundered before being reused is stored and transported in sealed containers.
- (3) An employer must ensure that prior to sending clothing contaminated with asbestos or lead to a laundering facility, the operator of the facility is made aware of the nature of the contamination and the health hazards associated with it.
- (4) Containers used in subsection (2) must be clearly labelled
- (a) to identify the contents,
 - (b) to indicate that the contents are a hazard, and
 - (c) to warn workers that dust from the contents should not be inhaled.

Release of asbestos

- 7.16(1) Where it is determined that asbestos fibres have been or may be released in a building, the building must be designated as an unsafe condition by the employer or the owner of the building.
- (2) The employer must take all necessary steps to correct the unsafe condition.

Prohibitions related to asbestos

- 7.17(1) A person must not use materials containing crocidolite asbestos in an existing or a new building.
- (2) A person must not apply materials containing asbestos by spraying them.

Asbestos in air distribution systems

- 7.18** A person must not use asbestos in an air distribution system or equipment in a form in which, or a location where, asbestos fibres could enter the air supply or return air systems.

Asbestos in building to be demolished

- 7.19** If a building is to be demolished, the employer must ensure that all materials with the potential to release asbestos fibres are removed prior to commencing the demolition.

Encapsulation, enclosure or removal of asbestos

- 7.20** Where a building is being altered or renovated, the employer must ensure that materials in the area of the alterations or renovations that could release asbestos fibres are encapsulated, enclosed or removed.

Notification of an asbestos project

- 7.21(1)** An employer who is responsible for removing or abating asbestos or for demolishing or renovating a building or equipment containing asbestos must notify the Chief Safety Officer of the activity at least 72 hours before beginning the activities that may release asbestos fibres.
- (2)** An employer must ensure that the notice, as required by subsection (1), includes at a minimum
- (a) a completed Notice of Asbestos Project form,
 - (b) the risk assessment that was conducted, and
 - (c) a copy of the safe work procedures for the project.
- (3)** A person must not remove or abate asbestos or demolish or renovate a building or equipment containing asbestos if the Chief Safety Officer has not been notified in accordance with subsection (1).

Asbestos worker course

- 7.22(1)** An employer must ensure that a worker who works with asbestos receives the training necessary for the worker to perform the work safely.
- (2)** An employer must ensure that a worker who enters a restricted area that is designated as a restricted area due to the presence of asbestos
- (a) has successfully completed a course of instruction approved by the Chief Safety Officer, and
 - (b) has in the worker's possession the original valid certificate of completion of the course issued to the worker.

Containment and labelling of asbestos waste

- 7.23(1)** An employer must ensure that asbestos waste is stored, transported and disposed of in sealed containers that are impervious to asbestos and asbestos waste.
- (2)** An employer must ensure that a container of an asbestos product and asbestos waste is clearly labelled
- (a) to identify the contents as an asbestos product and carcinogenic, and
 - (b) to warn handlers that dust from the contents should not be inhaled.

Prohibition of crystalline silica in abrasive blasting

7.24 An employer must ensure that crystalline silica is not used at a work site for abrasive blasting.

Health assessments for workers exposed to asbestos or silica

7.25(1) This section applies to exposed workers who are exposed to asbestos or silica.

- (2)** A health assessment of the worker must include the following:
 - (a) the identity of the worker and the employer;
 - (b) the date of the medical examination, chest x-ray and spirogram;
 - (c) a 35 centimetres by 43 centimetres postero-anterior view chest x-ray, including a radiologist's report;
 - (d) a spirogram, conducted by a pulmonary function technician, including determinations of forced expiratory volume in the first second and forced vital capacity;
 - (e) a history covering
 - (i) occupational exposures to asbestos, silica, coal dust, or other industrial dusts and carcinogens,
 - (ii) significant exposures to asbestos, silica, coal dust, other dust and carcinogens during non work-related activities,
 - (iii) significant symptoms that may indicate silicosis, pneumoconiosis, asbestosis or cancer,
 - (iv) past and current medical diagnoses of respiratory disease, and
 - (v) the worker's smoking history,
 - (f) a written interpretation and explanation of the results by a physician of the assessment with particular reference to the worker's exposure to airborne substances.
- (3)** The physician must give the written interpretation and explanation of the results of the health assessment to the worker not more than 60 days after the tests are completed.
- (4)** The physician must ensure that the records of the health assessment are kept for not less than 30 years.
- (5)** The person with custody of the health assessment record must ensure that no person, other than the worker or health professional who conducts the health assessment, the staff supervised by the health professional or another person authorized by law to have access, has access to the exposed worker's health assessment unless
 - (a) the record is in a form that does not identify the worker , or
 - (b) the worker gives written permission for access by another person.
- (6)** An employer must ensure that a worker undergoes a health assessment
 - (a) not more than 30 calendar days after the worker becomes an exposed worker, and
 - (b) every 2 years after the first health assessment.
- (7)** If an exposed worker received a health assessment from a previous employer within the immediately preceding 2 years, the worker must inform the present employer of the date or approximate date of that health assessment at the earliest possible time.
- (8)** An employer must ensure at all times that an exposed worker has received a health assessment within the immediately preceding 2 years.

- (9) Despite subsections (7) and (8) exposed workers may refuse to undergo part or all of a health assessment by giving the employer a written statement refusing it.
- (10) An employer must not coerce, threaten or force a worker into refusing part or all of a health assessment.
- (11) An employer must pay the cost of the health assessment, medical interpretation and explanation required by this section.
- (12) An employer must ensure that, where reasonably practicable, a health assessment is performed during normal hours of work.
- (13) An employer must not make deduction from the worker's wages, salary or other remuneration or benefits for the time an exposed worker
 - (a) undergoes a health assessment, or
 - (b) travels to or from a health assessment.

Lead exposure control plan

- 7.26(1) An employer must develop an exposure control plan for lead if
 - (a) a worker at the work site may be exposed to airborne lead in excess of its occupational exposure limit, or
 - (b) a worker's exposure to lead at the work site could result in an elevated body burden of lead through any route of entry.
- (2) The exposure control plan must include at least the following:
 - (a) a statement of purpose and the responsibilities of individuals;
 - (b) methods of hazard identification, assessment and control;
 - (c) worker education and training;
 - (d) safe work practices where these are required by the hazard assessment process under these regulations;
 - (e) descriptions of personal and work site hygiene practices and decontamination practices;
 - (f) processes of health monitoring, including biological testing;
 - (g) methods of documentation and record keeping;
 - (h) procedures for maintenance of the plan, including annual reviews and updating.
- (3) A worker must follow the exposure control plan and practice the personal and work site hygiene practices established by the employer to minimize lead exposure at the work site.

Lead - air monitoring

- 7.27 Where a worker may be exposed to lead in harmful amounts at a work site, an employer must ensure that air monitoring and surface testing for lead is regularly conducted to confirm that the controls in place are effective.

Medical monitoring for lead

- 7.28(1) An employer must ensure blood lead level testing is available to a worker if the worker at a work site could reasonably be expected to have an elevated body burden of lead.
- (2) An employer must ensure that a worker exposed to lead is informed of the availability of the blood lead test.
- (3) The employer must pay the cost of a blood level test.

- (4) An exposed worker may refuse to undergo a blood level test by giving the employer a written statement refusing it.
- (5) An employer must not coerce, threaten or force a worker into refusing part or all of the test.

Part 8 - Fire and Explosion Hazards

General Protection and Prevention

Prohibitions

- 8.1(1)** A person must not enter or work at a work area if more than 20 percent of the lower explosive limit of a flammable or explosive substance is present in the atmosphere.
- (2)** Subsection (1) does not apply to a competent, properly trained and equipped worker who is responding in an emergency.
- (3)** A person must not smoke in a work area where a flammable substance is stored, handled or processed.
- (4)** A person must not use an open flame in a work area where a flammable substance is stored, handled, processed or used, except in accordance with section 8.10.
- (5)** A person must not use a cellular phone or similar electronic device in a work area where a flammable substance is stored, handled, processed or used unless
- (a) it is certified as safe for use in a hazardous location, or
 - (b) it is used in accordance with section 8.10.
- (6)** A person must not mix, clean or use a flammable or combustible liquid at a temperature at or above its flash point in an open vessel if a potential source of ignition is in the immediate vicinity of the activity.
- (7)** A person must not use a flammable or combustible liquid at a temperature above its flash point in a washing or cleaning operation, unless the washing or cleaning equipment is specifically designed and manufactured for the use of the liquid.
- (8)** A person must not store contaminated rags used to clean or wipe up flammable substances other than in a covered metal container that has a label that clearly indicates it is to be used only for the storage of contaminated rags.

Classification of Work Sites

- 8.2(1)** If the hazard assessment required by Part 2 determines that a work area is a hazardous location, an employer must ensure that a professional engineer
- (a) subject to sub-section (b), divides and classifies the work area in accordance with Section 18 of the Canadian Electrical Code,
 - (b) for any work activity where paints, lacquers, or other flammable finishes are regularly or frequently applied by spraying, dipping, brushing or by other means, and where flammable solvents or thinners are used, divides and classifies the work area in accordance with Section 20 of the Canadian Electrical Code, and
 - (c) prepares a report and drawing(s) outlining the boundaries of the classified area and any specific measures to prevent the unintentional ignition of an explosive atmosphere.
- (2)** If hazard assessment reviews required by Part 2 determine that the basis of an area classification under subsection (1) has changed, an employer must review and update that classification

Protective procedures and precautions in non-hazardous work areas

- 8.3(1)** If the hazard assessment required by Part 2 determines that a work area is not a hazardous location an employer must ensure that flammable substances stored or used at the work area
- (a) are not in sufficient quantity to produce an explosive atmosphere if inadvertently released,
 - (b) are not stored within 30 metres of an underground shaft,
 - (c) are not stored in the immediate vicinity of the air intake of
 - (i) a ventilation supply system,
 - (ii) an internal combustion engine, or
 - (iii) the fire box of a fired heater or furnace, and
 - (d) are stored only in containers approved to
 - (i) CSA Standard B376-M1980 (R1998), *Portable Containers for Gasoline and Other Petroleum Fuels*,
 - (ii) ULC Standard C30-1995, *Containers, Safety*, or
 - (iii) NFPA Standard 30, *Flammable and Combustible Liquids Code*.
- (2)** If the work activity in a non-hazardous location requires that the contents of metallic or conductive containers or vessels used to contain flammable or combustible liquids be transferred from one container or vessel to another, an employer must ensure that static electricity is controlled by electrically bonding the containers or vessels to one another and electrically grounding them while their contents are being transferred.

Contaminated clothing and skin

- 8.4(1)** If a worker's clothing is contaminated with a flammable or combustible liquid, the worker must
- (a) avoid any activity where a spark or open flame may be created or exists,
 - (a) remove the clothing at the earliest possible time in a manner consistent with clause (a), and
 - (c) ensure that the clothing is decontaminated before it is used again.
- (2)** If a worker's skin is contaminated with a flammable or combustible liquid, the worker must wash the skin at the earliest possible time.

Protective procedures in hazardous work locations

- 8.5(1)** If the hazard assessment determines there is a potential for an explosive atmosphere to be created in a location, an employer must ensure that the atmosphere is classified as a "hazardous location" or "non-hazardous location" in accordance with the *Canadian Electrical Code*.
- (2)** An employer must ensure that, if a hazardous location is a particular work area at a work site, the boundaries of the hazardous location are
- (a) clearly identified to warn workers of the nature of the hazards associated with the presence of the flammable substance in that work area, or
 - (b) fenced off to prevent workers or equipment entering the area without authorization.
- (3)** An employer must ensure that
- (a) equipment used in a hazardous location will not ignite the flammable substance, and
 - (b) static electricity is effectively controlled by
 - i. electrically bonding to one another and electrically grounding metallic or conductive containers or vessels used to contain flammable

- or combustible liquids while their contents are being transferred from one container or vessel to another,
- ii. requiring workers to wear clothing that will not create an electrostatic discharge, or
- iii. some other effective means

- (4) In a hazardous location, an employer must ensure that all electrical wiring and appliances are certified as explosion-proof.
- (5) In a work area where a flammable or explosive substance is being stored, an employer must ensure that the area is ventilated or other means is used to maintain the concentration of flammable or explosive mixtures below 10% of the lower explosive limit of the substance.
- (6) An employer and worker must ensure that a worker in a hazardous location
 - (a) wears clothing that does not produce static electricity, and
 - (b) uses tools of a non-sparking type.
- (7) In a hazardous location, an employer must develop procedures and precautionary measures that will prevent
 - (a) the inadvertent release of a flammable substance, or
 - (b) the inadvertent release of oxygen gas where it can contact a flammable substance.
- (8) An employer must develop procedures and precautionary measures that will prevent a flammable substance igniting in a hazardous location, where it is not reasonably practicable to ensure compliance with subsection (7).

Internal combustion engines

- 8.6(1) An employer must ensure that an internal combustion engine in a hazardous location has a combustion air intake and exhaust discharge that are
 - (a) equipped with a flame arresting device, or
 - (b) located outside the hazardous location.
- (2) An employer must ensure that the temperature of all the surfaces of an internal combustion engine that are exposed to the atmosphere in a hazardous location are
 - (a) at a temperature lower than would ignite a flammable substance present in the hazardous location, or
 - (b) shielded or blanketed in such a way as to prevent a flammable substance present in the hazardous location contacting the surface.
- (3) Subsections (1) and (2) do not apply to a vehicle that is powered by an internal combustion engine.
- (4) An employer must ensure that a vehicle powered by an internal combustion engine is not located or operated in a hazardous location except in accordance with section 8.9.
- (5) An employer must ensure that an internal combustion engine is not located in a Zone 0 hazardous location under the *Canadian Electrical Code* or in a part of a Division 1 hazardous location under the *Canadian Electrical Code* that meets the description of a Zone 0 location.
- (6) An employer must ensure that an internal combustion engine is not located in a Zone 1 or Division 1 hazardous location under the *Canadian Electrical Code* unless it is equipped

with combustible gas monitoring equipment in accordance with section 18 of the *Canadian Electrical Code*.

- (7) An employer must ensure that an internal combustion engine is not located in a Class II, Division 1 or a Class III, Division 1 hazardous location.

Flare stacks, flare pits and flares

- 8.7 An employer must ensure that open flames from flare pits, flare stacks or flares are more than 25 metres beyond the boundary of a hazardous location.

Industrial furnaces and fired heaters

- 8.8(1) An employer must ensure that
- (a) a gas or oil fired furnace is designed, operated, monitored, controlled and maintained in a manner that minimizes the possibility of internal explosion of the fire box, and
 - (b) if the furnace is heating flammable substances, there are no connections between the process medium supply system and the fuel supply system or another system connected to the inside of the fire box of the furnace.
- (2) An employer must ensure that the heated substance systems referred to in subsection (1)(b) are not isolated using inserted blinds or a double block and bleed system.
- (3) A worker must not attempt to ignite a furnace manually, or to re-ignite a furnace after shutdown, until
- (a) explosive concentrations of flammable substances are eliminated from the fire box by purging or removed by another effective means, and
 - (b) tests or procedures are completed that ensure an explosive atmosphere is not present within the furnace.
- (4) An employer must ensure that intakes, exhausts and the fire box of a furnace or fired heater are not located or operated in a Division 1, Zone 0 or Zone 1 hazardous location of any Class under the *Canadian Electrical Code*.
- (5) An employer must ensure that a furnace or fired heater is not located or operated in a Division 2 or Zone 2 hazardous location of any Class under the *Canadian Electrical Code*, unless
- (a) it is totally enclosed, and
 - (b) all surfaces exposed to the atmosphere
 - (i) operate below the temperature that would ignite a flammable substance present in the hazardous location, or
 - (ii) are shielded or blanketed in such a way as to prevent a flammable substance present in the hazardous location from contacting the surface.
 - (c) the combustion air intake and exhaust discharge are equipped with a flame arresting device or are located outside the hazardous location.

Hot work

- 8.9(1) Despite any other section in this Part, an employer must ensure that hot work is done in accordance with subsections (2) and (3) if
- (a) the area is a hazardous location, or
 - (b) the area is not a hazardous location but
 - (i) a flammable substance is or may be in the atmosphere of the work area,

- (ii) a flammable substance is or may be stored, handled, processed or used in the location,
- (iii) the hot work is on or in an installation or item of equipment that contains a flammable substance or its residue, or
- (iv) the hot work is on a vessel that contains residue that may release a flammable gas or vapour when exposed to heat.

- (2) An employer must ensure that hot work is not begun until
- (a) a 'hot work' permit is issued that indicates
 - (i) the nature of the hazard,
 - (ii) the type and frequency of atmospheric testing required,
 - (iii) the safe work procedures and precautionary measures to be taken,
 - (iv) the protective equipment required, and
 - (v) the emergency procedures are available and communicated to the workers.
 - (b) the hot work location is
 - (i) made clear of combustible materials, or
 - (ii) is suitably isolated from combustible materials,
 - (c) procedures are implemented to ensure continuous safe performance of the hot work, and
 - (d) testing shows that the atmosphere does not contain
 - (i) a flammable substance, in a mixture with air, in an amount exceeding 10 percent of that substance's lower explosive limit for gas or vapours, or
 - (ii) the minimum ignitable concentration for dust.
- (3) An employer must ensure that the tests referred to in subsection (2) (d) are repeated at regular intervals appropriate to the hazard associated with the work being performed.

Hot taps

8.10(1) An employer must develop procedures in a hot tap plan specific to the type or class of hot tap work being performed before hot tap work begins.

- (2) The employer must ensure that the plan referred to in subsection (1) includes
- (a) a site hazard analysis,
 - (b) a description of the sequence of events,
 - (c) safety precautions to address the hazards, and
 - (d) an emergency response plan.
- (3) The employer must ensure that
- (a) only competent workers are permitted to carry out a hot tap operation,
 - (b) the point in the pressure-containing barrier to be hot tapped is checked and strong enough for the hot tap to be done safely,
 - (c) adequate working space is available at the location of the hot tap,
 - (d) exit routes are available and their locations known by workers involved in the work,
 - (e) workers wear appropriate personal protective equipment when a hot tap is performed on equipment containing hydrocarbons, combustible fluids, superheated steam or any other hazardous material,
 - (f) material being supplied to the equipment being hot tapped can be shut off immediately in an emergency,
 - (g) the hot tap machine and fittings are of adequate design and capability for the process, conditions, pressure and temperature, and
 - (h) the pressure in the equipment being hot tapped is as low as practical during the hot tap operation.

- (4) An employer must ensure, where reasonably practicable, that a hot tap is not undertaken if at the proposed hot tap location
- (a) the equipment contains a harmful substance,
 - (b) the equipment is in hydrogen service, or
 - (c) the equipment contains an explosive mixture.

Spray painting

- 8.11(1)** An employer must ensure that a spray booth used to apply flammable substances
- (a) is provided with ventilation, in accordance with Part 14, and which is
 - (i) in operation while spraying operations are being conducted,
 - (ii) adequate to remove flammable vapours, mists, or powders to a safe location,
 - (iii) interlocked with the spraying equipment so that the spraying equipment is made inoperable when the ventilation system is not in operation, and
 - (b) does not use equipment in the spray booth that will ignite a flammable substance.
- (2) When spray application of flammable substances is carried out other than in a spray booth, an employer must ensure that the application is
- (a) carried out in the open air at least 6 metres from any thing that might obstruct ventilation, and
 - (b) effectively isolated from all machinery and equipment that is or may become a source of ignition that is ,
 - (i) within 2 metres, measured vertically above, and
 - (iii) within 6 metres measured in other directions, from the place at which the spray painting substance is being applied.
- (3) If it is not reasonably practicable to ensure that the application is carried out as required by (2) (a), an employer must ensure that the work area where the application is carried out is adequately ventilated to remove flammable vapours, mists, or powders to a safe location.

Compressed and liquefied gas

- 8.12(1)** An employer must ensure that
- (a) compressed or liquefied gas containers are used, handled, stored and transported in accordance with the manufacturer's specifications,
 - (b) compressed or liquefied gas cylinders are secured, preferably upright, and cannot fall or roll,
 - (c) compressed or liquefied gas cylinders, piping and fittings are protected from damage during handling, filling, transportation and storage,
 - (d) compressed or liquefied gas cylinders are equipped with a valve protection cap if manufactured with a means of attachment, and
 - (e) oxygen cylinders or valves, regulators or other fittings of the oxygen using apparatus or oxygen distributing system are kept free of oil and grease.
- (2) An employer must ensure that a compressed or liquefied gas system is not exposed to heat sources that generate temperatures that may
- (a) result in the failure or explosion of the contents or the system, or
 - (b) exceed the maximum exposure temperatures specified by the manufacturer.
- (3) An employer must ensure that a compressed or liquefied gas system is kept clean and free from oil, grease and other contaminants that may
- (a) cause the system to fail, or

- (b) burn or explode if they come in contact with the contents of the system.
- (4) An employer must ensure that on each hose of an oxygen-fuel system,
 - (a) a flashback device is installed at the regulator end, and
 - (b) a back-flow prevention device is installed at the torch end.
- (5) Compressed or liquefied gas cylinders must be secured to prevent dislodgment and stored upright unless an employer ensures that another method, certified by a professional engineer, is used to protect against the hazards.
- (6) Despite subsection (5), an employer must ensure that a cylinder containing acetylene is secured and stored upright.
- (7) An employer must provide a nozzle guard for use with airless spray machinery.
- (8) A worker must ensure that
 - (a) compressed gas equipment designed to be used with a specific gas is only used with that gas,
 - (b) the cylinder valve is shut off and pressure in the hose is released when cutting or welding is not in progress,
 - (c) sparks, flames or other sources of ignition are not allowed to come in contact with the cylinders, regulators or hoses of a compressed or liquefied gas system,
 - (d) compressed air is not used to blow dust or other substances from clothing, and
 - (e) the nozzle guard of airless spray machinery is in place at all times when the machinery is operated.

Welding

General

- 8.13(1)** In this Part, "welding or allied process" means any specific type of electric or oxy-fuel gas welding or cutting process including those processes referred to in Appendix A of CSA standard W117.2 - 94, "Safety in Welding, Cutting, and Allied Processes", and includes
 - (a) arc welding, brazing, solid-state welding, soldering, resistance welding, and other welding, and
 - (b) allied processes such as arc cutting, oxygen cutting, thermal spraying, thermal adhesive bonding and other cutting.
- (2) An employer must, if reasonably practicable, adhere to the requirements of CSA standard CSA-W 117.2 -94, "Safety in Welding, Cutting and Allied Processes".
- 8.14(1)** An employer must ensure that welding or allied process equipment is erected, installed, assembled, started, operated, used, handled, stored, stopped, inspected, serviced, tested, cleaned, adjusted, carried, maintained, repaired and dismantled in accordance with the manufacturer's specifications.
- (2) An employer must ensure that a welding or allied process is performed by a designated competent person.
- 8.15(1)** An employer must ensure that, before a welding or allied process is commenced, the area within 11 meters of the operation is inspected and all combustible, flammable or explosive material, dust, gas or vapour is removed.

(2) Where a welding or allied process is performed above an area where a worker may be present, an employer must ensure that adequate means are taken to protect a worker below the operation from sparks, debris and other falling hazards.

8.16(1) An operator of an electric welding machine must not leave the machine unattended without removing the electrode.

(2) An employer must ensure that appropriate welding and ground leads are used to fasten the electric supply cable securely so that the inner wires of an electric welding machine are not exposed to damage and the cable cannot be separated from the fittings.

Work on containers

8.17(1) Unless the welding or allied process is performed in accordance with section 8.10, an employer must ensure that no welding or allied process is performed on a container, pipe, valve or fitting that

(a) holds or may have held an explosive, flammable, combustible or otherwise hazardous substance, or

(b) may become pressurized to the point of being a hazard

(2) If a welding or allied process is performed on a natural gas pipeline or a liquids pipeline associated with a natural gas pipeline, an employer must ensure that the welding or allied process is done in accordance with American Petroleum Institute standard API Recommended Practice 2201, "Procedures for Welding or Hot Tapping on Equipment in Service", Fourth Edition, September 1995.

Gas welding and allied process

8.18(1) An employer must ensure that a regulator and its flexible connecting hose are tested immediately after connection to a gas cylinder to ensure that there is no leak of the gas supply.

(2) An employer must ensure that where a leak of the gas supply develops during the performance of a gas welding or allied process,

(a) the supply of gas is immediately shut off by the worker performing the welding or allied process, and

(b) the work is not resumed until the leak is repaired.

Welding services from vehicles

Storage compartments

8.19(1) An employer and worker must ensure that welding services provided from vehicles comply with CSA Standard W117.2-01, *Safety in Welding, Cutting and Allied Processes*.

(2) An employer must ensure that gases do not accumulate and reach their lower explosive limit by providing the solid-walled storage compartments in which compressed gas cylinders are stored with vents that

(a) have a minimum of 0.18 square metres of free area for every 0.42 cubic metres of compartment volume,

(b) have the free area split evenly between the top surface and the bottom surface of the storage compartment, and

(c) are unobstructed under all conditions.

- (3) An employer must ensure that solid-walled storage compartments in which compressed gas cylinders are stored are built so that gases or vapours cannot flow into adjoining compartments.
- (4) An employer must ensure that solid-walled compartments in which compressed gas cylinders are stored use
 - (a) latching and locking hardware made of non-sparking materials, and
 - (b) electrical components appropriate for use in an explosive atmosphere if electrical components are located within the compartment.
- (5) Subsection (1) to (4) apply whether the compressed gas cylinder is stored vertically, horizontally or at an angle.

Horizontal cylinder storage

- 8.20(1) An employer must ensure that a compressed gas cylinder that is horizontal when it is transported or used in a vehicle
 - (a) is in a storage compartment that incorporates a structure of sufficient strength to prevent the cylinder from passing through it should the valve end of the cylinder be damaged and vent its contents in an uncontrolled manner,
 - (b) is in a storage compartment that incorporates a means of securing the cylinder that stops the cylinder moving within the compartment and puts the bottom of the cylinder in direct contact with the structure in clause (a), and
 - (c) is protected against scoring during insertion into, and removal from the storage compartment.
- (2) An employer must ensure that the regulator on a compressed gas cylinder that is horizontal when it is transported or used in a vehicle is protected from damage by other equipment in the storage compartment.
- (3) An employer must ensure that a storage compartment on a vehicle from which welding services are provided is certified by a professional engineer as meeting the requirements of subsections (1) and (2).

Handling cylinders

- 8.21(1) A worker must put on and secure the valve protection cap or plug, provided by the manufacturer of a compressed gas cylinder, to the valve outlet if the cylinder is not secured and not connected to dispensing equipment.
- (2) If a welding service vehicle is not in service for any reason, a worker must
 - (a) close compressed gas cylinder valves,
 - (b) remove regulators if they are not integral to the cylinder, and
 - (c) put on and secure the valve protection caps or plugs.
- (3) A worker must shut off the cylinder valve and release the pressure in the hose if a compressed gas cylinder on a welding service vehicle is not in use or the vehicle is left unattended.

Isolating Pipes and Pipelines

Isolating methods

- 8.22(1) An employer must ensure that piping containing harmful substances under pressure has
 - (a) an isolation system of blanking or blinding, or

(b) a double block and bleed isolation system providing 2 blocking seals with an operable bleed-off between the two seals.

- (2) An employer must ensure that piping that is blanked or blinded is clearly marked to indicate that a blank or blind is installed.
- (3) An employer must ensure that piping containing a harmful substance is isolated by blanking or double blocking and bleeding before and during the repair, modification or replacement of the piping.
- (4) An employer must ensure that, if 2 valves with a bleed-off valve between them are used to isolate piping, the bleed-off valve is locked in the "OPEN" position and the valves in the flow lines are functional and locked in the "CLOSED" position.
- (5) If it is not reasonably practicable to provide blanking, blinding or double block and bleed isolation, an employer must ensure that an alternate means of isolation that provides adequate protection to workers, certified as appropriate and safe by a professional engineer, is implemented.

Pigging

- 8.23(1)** A person not directly involved with a pigging and testing operation must not be in the immediate area of exposed piping during the operation.
- (2) An employer and worker must ensure that
 - (a) a pigcatcher on a pipeline is isolated from the pipeline and depressurized before the pig is removed, and
 - (b) there are no workers at the end of the pipe or in the immediate vicinity of the pigcatcher if the pipe or pigcatcher is under pressure during pigging and testing.

Part 9 – Emergency Preparedness and Response

Emergency response plan

- 9.1(1)** An employer must establish, implement and maintain an emergency response plan for responding to an emergency that may require rescue or evacuation at each of its established work sites.
- (2)** An employer must consult with affected workers in establishing the emergency response plan.
- (3)** An employer must ensure that an emergency response plan is kept current and valid for each particular work site.

Contents of plan

- 9.2** An emergency response plan must include the following:
- (a) the identification of potential emergencies for each work site;
 - (b) procedures for dealing with the identified emergencies;
 - (c) the identification of, location of and operational procedures for emergency equipment;
 - (d) the emergency response training requirements;
 - (e) the location and use of emergency facilities;
 - (f) the fire protection requirements;
 - (g) the alarm and emergency communication requirements;
 - (h) the first aid supplies and services required;
 - (i) procedures for rescue and evacuation;
 - (j) the names, contact numbers and location of designated rescue and evacuation workers; and
 - (k) the location of the work place, including coordinates where appropriate.

Rescue and evacuation workers

- 9.3(1)** An employer must designate the workers who will provide rescue services and supervise evacuation procedures in an emergency.
- (2)** An employer must ensure that designated rescue and emergency workers are trained in emergency response appropriate to the work site and the potential emergencies identified in the emergency response plan.
- (3)** The training under subsection (2) must include exercises appropriate to the work site that simulate the potential emergencies identified in the emergency response plan.
- (4)** The training exercises referred to in subsection (3) must be repeated at the intervals required to ensure that the designated rescue and evacuation workers are competent to carry out their duties.

Equipment

- 9.4(1)** An employer must provide workers designated under section 9.3 with personal protective clothing and equipment appropriate to the work site and the potential emergencies identified in the emergency response plan.

- (2)** An employer must ensure that the personal protective clothing and equipment required for emergency response or rescue is kept clean and readily available at the work site where it may be required to be used.
- (3)** Workers who respond to an emergency must wear and use personal protective clothing and equipment appropriate to the work site and the emergency.

Part 10 - First Aid

Training standards

- 10.1(1)** A person or agency that wishes to provide training in first aid
- (a) must enter into an agreement with the Chief Safety Officer for the purpose of providing training in first aid to workers under these regulations, and
 - (b) must ensure that an agreement is entered into prior to conducting any first aid training to workers.
- (2)** An approved training agency that provides the first aid training to candidates for a certificate in emergency first aid, standard first aid or advanced first aid must comply with the terms of the agreement with the Chief Safety Officer.
- (3)** A person who successfully completes first aid training by an approved training agency must meet the standards for a certificate in emergency first aid, standard first aid or advanced first aid that are adopted by St. John Ambulance, Red Cross or another training agency that has been approved by the Chief Safety Officer.

Providing services, supplies, equipment

- 10.2(1)** An employer must provide first aid services, supplies and equipment and provide a first aid room in accordance with the applicable requirements of Schedule 2, Tables 4 to 8.
- (2)** A prime contractor must ensure that first aid services, supplies and equipment and a first aid room, are available at the work site for the type of work site and the total number of workers at the work site in accordance with the applicable requirements of Schedule 2, Tables 4 to 8.
- (3)** Despite subsections (1) and (2), with acceptance of the Chief Safety Officer, the employers and prime contractor at a project may enter into a written agreement to collectively provide first aid services, supplies and equipment and provide a first aid room for workers in accordance with the applicable requirements of Schedule 2, Table 5 except that
- (a) the room may be used for other services if it is maintained appropriately to provide first aid, and
 - (b) where it is not possible or practicable to provide a supply of hot and cold potable water, a supply of cold potable water is acceptable.

Location of first aid

- 10.3** An employer and prime contractor must
- (a) ensure that first aid services, first aid equipment, supplies and the first aid room are
 - (i) located at or near the work site they are intended to serve, and
 - (ii) available and accessible during all working hours;
 - (b) ensure that first aid equipment and supplies are
 - (i) maintained in a clean, dry and serviceable condition,
 - (ii) contained in a material that protects the contents from the environment, and
 - (iii) clearly identified as first aid equipment and supplies;
 - (c) post, at conspicuous places at the work site, signs indicating the location of first aid services, equipment and supplies or, if posting of signs is not practicable, ensure that each worker knows the location of first aid services, equipment and supplies; and

(d) ensure that an emergency communication system is in place for workers to summon first aid services.

Emergency transportation

- 10.4(1)** Before workers are sent to a work site, an employer must ensure that arrangements are in place
- (a) to transport injured or ill workers from the work site to the nearest health care facility, and
 - (b) to ensure the emergency responders are informed of the location of the work place, including coordinates where appropriate.
- (2)** An employer must ensure that an ambulance service is readily available to the work site when
- (a) surface travel is available and in good drivable condition, and
 - (b) weather conditions allow safe road travel.
- (3)** Where an ambulance service is not readily available to the work site, or surface travel or weather conditions are not good, an employer must ensure that other transportation is available that
- (a) is suitable, considering the distance to be travelled and the types of acute illnesses or injuries that may occur at the work site,
 - (b) protects occupants from the weather,
 - (c) has systems that allow the occupants to communicate with the health care facility to which the injured or ill worker is being taken, and
 - (d) can accommodate a stretcher and an accompanying person if necessary.
- (4)** An employer must provide a means of communication at the work site to summon an ambulance service or transportation described in subsection (3).
- (5)** If a worker is acutely ill or injured or needs to be accompanied during transport to a health care facility, an employer must ensure that the worker is accompanied by at least one first aider, in addition to the operator of the transportation.
- (6)** Subsection (5) does not apply if there are 3 or fewer workers at the work site at the time.

First aid providers

- 10.5(1)** An employer must ensure that the number of first aiders at a work site and their qualifications and training comply with Schedule 2, Tables 6, 7 or 8.
- (2)** An employer must ensure that the first aiders at a work site have successfully completed a first aid training course approved by a Chief Safety Officer and hold a valid certificate in first aid.
- (3)** If an advanced first aider is required at a work site, that person must
- (a) be based at or near the first aid room, and
 - (b) when not in the first aid room, be easy to contact or notify when first aid services are required.
- (4)** An advanced first aider while on duty at the work site, must only perform duties that let the person remain in a fit and clean condition.
- (5)** Subsection (4) does not apply if the duties are those of a first aid provider.

- (6) An employer must keep a record and post the names of workers at a work site who are first aiders.

Duty to report injury or illness

- 10.6 If a worker has an acute illness or injury at the work site, the worker must report the illness or injury to the employer as soon as practicable.

Record of injury or illness

- 10.7(1) An employer must record every acute illness or injury that occurs at the work site in a record kept for the purpose as soon as practicable after the illness or injury is reported to the employer.

- (2) A record under subsection (1) must include the following:
- (a) the name of the worker;
 - (b) the name and qualifications of the person giving first aid;
 - (c) a description of the illness or injury;
 - (d) the first aid treatment given to the worker;
 - (e) the date and time of the illness or injury;
 - (f) the date and time the illness or injury was reported;
 - (g) where at the work site the incident occurred;
 - (h) the work-related cause of the incident, if any.

- (3) The employer must retain the records kept under this section for 3 years from the date the incident is recorded.

First aid records access

- 10.8(1) An employer must give a worker a copy of the records pertaining to the worker if the worker asks for a copy.

Part 11 - Violence

Hazard assessment

- 11.1** An employer must ensure that workplace violence is considered a hazard for the purposes of Part 2.

Policy and procedures

- 11.2** An employer must develop and implement a policy and procedures respecting potential workplace violence.

Instruction of workers

- 11.3** An employer must ensure that workers are instructed in
- (a) how to recognize workplace violence,
 - (b) the policy, procedures and workplace arrangements that effectively minimize or eliminate workplace violence,
 - (c) the appropriate response to workplace violence, including how to obtain assistance, and
 - (d) procedures for reporting, investigating and documenting incidents of workplace violence.

Response to incidents

- 11.4** Where an act of violence has occurred at a workplace, an employer must ensure that
- (a) an investigation is conducted to determine the causes, and
 - (b) procedures are amended or developed to reduce the likelihood of recurrence.
- 11.5** An employer must ensure that a worker is advised to consult a health professional of the worker's choice for treatment or referral if the worker
- (a) reports an injury or adverse symptom resulting from workplace violence, or
 - (b) is exposed to workplace violence.

Part 12 - Working Alone

Application

- 12.1(1)** This Part applies to workplaces where
- (a) a worker is working alone at a work site, and
 - (b) assistance may not readily available if there is an emergency or the worker is injured or ill.
- (2)** Working alone is a hazard for the purposes of Part 2.

Precautions required

- 12.2(1)** An employer must ensure that effective radio, telephone or other electronic communication is provided between a worker who works alone and persons capable of assisting the worker in an emergency or if the worker is injured or ill.
- (2)** Despite subsection (1), if effective electronic communication is not practicable or readily available at the work site, the employer must ensure that during the work shift
- (a) the employer or another competent worker visits the worker, or
 - (b) the worker contacts the employer or another competent worker.
- (3)** The visits or contact under subsection (2) must be at intervals of time appropriate to the nature of the hazards associated with the worker's work, the weather conditions at the time and the location of the workplace.
- (4)** An employer must ensure that practices and procedures are developed and implemented for the safety of workers who work alone.
- (5)** An employer must ensure that a worker who works alone is trained in the practices and procedures, and has appropriate emergency numbers nearby.
- (6)** Where a workplace is removed from an established area and weather conditions are at extremes, an employer must ensure that a worker who is working alone has adequate training, survival equipment and supplies for the particular situation.
- (6)** A worker must ensure that the procedures established for communicating with the employer are followed during the work shift or when the worker changes locations.

Part 13 - Toilets and Washing Facilities

Restrictions by employer

- 13.1** An employer must not place unreasonable restrictions on a worker's use of, or access to, any of the facilities required by this Part.

Drinking fluids

- 13.2(1)** An employer must ensure that an adequate supply of drinking fluids is available to workers at a work site.
- (2)** The drinking fluids available at a work site must include potable water that meets the *Guidelines for Canadian Drinking Water Quality*, published by Health Canada.
- (3)** Unless water is provided by a drinking fountain, the employer must ensure that an adequate supply of single-use drinking cups is provided in a sanitary container located by the water supply.
- (4)** If there are outlets at a work site for both potable water and non-potable fluid, the employer must ensure that the outlet for potable water has a prominent label that clearly indicates drinking water.
- (5)** Where water is provided in containers, the employer must ensure that the container is
- (a) covered adequately,
 - (b) equipped with a drain faucet, and
 - (c) periodically emptied, cleaned and refilled to ensure the water is potable.

Toilets

Exception

- 13.3** Sections 13.4 to 13.8 do not apply to
- (a) a food establishment or other such work site for which there are specific regulations under the *Public Health Act*, or
 - (b) a mobile or temporary work site at which work is being performed for a period of not more than 5 working days and the employer has arranged for workers to use local toilet facilities during that period.

Toilet facilities

- 13.4(1)** Subject to subsection (2), an employer must ensure that a work site has the number of toilets for each male and female that are required for industrial occupancy by Schedule 7 in separate toilet facilities.
- (2)** An employer may have only one toilet facility at a work site for the use of both male and female if:
- (a) the total number of workers at the work site is never more than 10, and
 - (b) the door to the toilet facility can be locked from the inside.
- (3)** If 3 or more toilets are required for men, an employer may substitute not more than two thirds of the toilets with urinals.
- (4)** If 2 toilets are required for men, an employer may substitute one of them with a urinal.

- (5) An employer must ensure that a toilet facility is
 - (a) located so that it is readily accessible to the workers who may use it,
 - (b) enclosed so workers are sheltered from view and protected from the natural elements, and
 - (c) kept in clean and sanitary condition.
- (6) An employer must ensure that toilet, washing facilities and showers at work sites other than those classed as 'industrial occupancy' are in accordance with the National Building Code, Tables 3.7.4.2A and 3.7.4.2B.

Water and drainage

- 13.5(1) If a work site is connected to a public or municipal water main and sanitary drainage system, the employer must ensure that the toilets are connected to that system.
- (2) If a work site is not connected to a public or municipal water main and sanitary drainage system, the employer must ensure that the toilets are self-contained units or connected to a septic tank.
- (3) An employer must ensure that a toilet that is a self-contained unit is emptied and serviced at regular intervals that ensure the unit does not overflow.

Hand cleaning facilities

- 13.6(1) An employer must ensure that at least one wash basin or hand cleaning facility is provided in a toilet facility.
- (2) An employer must ensure that there is one wash basin or hand cleaning facility for every 2 toilets in addition to the wash basin or hand cleaning facility required under subsection (1) if 3 or more toilets are required in a toilet facility.
- (3) An employer may substitute circular wash fountains for wash basins or hand cleaning facilities required by subsections (1) and (2) on the basis that each 500 millimetres of the fountain's circumference is equivalent to one wash basin or hand cleaning facility.

Supplies and waste receptacle

- 13.7 An employer must ensure that a toilet facility at a work site has
 - (a) toilet paper available at each toilet,
 - (b) hand cleaning agents and single-use towels of cloth or paper or air hand drying equipment at each wash basin or hand cleaning facility, and
 - (c) a covered disposal container for feminine hygiene products near each toilet used by women.

Condition of facilities

- 13.8(1) An employer must ensure that a toilet, urinal, wash basin, hand cleaning facility, circular wash fountain or shower at a work site is
 - (a) clean and sanitary, and
 - (b) operational.
- (2) An employer must ensure that changing rooms, lunch rooms, toilet facilities and rooms in which a wash basin or shower are located are not used as storage areas for materials unless the storage facilities are properly constructed for those materials.

Shower facilities

- 13.9(1)** Where a worker may be exposed to a toxic, noxious, infectious or irritating substance or may be exposed to water, dirt, dust, or high levels of heat or humidity so that the health of the employee may be adversely affected, an employer must ensure that a shower facility is provided at the work place.
- (2)** An employer must ensure that the shower facility referred to in subsection (1) has showers for each sex determined according to the maximum number of workers of each sex who are normally employed at the work place at any one time and who are or may be exposed as described in subsection (1), as follows:
- (a) where the number of workers does not exceed ten, one shower,
 - (b) where the number of workers is between 11 and 15, two showers, and
 - (c) an additional shower for each unit of ten additional workers.
- (3)** An employer must ensure that a shower facility is provided with water that may be manually adjusted to a temperature between 35C and 45C, soap, and towels or towelling.

Part 14 - Ventilation Systems

Application

- 14.1(1)** This Part applies to work sites where a mechanical ventilation system is used to control worker exposure to
- (a) an airborne contaminant that exceeds or is likely to exceed the occupational exposure limits prescribed in these regulations,
 - (b) a biological contaminant that exceeds or is likely to exceed the occupational exposure limits prescribed in these regulations,
 - (c) potentially hazardous dust, fumes, gas, mist, aerosol, smoke, vapour or other particulate of a kind or quantity that is given off by a process,
 - (d) an atmosphere that has flammable or explosive levels of gases, vapours, liquids or solids, or
 - (e) an atmosphere that has less than 19.5 percent or more than 23 percent by volume of oxygen.
- (2)** An employer must ensure that a worker's exposure to substances listed in subsection (1) is kept below the occupational exposure limits listed in Schedule 1.
- (3)** Where a worker is exposed to substances listed in Schedule 1, an employer must ensure that a hazard assessment is conducted to determine the exposure and implement the appropriate control method.

Design

- 14.2(1)** An employer must ensure that a ventilation system is
- (a) designed, installed and maintained in accordance with established engineering principles,
 - (b) designed so that a worker's breathing zone is not located between the source of emission and the ventilation equipment, and
 - (c) installed, maintained and operated according to the manufacturer's specifications.
- (2)** An employer must ensure that the general supply and distribution ventilation system is designed, constructed and operated in accordance with *ASHRAE Standard 62.1-2004 (as updated periodically)*
- (3)** Where practical, an employer must ensure that an effective local exhaust system is installed and used to minimize worker exposure at the source of the contamination.
- (4)** An employer must ensure that
- (a) externally exhausted air from a ventilation system is prevented from re-entering a work site,
 - (b) make up air of a volume that does not compromise the effectiveness of the ventilation system and other ventilation systems is provided,
 - (c) if it is a recirculating air system, the concentration of a contaminant controlled by the ventilation system and discharged within the work site from the system, does not exceed 10 percent of the contaminant's occupational exposure limit, and
 - (d) the discharged air is cleaned, scrubbed, or filtered so that it does not pose a risk to workers outside or at adjacent worksite, and meets environmental requirements.

Safety provisions

- 14.3(1)** An employer must ensure that if a ventilation system fails, provision is made to warn workers immediately, and to provide for their protection.
- (2)** An employer must ensure that workers at the work site
- (a) are trained in the correct use of the ventilation system,
 - (b) participate in the training, and
 - (c) use the ventilation system properly.
- (3)** To maintain acceptable air quality, an employer or the owner of the ventilation system must ensure that the system is
- (a) operated according to established engineering principles, and
 - (b) maintained according to an effective preventive maintenance program.

Part 15 - Joint Work Site Health & Safety Committees and Representatives

Establishing committees or representatives

Joint work site health and safety committees

- 15.1(1)** This Part applies to a work site that is directed to have a joint work site health and safety committee by a Chief Safety Officer under authority of section 7 of the *Safety Act*.
- (2)** In applying subsection (1), the Chief Safety Officer will consider the nature, and location of the work and the size and duration of the work force

Safety representatives

- 15.2** Despite section 13.1(1) and (2), where a work site in a high hazard industry, as defined in Schedule 2, has more than 5 workers working for more than one month, an employer and principal contractor must ensure that at least one worker is elected by the other workers to represent them as their safety representative.

Members

- 15.3** An employer must ensure that a joint work site health and safety committee has
- (a) at least 2 but not more than 6 worker members, and
 - (b) at least 1 but not more than 6 employer members.

Term of membership

- 15.4(1)** Members of a joint work site health and safety committee or a safety representative hold office for a term of not less than 1 year and may continue to hold office until their successors are elected or appointed.
- (2)** Members of a joint work site health and safety committee or a safety representative may be reelected or re-appointed for further terms.
- (3)** Despite subsection (1), a member of a joint work site health and safety committee or a safety representative may be replaced at any time during that member's term of office by those persons whom the member represents.

Election of worker members

- 15.5(1)** An employer and principal contractor must ensure that an election is held to elect worker members of a joint work site health and safety committee or safety representative.
- (2)** Worker members of the joint work site health and safety committee or safety representatives must be elected by workers employed at the work site who do not exercise any managerial function on behalf of the employer and principal contractor.
- (3)** Despite subsection (1), workers employed at the work site who belong to a trade union or worker association may, in accordance with the constitution or by-laws of the trade union or worker association, elect to the joint work site health and safety committee the number of worker members that is proportionate to the number of workers at the work site who belong to that trade union or worker association.

- (4) To be eligible to be elected a worker member, a person must work at the work site where the joint work site health and safety committee is established.

Appointment of employer members

15.6(1) Employer members of a joint work site health and safety committee must be appointed to the committee by an employer and principal contractor.

- (2) To be eligible to be appointed as an employer and principal contractor member, a person must be employed at the work site where the joint work site health and safety committee is established.

Co-chairs of committee

15.7(1) An employer and principal contractor must ensure that a joint work site health and safety committee has 2 co-chairs.

- (2) Worker members must select one co-chair from among themselves.
- (3) Employer members must select one co-chair from among themselves.

Recording and posting minutes

15.8 The co-chair selected by employer and principal contractor members must ensure that

- (a) minutes of each meeting of the joint work site health and safety committee are recorded,
- (b) copies of the minutes are given to the employer within 7 days after the day the meeting was held, and
- (c) copies of the minutes are posted at the work site within 7 days after the day the meeting was held.

Meetings

15.9(1) An employer and principal contractor must ensure that the joint work site health and safety committee meets within 10 days of its establishment and thereafter at least once in each three calendar months or more often if ordered by a Chief Safety Officer.

- (2) The joint work site health and safety committee must convene special meetings if requested to do so by a Chief Safety Officer.

Quorum

15.10 A quorum of a joint work site health and safety committee is one-half of the members if

- (a) both worker and employer members are present, and
- (b) at least one-half of those present are worker members.

Attendance by an officer

15.11 A safety officer may attend a meeting of a joint work site health and safety committee.

Duties of a health and safety committee

15.12(1) An employer and principal contractor must ensure that a joint work site health and safety committee performs inspections at the work site at least once before each regular meeting of the committee and more frequently where so ordered by a Chief Safety Officer.

- (2) An employer and principal contractor must ensure that a safety representative performs an inspection at the work site at least once per month and submits a report of the inspection to the employer or principal contractor.
- (3) An employer must ensure that a worker member of a health and safety committee or a safety representative is involved in the development, review and changes to a health and safety plan and program.

Representation during inspection, investigation

15.13(1) Where a safety officer inspects a work site or investigates an accident at a work site, the joint work site health and safety committee co-chairs or a safety representative may be present at that inspection or investigation unless the safety officer asks that they not be there.

- (2) A safety officer must not make a request under subsection (1) unless, in the officer's opinion, special circumstances exist that would prevent the officer from making a proper inspection or investigation if the members of the joint work site health and safety committee or a safety representative were present.

Training for members or representatives

15.14 An employer and principal contractor must ensure that safety committee co-chairs and safety representatives are trained in their duties and responsibilities within three months of their appointment or election.

Part 16 - General Safety Precautions

Impairment

- 16.1(1)** A worker with a physical or mental impairment that may affect the workers ability to safely perform assigned work must inform the immediate supervisor or manager of the impairment and must not engage in any work that may create an undue risk to the worker or any other person.
- (2)** An employer must ensure that a worker with a reported or observed physical or mental impairment is not assigned to work where the impairment may cause an undue risk to the worker or any other person.
- (3)** A person must not enter or remain at a work site where that person's ability to work is affected by drugs, alcohol or other substance or circumstance so as to create a danger to any other person.
- (4)** An employer must ensure that a person is not permitted to remain at a work site where the person's ability is affected by alcohol, drugs or other substance or circumstance so as to create a danger to that person or any other person.
- (5)** In applying subsections (3) and (4) an employer and workers must consider the effects of prescription and non-prescription drugs, sleep deprivation, and personal problems as possible sources of impairment.

Training of workers

- 16.2** Before a worker is allowed to operate a tool, piece of equipment or machine, an employer must ensure that the worker is
- (a) adequately trained in the safe operation,
 - (b) familiar with the relevant safe work practices and procedures,
 - (c) authorized and where applicable licenced or certified, and
 - (d) able to demonstrate the ability to perform the work safely.

Inspection of equipment

- 16.3** An employer and a worker must ensure that, prior to putting any tool or equipment into service, it has been inspected to ensure that all safe guards are in place and function properly and that the tool or equipment is in safe operating condition.

Servicing of equipment

- 16.4** An employer must ensure that prior to a worker cleaning, oiling, adjusting or repairing any equipment or machine
- (a) any movement that could endanger a worker is stopped, and
 - (b) any part that has been stopped has been immobilized.

Housekeeping

- 16.5(1)** An employer must ensure that a work site is kept clean and free from materials, equipment or other things that could cause workers to slip or trip.
- (2)** An employer must ensure that a work site is maintained in a condition that does not present a hazard to workers.

Working on equipment

- 16.6** Prior to a worker cleaning, repairing, adjusting or oiling any machine or equipment the employer must ensure that any moving part has been stopped and immobilized.

Lighting

- 16.7(1)** An employer must ensure that lighting at a work site is sufficient to enable work to be done safely.
- (2)** An employer must ensure that a light source above a working or walking surface is protected against damage.
- (3)** An employer must ensure that there is emergency lighting at a work site if workers are in danger if the normal lighting system fails.
- (4)** An employer must ensure that emergency lighting generates enough light so workers can
- (a) leave the work site safely,
 - (b) start the necessary emergency shut-down procedures, and
 - (c) begin to restore normal lighting.

Restricted visibility

- 16.8** Where visibility is restricted by dust, mist, smoke, steam or other substance at a work site, an employer must ensure that workers are not directed or permitted to enter the area until safe work procedures have been fully put into place.

Pallets and storage racks

- 16.9(1)** An employer must ensure that pallets used to transport or store materials or containers are loaded, moved, stacked, arranged and stored in a manner that does not create a danger to workers.
- (2)** An employer must ensure that racks used to store materials or equipment
- (a) are designed, constructed and maintained to support the load placed on them, and
 - (b) are placed on firm footings or foundations that can support the load.
- (3)** The employer and the workers at a work site must take all reasonable steps to prevent storage racks from being damaged to the extent that their integrity as a structure is compromised.
- (4)** A worker must report any damage to a storage rack to an employer as quickly as is practical.
- (5)** When a storage rack has been damaged, an employer must ensure that any load is removed from it and the rack is repaired or replaced prior to re-loading.

Restraining hoses and piping

- 16.10(1)** An employer must ensure that a hose or piping and its connections operating under pressure is restrained if workers could be injured by its movement, if part of the system fails or is inadvertently disconnected.
- (2)** Despite subsection (1), if a hose or piping and its connections operating at a working pressure of 2000 kilopascals or more cannot be restrained, an employer must ensure that

- the hose or piping and its connections are designed, installed, used, inspected and maintained to prevent a failure that could injure workers
- (a) in accordance with the manufacturer's specifications, or
 - (b) in accordance with the specifications certified by a professional engineer.
- (3) Subsection (1) does not apply to properly maintained fire hoses used by competent workers.

Securing equipment and materials

- 16.11** Where a worker may be injured if equipment or material is dislodged, moved, spilled or damaged, both the employer and the worker must take all reasonable steps to ensure the equipment or material is contained, restrained or protected to eliminate the potential danger.

Signallers

- 16.12(1)** Where these regulations require signals to be given by a designated signaller, an employer must designate a competent worker to give the signals.
- (2) An employer must ensure that, if the designated signaller uses hand signals, the signaller wears a highly visible vest, armlet or other piece of clothing that clearly identifies the worker as a designated signaller.
 - (3) A designated signaller using hand signals must wear the vest, armlet or other piece of clothing required by the employer under subsection (2).
 - (4) Before giving a signal to proceed, a designated signaller must ensure that there are no hazards in the vicinity.
 - (5) An equipment operator must take signals only from the designated signaller if a signaller is designated.
 - (6) An employer must ensure that only one designated signaller at a time gives signals to an equipment operator.
 - (7) Despite subsections (5) and (6), an equipment operator must take a "STOP" signal from any worker who may or may not be a designated signaller.
 - (8) Despite subsections (5) and (6), if signals cannot be transmitted properly between a designated signaller and an equipment operator, an employer must ensure that
 - (a) additional designated signallers are available to transmit signals, or
 - (b) a means of ensuring clear and complete communication other than using designated signallers is provided.

Skeleton structures

- 16.13(1)** An employer must ensure that the erection drawings and procedures for a project that includes connecting the structural parts of a skeleton structure are prepared and certified by a professional engineer.
- (2) The erection drawings and procedures referred to in subsection (1) must
 - (a) show the sequence in which the structure is erected,
 - (b) show the horizontal and vertical placement of base structures and footings, and
 - (c) ensure that the structure is stable during assembly.

- (3) If the erection procedures referred to in subsection (1) must be changed because of the site conditions or unanticipated loads on the skeleton structure, the employer must ensure that the changed, additional or alternative procedures are prepared and certified by a professional engineer before they are used.
- (4) An employer must ensure that at a work site where a skeleton structure is being erected that a competent worker
 - (a) coordinates the operation until the structure is permanently stabilized, and
 - (b) directs the removal of the temporary supporting structures.

Stabilizing masonry walls

- 16.14** An employer must ensure that temporary supporting structures
- (a) are used to stabilize a masonry wall that is more than 2 metres high during its erection, and
 - (b) are not removed until the wall is permanently stabilized.

Tire servicing

- 16.15(1)** An employer must ensure that a competent worker services, inspects, disassembles and reassembles a tire or tire and wheel assembly in accordance with the manufacturer's specifications and site specific safe work procedures developed by the employer.
- (2) An employer must ensure that the manufacturer's service manuals for tires and wheels serviced by the employer are readily available to workers.
 - (3) An employer must ensure that only a competent worker is assigned to mount and inflate a tire mounted on a split-rim or locking ring wheel and only if
 - (a) the wheel assembly is in a tire cage or is similarly restrained, and
 - (b) flying parts from split-rim or locking ring failure or tire rupture are contained.
 - (4) An employer must ensure that a worker uses a clamp-on type of connector with a positive pressure control and an adequate length of hose to inflate split rim and locking ring wheels.
 - (5) If a clamp-on type of connector is used to inflate any tire, the employer must ensure that the worker
 - (a) uses an in-line pressure gauge and positive pressure control, and
 - (b) inflates the tire from a safe position out of the immediate danger area.
 - (6) A worker must not inflate a tire with a clamp-on type of connector unless the worker is in a safe position and out of the immediate danger area, and the system has a positive pressure control.
 - (7) A worker must ensure that the valve core has been removed and all the air pressure has been released from a tire prior to welding or applying any other heat to a tire and wheel assembly.
 - (8) A worker must ensure that when a tire is disassembled from a wheel assembly
 - (a) the wheel is cleaned and inspected for damage prior to re-assembly,
 - (b) the tire is inspected internally to ensure there is no damage prior to re-assembly, and
 - (c) the tire is inflated to the pressure recommended by the manufacturer of the tire or the equipment on which it will be installed.

- (9) An employer and worker must ensure that a tire on a multi piece wheel is deflated completely prior to dismounting and where it is part of a dual wheel arrangement, both tires are deflated prior to removing any wheel nuts.
- (10) An employer must ensure that a tire mounted on a vehicle is removed from service if
 - (a) it has been subjected to excessive heat by driving on it while severely under-inflated,
 - (b) the vehicle or equipment has been in direct contact with an electrical source, or
 - (c) examination of the tire indicates severe internal or external damage to the carcass of the tire.

Vehicle traffic control

- 16.16(1)** If vehicle traffic at or on a work site is dangerous to workers on foot, in vehicles or on equipment, an employer must ensure that the traffic is controlled to protect the workers.
- (2) An employer must ensure that a worker on foot and exposed to traffic wears high visibility clothing, including a high visibility vest or similar garment and a hard hat of a high visibility color, as a minimum.
 - (3) A worker on foot and exposed to traffic must wear high visibility clothing.
 - (4) The employer must ensure that a designated traffic controller wears high visibility clothing that
 - (a) clearly identifies the worker as a designated traffic controller, and
 - (b) is retroreflective when the worker is controlling traffic in the dark or when visibility is poor.
 - (5) A worker designated to control traffic must wear high visibility clothing that complies with subsections (2) and (4).
 - (6) Where a worker is designated to control traffic, the employer must ensure that the designated traffic controller uses a handheld signal light if it is dark or visibility is poor.
 - (7) If traffic on a highway is dangerous to workers, an employer must protect the workers from the traffic using any or a combination of
 - (a) warning signs,
 - (b) barriers,
 - (c) lane control devices,
 - (d) flashing lights,
 - (e) flares,
 - (f) conspicuously identified pilot vehicles,
 - (g) automatic or remote controlled traffic control systems,
 - (h) designated persons directing traffic, or
 - (i) methods described in the *Manual of Uniform Traffic Control Devices for Canada* (1998), and its updates published up to and including April 30, 2004, published by the Transportation Association of Canada.

Working on ice

- 16.17(1)** Prior to a worker conducting any work on ice where the water beneath the ice is more than 1 metre deep at any point, an employer must ensure that the ice will support any anticipated load to be placed on it.

- (2) An employer must test the ice for the purposes of subsection (1)
 - (a) before work begins, and
 - (b) as often during the work as necessary to ensure the safety of the workers.
- (3) An employer must ensure that safe work procedures are developed, implemented and communicated to the workers when work is to be performed on ice or when workers must drive or operate equipment on ice.
- (4) Where a worker is required to drive, operate or work on ice, an employer must ensure that the worker is trained
 - (a) in the hazards and the safe work procedures associated with operating, working or driving on ice, and
 - (b) in rescue survival techniques in case of emergency.
- (5) An employer and a worker must ensure that no work is conducted and no worker remains on ice that is less than 10 cm in thickness.

Working on or over water

- 16.18(1)** An employer must develop and implement safe work procedures when a worker is required to work on, near or over water.
- (2) Where there is a risk of workers falling and drowning, an employer must ensure that the safe work procedures, as required by subsection (1) include procedures or devices to prevent falling, methods of recovery in case of falling, and instruction and training of workers who may be involved in rescue work.
 - (3) An employer must ensure that a worker uses an appropriate fall protection system in combination with a life jacket or personal flotation device if the worker
 - (a) may fall into cold or fast moving water, or
 - (b) could drown from a fall, other than from a boat.
 - (4) Where workers can not be protected from falling into the water, the employer must ensure that a rescue boat of appropriate size and capacity, along with the necessary rescue equipment, is readily available to affect a rescue. Where the work is being conducted on a river, the boat must be kept downstream from the work.
- (4) An employer must ensure that the rescue boat required by subsection (4) has a suitably trained operator in charge of the boat as well as another person to aid in the rescue.

Cold weather work

- 16.19** An employer must ensure that outdoor work schedules in cold weather are in accordance with the requirements of Schedule 10.

Part 17 - Lifting and Handling Loads

Assessing manual handling hazards

- 17.1(1)** Before a worker manually lifts, lowers, pushes, pulls, carries, handles or transports a load that could injure the worker, an employer and a worker must perform a hazard assessment that considers
- (a) the weight of the load,
 - (b) the size of the load,
 - (c) the shape of the load,
 - (d) the number of times the load will be moved, and
 - (e) the manner in which the load will be moved.
- (2)** An employer must ensure that the safe work practices identified in the hazard assessment are implemented and followed by the workers at the work site.

Equipment

- 17.2 (1)** Where a worker must regularly handle awkward or heavy loads, an employer must provide appropriate equipment or devices for lifting, lowering, pushing, pulling, carrying, handling or transporting those loads.
- (2)** An employer must ensure that workers use the equipment or device provided under subsection (1).
- (3)** Workers must use the equipment or device provided by an employer for lifting, lowering, pushing, pulling, carrying, handling or transporting heavy or awkward loads.
- (4)** For the purposes of this section, a heavy or awkward load includes equipment, goods, supplies, materials, persons, animals or any other thing that an employer may require a worker to handle.

Adapting heavy or awkward loads

- 17.3** If the equipment or device provided under section 17.1 is not reasonably practicable in a particular circumstance or for a particular heavy or awkward load, the employer must take all practicable means,
- (a) to adapt the load to facilitate lifting, lowering, pushing, pulling, carrying, handling or transporting the load without injuring workers, or
 - (b) to otherwise minimize the manual handling required to move the load.

Musculoskeletal injuries

- 17.4** If a worker reports to the employer what the worker believes to be work related symptoms of a musculoskeletal injury, the employer must promptly
- (a) review the activities of that worker, and of other workers doing similar tasks, to identify work-related causes of the symptoms, if any,
 - (b) conduct a hazard assessment to identify safe work practices, and
 - (c) take corrective measures to avoid further injuries, if the causes of the symptoms are work related.

Part 18 - Powered Mobile Equipment

Operator responsibilities

- 18.1** A worker must not operate powered mobile equipment unless the worker
- (a) is trained to safely operate the equipment,
 - (b) has demonstrated competency in operating the equipment to a competent worker designated by the employer,
 - (c) is familiar with the equipment's operating instructions,
 - (d) is duly licenced or certified where so required, and
 - (e) is authorized by the employer to operate the equipment.
- (2)** Subsections (1)(a), (b) and (c) do not apply if a worker in training operates the equipment under the direct supervision of a competent worker designated by the employer.
- (3)** If a worker uses a personal vehicle for work purposes, the employer must ensure that the worker meets the requirements of subsection(1) by complying with the appropriate 'licenced driver' requirements of the territorial legislation.
- (4)** The operator of powered mobile equipment must
- (a) report to the employer any conditions that affect the safe operation of the equipment,
 - (b) operate the equipment safely,
 - (c) maintain full control of the equipment at all times,
 - (d) use the seat belts and other safety equipment in the powered mobile equipment,
 - (e) ensure that passengers in the powered mobile equipment use the seat belts and other safety equipment in the powered mobile equipment, and
 - (f) keep the cab, floor and deck of the powered mobile equipment free of materials, tools or other objects that could interfere with the operation of the controls or create a tripping or other hazard to the operator or other occupants of the equipment.

Visual inspection

- 18.2 (1)** Before operating powered mobile equipment, the operator must complete a visual inspection of the equipment and the surrounding area to ensure that the powered mobile equipment is in safe operating condition and that no worker, including the operator, is endangered when the equipment is started up.
- (2)** While powered mobile equipment is in operation, the operator must complete a visual inspection of the equipment and surrounding area at the intervals required by the manufacturer's specifications or, in the absence of manufacturer's specifications, the employer's operating procedures.
- (3)** Despite subsections (1) and (2), if the powered mobile equipment is continuously operated as part of an on-going work operation, the operator may visually inspect the equipment during the work shift or work period as required by the employer's operating procedures.
- (4)** A person must not start powered mobile equipment if the visual inspection under subsection (1) is not completed.

Dangerous movement

- 18.3(1)** If the movement of a load or the cab, counterweight or any other part of powered mobile equipment creates a danger to workers,
- (a) an employer must not permit a worker to remain within range of the moving load or part, and
 - (b) the operator must not move the load or the equipment if a worker is exposed to the danger.
- (2)** If the movement of a load or the cab, counterweight or any other part of powered mobile equipment creates a danger to workers, a worker must not remain within range of the moving load or part.
- (3)** If a worker could be caught between a moving part of a unit of powered mobile equipment and another object, an employer must
- (a) restrict entry to the area by workers, or
 - (b) require workers to maintain a clearance distance of at least 600 millimetres between the powered mobile equipment and the object.

Pedestrian traffic

- 18.4(1)** An employer must ensure that, if reasonably practicable,
- (a) walkways are designated that separate pedestrian traffic from areas where powered mobile equipment is operating, and
 - (b) workers use the designated walkways.
- (2)** Where it is not reasonably practicable to use designated walkways, an employer must ensure that safe work practices and procedures are used to protect workers who enter areas where powered mobile equipment is operating.

Load securement

- 18.5** An employer and worker must ensure that material or equipment
- (a) that is being transported is loaded and secured to prevent movement, and
 - (b) does not extend beyond the carrier in such a way as to create a hazard.

Inspection and maintenance

- 18.6(1)** An employer and supplier must ensure that powered mobile equipment is inspected by a competent worker for defects and conditions that are hazardous or may create a hazard.
- (2)** An inspection under subsection (1) must be made in accordance with the manufacturer's specifications or those of a professional engineer.
- (3)** An employer and supplier must ensure that powered mobile equipment is maintained in accordance with the manufacturer's specifications or those of a professional engineer.
- (4)** If an inspection under subsection (1) indicates that powered mobile equipment is hazardous or potentially hazardous, an employer and supplier must ensure that
- (a) the health and safety of a worker who may be exposed to the hazard is protected immediately,
 - (b) the powered mobile equipment is identified and not operated until the defect is repaired or the condition is corrected, and
 - (c) the defect is repaired or the unsafe condition corrected as soon as reasonably practicable.

- (5) Despite subsection (4), if an inspection under subsection (1) indicates that the powered mobile equipment is potentially hazardous but the equipment can be operated safely, an employer and supplier must ensure that
 - (a) the operator is made aware of the potential hazard, and
 - (b) the defect or condition is repaired as soon as reasonably practicable.
- (6) An employer and supplier must ensure that a record of the inspections and maintenance carried out as required by subsections (1) and (2) is kept at the work site and readily available to a worker who operates the powered mobile equipment.
- (7) If a worker uses a personal vehicle for work purposes, the worker must ensure that the vehicle is maintained in sound mechanical condition in accordance with the manufacturer's maintenance specifications.

Maintenance on elevated parts

- 18.7(1) An employer and worker must ensure that where elevated parts of powered mobile equipment are being maintained or repaired by workers, the parts and the powered mobile equipment are securely blocked in place and cannot move accidentally.
- (2) An employer and worker must ensure that hydraulic or pneumatic jacks are not used for blocking equipment unless they are fitted with devices to prevent collapse in the event of loss of pressure.

Starting engines

- 18.8 An employer and supplier must ensure that powered mobile equipment is provided with a device that prevents engine starter engagement while the engine is coupled to the drive mechanism or clutches.

Unattended equipment

- 18.9(1) A person must not leave the controls of powered mobile equipment unattended unless the equipment is secured against unintentional movement by an effective method of immobilizing the equipment.
- (2) A person must not leave the controls of powered mobile equipment unattended unless a suspended or elevated part of the powered mobile equipment is either landed, secured in a safe position, or both.

Brakes

- 18.10 An employer and supplier must ensure that vehicles and mobile equipment have service and park braking systems maintained to the manufacturer's specifications.

Steering

- 18.11 An employer and supplier must ensure that where wheeled mobile equipment depends on engine power for steering, and power failure results in loss of directional control
 - (a) a supplementary steering system is provided to enable the operator to steer to a controlled stop,
 - (b) a supplementary steering system will activate automatically upon failure of the primary system, and

(c) there is an audible and visual warning device to alert the operator to the loss of the primary steering system.

Lights

- 18.12(1)** An employer and supplier must ensure that powered mobile equipment operated during hours of darkness or when, due to insufficient light or unfavourable atmospheric conditions, workers and vehicles are not clearly discernible at a distance of at least 150 metres, is equipped with lights that illuminate
- (a) a direction in which the equipment travels,
 - (b) the working area around the equipment, and
 - (c) the control panel of the equipment.
- (2)** An employer and supplier must ensure that the lights on earthmoving construction machinery comply with SAE Standard J1029 (1996), *Lighting and Marking of Construction, Earthmoving Machinery*.

Windows and windshields

- 18.13(1)** An employer and supplier must ensure that glazing used as part of the enclosure for a cab, canopy or rollover protective structure on powered mobile equipment is safety glass or another non-shattering material providing at least equivalent protection.
- (2)** An employer and supplier must ensure that the glazing on an enclosure of powered mobile equipment complies with ANSI Standard ANSI/SAE Z26.1 (1996), *Safety Glazing Material for Glazing Motor Vehicles and Motor Vehicle Equipment Operating on Land Highways — Safety Standard*.
- (3)** An employer and supplier must ensure that broken or cracked glazing that obstructs an operator's view from powered mobile equipment is replaced as soon as reasonably practicable.
- (4)** An employer and supplier must ensure that a windshield on powered mobile equipment has windshield wipers of sufficient size and capacity to clean matter that obstructs the operator's view from the windshield.

Other safety equipment

- 18.14** An employer and supplier must ensure that powered mobile equipment has
- (a) a device within easy reach of the operator that permits the operator to stop, as quickly as possible, the power unit, drawworks, transmission or any ancillary equipment driven from the powered mobile equipment, including a power take-off auger or digging, lifting or cutting equipment,
 - (b) an effective means of warning workers of the presence, general dimensions and movement of the equipment if the presence, dimensions or movement may be a danger to a worker,
 - (c) seats or other installations sufficient to ensure the safety of the operator and any other workers who may be in or on the equipment while it is in motion,
 - (d) mirrors to provide the operator a reflected view to the rear of the equipment, and
 - (e) safety clips on the connecting pins if the powered mobile equipment is equipped with a trailer hitch.

Controls

- 18.15** An employer and supplier must ensure that the operating controls of powered mobile equipment are clearly and legibly identified to show the function they serve.

Warning signal

- 18.16(1)** An employer and supplier must ensure that, if a powered mobile equipment operator's view of the equipment's path of travel is obstructed or cannot be seen directly or indirectly in a direction, the powered mobile equipment has
- (a) an automatic audible warning device that
 - (i) activates if the equipment controls are positioned to move the equipment in that direction, and
 - (ii) is audible above the ambient noise level,
 - (b) a warning device or method appropriate to the hazards of the work site, or
 - (c) an automatic system that stops the equipment if a worker is in its path.
- (2)** Despite subsection (1), an employer or supplier may disconnect or switch off the warning device if there are no workers or other equipment working nearby.
- (3)** If it is impractical to equip powered mobile equipment in accordance with subsection (1), the operator must ensure that the operator and other workers are protected from injury before moving the equipment by
- (a) doing a visual inspection on foot of the area into which the equipment will move,
 - (b) following the directions of a traffic control or warning system, or
 - (c) getting directions from a worker who
 - (i) has an unobstructed view of the area into which the equipment will move, and
 - (ii) is stationed in a safe position in continuous view of the operator.

Emergency escape

- 18.17(1)** An employer and supplier must ensure that powered mobile equipment with a single cab entrance door, manufactured after January 1, 2000 has an alternate means of escape that
- (a) is clearly marked both inside and outside the cab,
 - (b) is located on a different surface than the cab entrance,
 - (c) is usable regardless of the position of the moveable components or accessories of the machine,
 - (d) can be opened from both inside and outside without the use of tools,
 - (e) requires a force of 135N or less to open, and
 - (f) provides a clear opening of at least 65 cm if circular, 60 cm if square, or 47 cm by 65 cm if rectangular.
- (2)** An employer and supplier must ensure that powered mobile equipment with a single cab entrance door, manufactured before January 1, 2000 has an alternate means of escape that met the requirement at the date of manufacture.
- (3)** Despite subsection (2), the Chief Safety Officer may order the installation of a second means of escape where the current operating conditions pose a significant hazard to the operator.

Bulkheads

- 18.18** An employer and supplier must install a bulkhead or provide other effective means to protect the operator of a vehicle transporting equipment or materials that may shift during an emergency stop.

Guards and screens

- 18.19(1)** An employer and supplier must ensure that powered mobile equipment has a cab, screen, shield, grill, deflector, guard or other adequate protection for the operator if the hazard assessment indicates there is a possibility that the operator may be injured by flying or projecting objects while loading, unloading or operating the equipment.
- (2)** An employer and supplier must ensure that mobile equipment with moving parts close to the operator's compartment are guarded so that
- (a) the controls inside the cab can not be operated from outside the cab, and
 - (b) no part of the operator inside the cab can project into the hazardous area outside the cab.

Rollover protective structures

- 18.20(1)** An employer and supplier must ensure that the following types of powered mobile equipment weighing 700 kilograms or more have rollover protective structures:
- (a) tracked (crawler) or wheeled bulldozers, loaders, tractors or skidders, other than those operating with side booms manufactured before January 1, 2006;
 - (b) back hoes with a limited horizontal swing of 180 degrees;
 - (c) motor graders;
 - (d) self-propelled wheeled scrapers;
 - (e) industrial, agricultural and horticultural tractors, including ride-on lawnmowers;
 - (f) wheeled trenchers;
 - (g) compactors/rollers;
 - (h) self propelled rock drills moved by an on-board operator;
 - (i) pipe layers or side boom tractors manufactured after January 1, 2006.
- (2)** Despite subsection (1), a safety officer may order the installation of a ROPS on a piece of powered mobile equipment where the design of the equipment or the circumstances of use present a hazard to the operator.
- (3)** An employer and supplier must ensure that a rollover protective structure complies with the applicable requirements of
- (a) CSA Standard B352.0-95 (R1999), *Rollover Protective Structures (ROPS) for Agricultural, Construction, Earthmoving, Forestry, Industrial and Mining Machines — Part 1: General Requirements*, and
 - (i) CSA Standard B352.1-95 (R1999), *Rollover Protective Structures (ROPS) for Agricultural, Construction, Earthmoving, Forestry, Industrial and Mining Machines – Part 2: Testing Requirements for ROPS on Agricultural Tractors*, or
 - (ii) CSA Standard B352.2-95 (R1999), *Rollover Protective Structures (ROPS) for Agricultural, Construction, Earthmoving, Forestry, Industrial and Mining Machines — Part 3: Testing Requirements for ROPS on Construction, Earthmoving, Forestry, Industrial, and Mining Machines*,
 - (b) SAE Standard J1042 (2003), *Operator Protection for General-Purpose Industrial Machines*,
 - (c) SAE Standard J1194 (1999), *Rollover Protective Structures (ROPS) for Wheeled Agricultural Tractors*,
 - (d) ISO Standard 3471:1994, *Earth-moving machinery – Roll-over protective structures – Laboratory tests and performance requirements*,
 - (e) OSHA Standard 1928.52, *Protective Frames for Wheel-type Agricultural Tractors – Tests, Procedures and Performance Requirements*,
 - (f) a predecessor of the standard that was in effect at the time the powered mobile equipment was designed or manufactured, or

(g) a professional engineer, where the ROPS was built by other than a recognized manufacturer.

- (4) If powered mobile equipment is not referred to in subsection (1) and a hazard assessment identifies rollover as a potential hazard, the employer and supplier must
- (a) equip the powered mobile equipment with a rollover protective structure that is either supplied by the manufacturer or certified by a professional engineer as being suited to that equipment, or
 - (b) institute safe work procedures that eliminate the possibility of rollover.

Seat belts

- 18.21(1)** An employer and supplier must ensure that the powered mobile equipment fitted with a rollover protective structure has seat belts for the operator and passengers that comply with
- (a) SAE Standard J386 (1997), *Operator Restraint System for Off-Road Work Machines*, or
 - (b) SAE Information Report J2292 (2000), *Combination Pelvic/Upper Torso (Type 2) Operator Restraint Systems for Off-Road Work Machines*.
- (2) Where powered mobile equipment has been fitted with seat belts, a worker must ensure that they are worn while operating the equipment.
- (3) Despite subsection (1), if the work process makes wearing the seat belts in the powered mobile equipment impracticable, the employer may permit workers to wear shoulder belts or use bars, screens or other restraining devices designed to prevent the operator or a passenger from being thrown out of the rollover protective structure.

Falling objects protective structures

- 18.22(1)** Where a hazard assessment identifies that an operator of powered mobile equipment is exposed to falling objects, the employer and supplier must ensure that the powered mobile equipment is equipped with a falling objects protective structure.
- (2) A falling objects protective structure must comply with the appropriate requirements of
- (a) SAE Standard J167 (2002), *Overhead Protection for Agricultural Tractors – Test Procedures and Performance Requirements*,
 - (b) SAE Standard J/ISO 3449 (1998), *Earthmoving Machinery — Falling- Object Protective Structures — Laboratory Tests and Performance Requirements*, or,
 - (c) SAE Standard J1042 (2003), *Operator Protection for General – Purpose Industrial Machines*.
- (3) An employer and supplier, instead of using a falling objects protective structure that complies with subsection (2), may use equipment that is certified by a professional engineer as providing the equivalent or better protection.

Recertification after modification

- 18.23** An employer and supplier must ensure that any addition, modification, welding or cutting of a rollover protective structure or a falling objects protective structure is done in accordance with the instructions of, and is re-certified as restored to its original performance requirements by, the equipment manufacturer or a professional engineer.

Load handling attachments

18.24 An employer and supplier must ensure that buckets, forks, booms, hoists and other load handling attachments or devices are designed, fabricated, installed and used on equipment as specified by the manufacturer or as specified by a professional engineer.

Fuel tank in cab

18.25 An employer and supplier must ensure that a fuel tank located in the enclosed cab of a unit of powered mobile equipment has the filler spout and vents

- (a) extending outside the cab, and
- (b) that are sealed to prevent vapours from entering the enclosed cab.

Worker transportation

- 18.26(1)** An employer must ensure that no part of an operator's or passenger's body extends beyond the side of a vehicle or powered mobile equipment while it is in operation.
- (2)** An employer must ensure that equipment or material in a vehicle or unit of powered mobile equipment is positioned or secured to prevent injury to the operator and passengers, if any.
 - (3)** An employer must ensure that sufficient protection against inclement weather is provided for workers travelling in a vehicle or unit of powered mobile equipment.
 - (4)** If a vehicle or unit of powered mobile equipment with an enclosed body is used to transport workers, an employer must ensure that the equipment's exhaust gases do not enter the enclosed body.
 - (5)** An employer must ensure that seating and seat belts are provided for each person riding in a vehicle used to transport workers.

Riding on loads

18.27 A person must not ride on top of a load that is being moved.

Hazardous loads

- 18.28(1)** An employer must ensure that workers are not servicing or maintaining a vehicle while flammable, combustible or explosive materials are
- (a) being loaded into or unloaded from the vehicle, or
 - (b) in the vehicle, other than in the vehicle's fuel tank or a portable fuel tank that is approved to the appropriate ULC standard for that tank.
- (2)** For the purposes of subsection (1), servicing and maintaining a vehicle does not include checking or topping up fluid levels or air pressure.
 - (3)** A worker must not service or maintain a vehicle in contravention of subsection (1).

Tank trucks

18.29(1) The operator must ensure that a tank truck containing flammable, combustible or explosive materials is bonded and grounded while

- (a) its loading lines are connected or disconnected, and
- (b) the contents of the tank truck are being transferred.

- (2) Section 18.28 does not apply to a commercial tank truck designed to transport flammable, combustible or explosive materials, except in cases where hot work is necessary.

Refuelling

- 18.30(1)** An employer must ensure that while refueling a vehicle, powered mobile equipment, watercraft or aircraft a worker does not
- (a) smoke tobacco within 7.5 metres while it is being refuelled,
 - (b) refuel when there is a source of ignition within 7.5 metres, or
 - (c) dispense flammable fuels into the fuel tank, while its engine is running.
- (2) While refueling a vehicle, powered mobile equipment, watercraft or aircraft a person must not
- (a) smoke tobacco within 7.5 metres while it is being refuelled,
 - (b) refuel when there is a source of ignition within 7.5 metres, or
 - (c) dispense flammable fuels into the fuel tank while its engine is running.
- (3) An employer must ensure that a worker dispensing flammable fuel
- (a) takes precautions to prevent the fuel overflowing or spilling,
 - (b) does not knowingly overfill the fuel system, and
 - (c) does not use an object or device that is not an integral part of the hose nozzle valve assembly to maintain the flow of fuel.
- (4) Subsections (1)(c) and (2)(c) do not apply to the fuelling system of the motor vehicle, powered mobile equipment, watercraft or aircraft if its manufacturer or a professional engineer certifies
- (a) it is safe to refuel while the engine is running, and
 - (b) the safe work practices to be used during the refueling.

All-Terrain Vehicles and Snow Vehicles

Three-wheeled all-terrain cycles

- 18.31** A person must not use a three-wheeled all-terrain vehicle at a work site.

Operator's manual

- 18.32** An employer and supplier must ensure that the operator's manual for an all-terrain vehicle or snow vehicle is kept in a secure place with the vehicle or at another location readily accessible to the operator.

Load and slope limitations

- 18.33(1)** The operator of an all-terrain vehicle or snow vehicle must ensure that, if it is used to move a load, the load conforms to the weight, height and other limits specified by the manufacturer of the all-terrain vehicle or snow vehicle.
- (2) If the manufacturer has not set limits for operation of the all-terrain vehicle or snow vehicle on sloping ground, the employer must implement safe work procedures appropriate for the slopes on which the equipment is used.

Forklift Trucks

Load chart

18.34 An employer and supplier must ensure that a forklift truck has a durable and legible load rating chart that is readily available to the operator.

Seat belt

18.35 If a forklift truck is equipped with a seat belt by the original equipment manufacturer or a seat belt is added to the equipment at some later date, an employer must ensure that the seat belt is present and in useable condition.

Pile Driving Equipment and Practices

Chocking

18.36 The operator of pile driving equipment must ensure that a pile hammer is securely chocked while suspended by the hammer line when the equipment is not operating.

Pile hoisting

18.37(1) The operator of pile driving equipment must ensure that pilings are not hoisted in the leads if workers who are not directly involved in the pile hoisting are on the superstructure or within range of a falling pile.

(2) A worker must not
(a) remain or ride on a load or part of a load being moved, raised or lowered by pile driving equipment, or
(b) be on the superstructure of pile driving equipment or within range of a falling pile if the worker is not directly involved in the pile hoisting.

Restraining hoses and connections

18.38 An employer and supplier must ensure that the pressure hoses of pile driving equipment with pressure hammers have, on the pressure side of all hose connections, safety chains or ropes designed to protect workers should the hoses or connections fail.

Brake bands and clutches

18.39 An employer must ensure that the brake bands and clutches of pile driving equipment
(a) are inspected at the beginning of a work shift, by a competent worker designated by the employer, and

(b) are dismantled and cleaned or replaced before they are used, if the worker finds contamination by oil or grease,

Timber piles

18.40 An employer must ensure that
(a) workers in the area of a timber pile being struck by a pile driver are protected from any danger that may result from the pile shattering, and
(b) before piles are placed in position for driving, pile heads are cut square and timber piles are free of debris, bark and splintered wood.

Crane boom inspection

- 18.41(1)** An employer and supplier must ensure that a crane boom used for driving piles with a vibratory hammer is inspected
- (a) at intervals specified in the manufacturer's specifications, or
 - (b) every 600 operating hours whichever comes first, and
- is certified by a professional engineer as safe for continued use.
- (2)** An employer and supplier must ensure that a crane boom with a vibratory pile extractor is inspected
- (a) at intervals specified in the manufacturer's specifications, or
 - (b) every 200 operating hours whichever comes first, and
- is certified by a professional engineer as safe for continued use.
- (3)** An employer and supplier must ensure that a crane boom used for dynamic compaction is inspected
- (a) at intervals specified in the manufacturer's specifications, or
 - (b) every 200 operating hours whichever comes first, and
- is certified by a professional engineer as safe for continued use.
- (4)** An employer and supplier must ensure that the inspections required by subsections (1), (2) and (3) are undertaken before the crane is returned to lifting service.

Part 19 - Cranes, Hoists and Lifting Devices

General Requirements

Application

- 19.1(1)** This Part applies to employers and suppliers who use or supply lifting devices, including cranes and hoists, with a rated load capacity of 2000 kilograms or more.
- (2)** Sections 19.2 to 19.17 apply to roofer's hoists regardless of their rated load capacity.
- (3)** Despite subsection (2), sections 19.5, 19.10, 19.6(4) and 19.7 do not apply to roofer's hoists.
- (4)** Despite subsection (1), an employer must ensure that a lifting device with a rated load capacity of less than 2000 kilograms
- (a) has the rated load capacity of the equipment shown on the equipment, and
 - (b) is operated, maintained, inspected and certified as required by the manufacturer or as certified by a professional engineer.

Not commercially manufactured

- 19.2** An employer must ensure that a lifting device that is not commercially manufactured is fit and safe for use as a lifting device and it is certified by a professional engineer, prior to being placed into service.

Identification of components

- 19.3** An employer and supplier must ensure that all major structural, mechanical and electrical components of a lifting device are permanently and legibly identified as being component parts of a specific make and model of lifting device.

Rated load capacity

- 19.4(1)** An employer and supplier must ensure that a lifting device has a plate or weatherproof label permanently secured to it that legibly shows
- (a) the manufacturer's rated load capacity,
 - (b) the manufacturer's name, and
 - (c) the model, serial number and the year of manufacture or shipment date.
- (2)** An employer and supplier must ensure that a lifting device that is not commercially manufactured has a plate, weatherproof label or other marking permanently secured to it that legibly shows the rated load capacity according to the professional engineer's certification.

Load charts

- 19.5(1)** An employer and supplier must ensure that a mobile crane or boom truck is equipped at all times with load charts showing the rated load capacity of the mobile crane or boom truck at all permitted boom angles and boom radii.
- (2)** An employer and supplier must ensure that a tower crane has a load chart
- (a) conspicuously and permanently secured to the cab, and
 - (b) showing the manufacturer's rated capacity loads at various radii of a two-part line and a four-part line separately.

Operator requirements, certification

- 19.6(1)** An employer must ensure that a crane, hoist or lifting device is only operated by a competent worker authorized by the employer to operate the equipment.
- (2)** No worker other than the competent worker authorized by the employer may operate a crane, hoist or lifting device.
- (3)** Before operating a crane, hoist or lifting device, an operator must demonstrate to the employer that the worker is competent in the equipment's operation, the load charts and in the code of signals for hoisting operations.
- (4)** An employer must ensure that an operator of a crane, that is not a tower crane, with a rated capacity of more than 15,000 kg
- (a) holds a valid crane operator trade certificate issued by an apprenticeship board that is acceptable to the Chief Safety Officer, or
 - (b) is an indentured apprentice in a crane operator apprenticeship program operating under the supervision of a journeyman, or
 - (c) has documented evidence of more than 500 hours of crane operating experience that is acceptable to the employer and the Chief Safety Officer.
- (5)** An employer must ensure that a tower crane operator
- (a) holds a valid tower crane operator trade certificate issued by an apprenticeship board that is acceptable to the Chief Safety Officer, or
 - (b) is an apprentice indentured in a crane operator apprenticeship program.
- (6)** Before operating a particular crane, hoist or lifting device, the operator must be familiar with all recent entries in its log book.

Log books

- 19.7(1)** An employer and supplier must ensure that a paper or electronic log book is set up for each crane, hoist and lifting device at a work site.
- (2)** The employer and supplier must ensure that
- (a) the log book is readily available for inspection by a safety officer at any time,
 - (b) the most current log book of a mobile crane accompanies it or is available to the operator at all times, and
 - (c) where ownership of a lifting device is transferred to a new owner, the log book is transferred to the new owner.
- (3)** The employer and supplier must ensure that the following details are entered into the log book:
- (a) the date and time when any work (maintenance, modification or repair) was performed on the lifting device;
 - (b) length of time in lifting service
 - (i) recorded as hours of service if the lifting device is equipped by the manufacturer with an hour-meter, or
 - (ii) if required by the manufacturer's specifications;
 - (c) all defects or deficiencies and when they were detected;
 - (d) inspections, including examinations, checks and tests, that are performed, including those specified in the manufacturer's specifications;
 - (e) repairs or modifications performed;
 - (f) a record of a certification under section 19.16;
 - (g) any matter or incident that may affect the safe operation of the lifting device;

(h) any other operational information specifically identified by the manufacturer or the employer; such as

(i) in the case of a tower crane, whether or not the weight testing device was lifted for that working day, before the work of lifting loads began.

- (4) The employer must ensure that each entry in a paper log book is signed by the person performing the work or making the entry.
- (5) The employer must ensure that each entry in an electronic log book identifies the person performing the work or making the entry.
- (6) In the case of a tower crane, the employer must ensure that a senior representative of the employer at the work site confirms that the entries in the log book are made and are correct every day that the tower crane is in operation.

Preventing an unsafe lift

- 19.8** If the operator of a lifting device has any doubts as to the safety of workers in the vicinity of the lift, the operator must not move any equipment or load until the operator is assured that the working conditions are safe.

Preventing collisions

- 19.9** Where 2 or more lifting devices are in use at a work site and there is the potential for a collision between them or their loads or component parts, an employer must ensure that procedures are developed and implemented to prevent a collision.

Multiple crane lifts

- 19.10(1)** Prior to a multiple crane lift, an employer must ensure that a competent person is assigned to be in charge of the lift.
- (2) An employer must ensure that a written safe work procedure is developed and communicated to the operators and workers involved in a multiple crane lift.

Load weight

- 19.11** An employer must ensure that the operator of a lifting device, the rigger supervised by the operator and the person in charge of a lift are provided with all the information necessary to enable them to readily and accurately determine the weight of the load to be lifted.

Loads over work areas

- 19.12(1)** An employer must ensure that work is arranged, as is reasonably practicable, so that a load does not pass over workers.
- (2) An operator of a lifting device must not pass the load on the device over workers unless
- (a) no other practical alternative exists in the circumstances, and
 - (b) the workers are effectively warned and aware of the danger.
- (3) A worker must not stand or pass under a suspended load unless the worker has been effectively warned of the danger and the operator of the lifting device knows the worker is under the suspended load.

- (4) The operator of a lifting device traveling with a load must ensure that the load is positioned as close to the ground or grade as possible.

Tag and hoisting lines

- 19.13(1)** If workers are in danger because of the movement of a load being lifted, lowered or moved by a lifting device, an employer must ensure that
- (a) a worker uses a tag line of sufficient length to control the load, and
 - (b) a tag line is used in a way that prevents the load from striking the worker controlling the tag line.
- (2) The operator of a lifting device that is lifting a load must ensure the hoisting line is in a vertical position directly over the centre of gravity of the load.

Hand signals

- 19.14** An employer must ensure that hand signals necessary to ensure a safe hoisting operation are given in accordance with section 16.12 by a competent signaller designated by the employer.

Controls

- 19.15(1)** An employer and supplier must ensure that the controls on a lifting device are of a constant manual pressure type.
- (2) The employer must ensure that an operator who uses a remote control to operate a lifting device is visually distinguishable from other workers at the work site.

Repairs and modifications

- 19.16(1)** An employer and supplier must ensure that structural repairs or modifications to components of a lifting device are
- (a) made only under the direction and control of a professional engineer, and
 - (b) certified by the professional engineer to confirm that the workmanship and quality of materials used has restored the components to not less than their original capacity.
- (2) Where structural repairs or modifications are made to a lifting device, the employer and supplier must ensure that
- (a) the repaired or modified components are individually and uniquely identified in the log book and on the component, and
 - (b) the professional engineer's certification makes reference to those components and their identification.

Containers for hoisting

- 19.17(1)** An employer must ensure that a container used for lifting a load is designed for that particular purpose and bears a marking to indicate its maximum load rating.
- (2) A person must not use an oil drum or similar container as a container for lifting a load unless the drum or container is hoisted in a cage or other device designed for that purpose.

Hoisting workers

- 19.18** An employer, operator and worker must ensure that no person rides or is hoisted on any load, sling, hook, or other rigging component, unless it is a basket designed and certified for that purpose by a professional engineer.

Operating near high voltage conductors

- 19.19(1)** An employer and operator must ensure that a crane or hoist is positioned and operated so as to prevent any part of the equipment, its lines or load from coming within the established limits of approach.
- (2)** Where a crane or hoist is positioned near an electrical source such as a radio transmitter or energized high voltage lines, an employer and operator must ensure that
- (a) the equipment is effectively grounded,
 - (b) any induced electrical charge on the load is dissipated through grounding cables or another effective means, and
 - (c) any flammables are removed from the immediate vicinity.

A-Frames and gin poles

- 19.20(1)** An employer must ensure that an A-frame or gin pole is not inclined more than 45 degrees from the vertical.
- (2)** An employer must ensure that gin poles
- (a) are equipped with a boom stop, and
 - (b) have the sheave and cap of its rigging attached securely to the gin poles to withstand any loads to which the assembly may be subjected.

Cantilever Hoists

Installation and use

- 19.21(1)** An employer and supplier must ensure that a cantilever hoist
- (a) is anchored to a building or structure at distance intervals that meet the manufacturer's specifications or specifications certified by a professional engineer,
 - (b) has a foundation that is solid, level and of a size and strength capable of supporting the weight of the hoist and its loads under all working conditions, and
 - (c) carries loads that do not project beyond the edges of the material landing platform or the skip of the hoist.
- (2)** A worker shall ensure that a cantilever hoist is loaded so that no part of a load projects out past the edge of the platform or skip.

Chimney Hoists

Equipment requirements

- 19.22** An employer and supplier must ensure that a chimney hoist
- (a) is equipped with positive drives,
 - (b) does not have a clutch between the transmission and the hoist drums,
 - (c) is equipped with a speed indicating device if the hoist is capable of operating at speeds of more than 0.6 metres per second,
 - (d) is equipped with at least 2 independent braking systems, each capable

of stopping 150 percent of the manufacturer's rated capacity load, at the manufacturer's rated capacity maximum speed,
(e) has a roller or ball bearing swivel installed between the bucket and the rope on the hoist,
(f) is equipped with a communication system that informs the operator when the hoist is to be used to lift or lower workers, and
(g) has a separate safety line attached between the bucket or man basket yoke and the hoist rope above the ball or hook.

Operator responsibilities

- 19.23(1)** An operator of a chimney hoist must not
- (a) lift or lower a worker at a speed of more than 0.6 metres per second,
 - (b) use the brake alone to control the speed of the chimney hoist when a worker is being lowered,
 - (c) lift or lower more than 2 workers at the same time, or
 - (d) lift or lower materials or equipment at the same time as a worker.
- (2)** An operator of a chimney hoist must use safety latch hooks or shackles equipped with safety pins to attach the skip or platform to the load line.

Worker in lifting device

- 19.24** The employer, the hoist operator, and a worker must ensure that a worker who is being raised or lowered by a chimney hoist rides in a man basket.

Hand-Operated Hoists

Holding suspended load

- 19.25(1)** An employer must ensure that a hand-operated hoist is provided with a ratchet and pawl, load brake or other device capable of holding the total load suspended safely under all operating conditions.
- (2)** Where a crank operated winch without automatic load brakes is used, an employer must ensure that the crank handle is
- (a) prevented from slipping off the crankshaft while hoisting, and
 - (b) removed from the crankshaft before the load is lowered.

Material Hoists

Safety code for material hoists

- 19.26** An employer and supplier must ensure that a material hoist is designed, erected, maintained and used meeting the requirements of CSA Standard CAN/CSAZ256-M87 (R2001), *Safety Code for Material Hoists*.

Testing and inspection

- 19.27** An employer must ensure that all control devices, safety devices and braking systems are tested and inspected by a competent person at intervals specified by the manufacturer or a professional engineer and the results are recorded in the log book.

Rider restriction

- 19.28(1)** An employer must ensure that a notice is posted on a material hoist to indicate that no person is to ride the hoist.
- (2)** An employer, hoist operator and worker must ensure that no person rides on a material hoist.

Gate interlocks

- 19.29** An employer and supplier must ensure that a material hoist is equipped with devices at each floor or level that prevent
- (a) a landing gate being opened unless the hoist platform is positioned at that landing, and
 - (b) movement of the hoist platform when a landing gate is open.

Operator responsibilities

- 19.30** A material hoist operator must not
- (a) leave the hoist controls unattended while the skip, platform or load is in the raised position, or
 - (a) move the skip, platform or cage until the operator is informed by a designated signaller that it is safe to do so.

Signal systems

- 19.31(1)** An employer must ensure that
- (a) where a signal system is used to control the movement of a material hoist, the signal descriptions are posted at each floor or level and at the operator's station,
 - (b) the operator of a material hoist, and a designated signaller at the floor or level where loading and unloading is being performed, maintain visual or auditory communication with each other at all times during loading and unloading, and
 - (c) if an electrical or mechanical signal system has been installed to coordinate the movement of the hoist's skip, platform or cage, the system is arranged so that the hoist operator knows from which floor or level a signal originates.
- (2)** An employer and supplier must ensure that a material hoist erected at a building that is more than 20 metres high has a signal system that
- (a) is installed at each floor or level and at the operator's station,
 - (b) is designed to allow voice communication between a worker at any floor or level and the operator, and
 - (c) informs the operator from which floor or level the signal originates.

Hoist brakes

- 19.32** An employer and supplier must ensure that a material hoist's braking system is adequate and capable of stopping and holding the total load suspended safely under all operating conditions.

Location protected

- 19.33** An employer must ensure that
- (a) the area around the base of a material hoist is fenced or otherwise barricaded to prevent anyone from entering the area when the hoist platform is not at the base level,
 - (b) a removable guardrail or gate is installed between 600 millimeters and 900 millimetres away from the edge of a floor or level served by the material hoist, and
 - (c) if the operator controls are not remote from the material hoist, overhead protection is provided for the operator.

Mobile Cranes and Boom Trucks

Safety code for mobile cranes

- 19.34** An employer and supplier must ensure that a mobile crane meets the requirements of CSA Standard CAN/CSAZ150-98, *Safety Code on Mobile Cranes*.

Non-destructive testing

- 19.35** An employer and supplier must ensure that all load-bearing components of a mobile crane undergo non-destructive testing under the direction and control of a professional engineer in accordance with the manufacturer's specifications at 12-month intervals from the date of the mobile crane's most recent certification.

Outriggers

- 19.36** Where outriggers are installed on a mobile crane or boom truck, the employer and the operator must ensure that the outriggers are extended and on solid footings capable of supporting the equipment before the unit used for a lift.

Turntable level

- 19.37** An employer and operator must ensure that a crane or boom truck is operated with the turntable level, unless the manufacturer permits otherwise.

Warning device

- 19.38** An employer and supplier must ensure that a mobile crane is equipped with an effective warning device in addition to the one required by section 18.16, that
- (a) is readily accessible to the operator,
 - (b) is sufficient to warn workers of the impending movement of the crane, and
 - (c) if it is an auditory warning device, has a distinct sound that is distinguishable from all other sounds at the work site.

Two-Block prevention

- 19.39** Where a crane or hoist is being used to hoist workers, an employer and supplier must ensure that
- (a) the load line has a device to prevent two-blocking if the equipment has a telescoping boom, or
 - (b) there is a device on the load line to warn the operator of impending two-blocking if the equipment has a fixed boom.

Preventing damage

- 19.40(1)** Where a boom is fitted on a mobile crane or boom truck and the crane or truck may overturn or flip backwards because of the return movement of the boom, an employer and supplier must ensure that
- (a) positive boom stops are installed in the crane or truck in accordance with the manufacturer's specifications or those of a professional engineer, and
 - (b) a boom stop limit device is installed to prevent the boom from being drawn back beyond a pre-determined safe boom angle.
- (2)** If a jib is attached to the boom of a mobile crane or boom truck, an employer and supplier must ensure that a jib stop device is installed in the crane or truck to prevent the jib from being drawn back over the boom.
- (3)** An employer must ensure that procedures are developed for blocking to prevent the collapse or upset of any part of a derrick, mast or boom during the installation, removal or replacement of a derrick or the mast or boom section of a mobile crane or boom truck.

Overhead Cranes

Electrical components and functions

- 19.41** An employer must ensure that a bridge, jib, monorail, gantry or overhead traveling crane meets the design requirements for electrical components and functions of
- (a) CSA Standard C22.1-02, *Canadian Electrical Code, Part 1, Section 40*, and
 - (b) CSA Standard C22.2 No. 33-M1984 (R1999), *Construction and Test of Electric Cranes and Hoists*.

Maintenance and inspection

- 19.42** An employer must ensure that a bridge, jib, monorail, gantry or overhead travelling crane must meet the safety requirements of CSA Standard CAN/CSA-B167-96 (R2002), *Safety Standard for Maintenance and Inspection of Overhead Cranes, Gantry Cranes, Monorails, Hoists and Trolleys*.

Safe movement

- 19.43** An employer must ensure that a crane operating on rails, tracks or trolleys
- (a) has a positive stop or limiting device on the crane or on the rails, tracks or trolleys to prevent its overrunning safe limits or contacting other equipment that is on the same rail, track or trolley,
 - (b) is equipped with an over-speed limiting device,
 - (c) has a device that will limit the upward travel of the hook to a safe distance,
 - (d) has positive means of ensuring that the rails, tracks or trolleys cannot be spread or misaligned,
 - (e) has sweep guards installed to prevent material on the rail, track or trolley from dislodging the crane, and
 - (f) has a bed designed and constructed to carry all anticipated loads.

Personnel Hoists

Safety code for personnel hoists

19.44 Except for a personnel hoist used in a mine, an employer and supplier must ensure that a personnel hoist meets the requirements of CSA Standard CAN/CSA-Z185 (R2001), *Safety Code for Personnel Hoists*.

Roofer's Hoists

Safe use and design

- 19.45(1)** An employer and supplier must ensure that a roofer's hoist has counterweights
- (a) designed as a component part of the hoist to remain securely attached to the hoist until all lifting is completed, and
 - (b) heavy enough to counterbalance 4 times the maximum weight of the load being lifted.
- (2)** A person must not use roofing materials as a counterweight on a roofer's hoist.
- (3)** An employer must ensure that a roofer's hoist is inspected daily by a competent worker designated by the employer and a record of the inspection and any work performed on the hoist is kept on site.
- (4)** An employer and supplier must ensure that bolts and pins used to interconnect component parts of a roofer's hoist are equipped with safety pins that prevent them from being dislodged.
- (5)** A worker must ensure that
- (a) a roofer's hoist is used only for vertical lifting, and
 - (b) the design load limits of the roofer's hoist are not exceeded.
- (6)** An employer must ensure that a gallows frame roofer's hoist is constructed of lumber sized as follows, or of material that has the same or greater properties as the lumber used for the same function:
- (a) thrustout — 38 millimetres by 184 millimeters lumber;
 - (b) uprights — 90 millimetres by 90 millimetres lumber;
 - (c) braces and base plates — 38 millimetres by 140 millimetres.
- (7)** An employer must ensure that a gallows frame roofer's hoist
- (a) has a hoisting line with a breaking strength of not less than 25 kilonewtons,
 - (b) has thrustouts placed on edge that do not overhang more than $\frac{1}{4}$ of their length, and
 - (c) has sheaves securely attached to the thrustouts without using single strand wire or nails.

Tower and Building Shaft Hoists

Protective enclosure

19.46 An employer and supplier must ensure that

- (a) a tower hoist is enclosed at ground level with solid walls or equally effective fencing to a height of at least 2 metres on all sides except the loading side,

- (b) a hoist shaft inside a building is enclosed on all sides but the landing side at all floors or levels to a height of at least 2 metres with solid walls or equally effective fencing,
- (c) a landing gate inside a building does not open unless the hoist platform is positioned at that landing,
- (d) the landing side of the hoist shaft inside a building has an access door complete with a lock and an "OPEN SHAFT" sign attached to the enclosure,
- (e) a tower or building shaft hoist is braced, guyed or supported at vertical intervals of not more than 6 metres or at the intervals in the manufacturer's specifications and
- (f) the bottom pulley block or sheave is securely anchored and the pulley and hoisting ropes to the hoisting engine are enclosed.

Design

- 19.47** An employer and supplier must ensure that a boom is not installed on a tower hoist unless its design is certified by a professional engineer to the effect that the tower structure can withstand the additional load.

Tower Cranes

Safety code for tower cranes

- 19.48(1)** An employer and supplier must ensure that a tower crane meets the requirements of CSA Standard Z248-1975 (R2000), *Code for Tower Cranes*.
- (2) Prior to erecting a tower crane, an employer and supplier must ensure that foundation, shoring, bracing and connections necessary to support the crane are certified by a professional engineer.
 - (3) Prior to the tower crane being put into service, the employer and supplier must ensure that the person who erected the crane has provided verification in writing that the crane has been erected according to the manufacturer's specifications and the instructions of a professional engineer.

Limit devices

- 19.49(1)** An employer and supplier must ensure that a tower crane is equipped with
- (a) an overload device consisting of a hoist overload switch that automatically restricts the weight of the load,
 - (b) a travel limit device consisting of a moment overload switch that automatically restricts the radius within which the load can travel,
 - (c) a height limit switch that prevents the load from being over wound, and
 - (d) trolley travel limit devices consisting of a "trolley in" limit switch and a "trolley out" limit switch that prevent the trolley from running to the end of its track.
- (2) An employer must ensure that the devices described in subsection (1) are adjusted and set in accordance with the manufacturer's specifications and have their limit switches sealed.

Operation

- 19.50** An operator of a tower crane must
- (a) ensure the safe movement of the crane and its load at all times,
 - (b) verify at the beginning of each work shift that the mast is plumb, and

(c) verify at least once in each 24 hour period that the limit devices described in section 19.49 are operational.

Freedom to slew

- 19.51(1)** An employer, supplier, and crane erector must ensure that the crane is able to safely slew 360 degrees at all times with adequate clearances between any component of the crane and any obstructions.
- (2)** An operator and employer must ensure that where an unattended crane is allowed to slew, the empty load block is located at minimum radius and near the top position.

Access

- 19.52** An employer and supplier must ensure that a tower crane has an adequately designed and built
- (a) safe ladder access on the mast and crown, and
 - (b) catwalk and handlines from the mast to the tip of the jib.

Changing components

- 19.53(1)** An employer and supplier must ensure that the major structural, mechanical and electrical components of a tower crane are not interchanged with those of other tower cranes unless
- (a) the components are from the same make or model of tower crane,
 - (b) the components are approved by the manufacturer as suitable for their intended application, or
 - (c) the components are certified by a professional engineer as suitable for their intended application.
- (2)** An employer and supplier must ensure that if an operator's cab is attached to the boom of a tower crane, the design of the cab, its position, method of attachment and any structural changes, including changes to the counterweight, capacity and operation of the crane, are in accordance with the manufacturer's specifications or are certified by a professional engineer.

Test weights

- 19.54(1)** An employer and supplier must ensure that if weights are used as a weight testing device on a tower crane,
- (a) the true weight of the test weight is determined and legibly recorded on the weight, and
 - (b) the test weights rest on supports when not in use, to prevent the weights from freezing to the ground or creating a vacuum when lifted.
- (2)** An employer and supplier must ensure that the lifting attachment on a test weight is made of mild steel and of sufficient size and strength to support the weight.

Hoisting line

- 19.55** An employer and supplier must ensure that the hoisting line of a tower crane is
- (a) shortened by removing 3 meters at the dead end after every 3 months of operation or as specified by the manufacturer, and
 - (b) properly seized before being cut.

Structural testing and examination

- 19.56(1)** An employer and supplier must ensure that all structural and rigging components of a tower crane undergo non-destructive testing under the direction and control of a professional engineer in accordance with the manufacturer's specifications
- (a) as close as reasonably practicable to the project site,
 - (b) before the crane is used for the first time on a project, and
 - (c) before it is used after a move, if the crane is moved from project to project.
- (2)** Where a tower crane is in operation on a project for more than one year from the date on which the crane starts operating, the employer and supplier must ensure its structural components are examined under the direction and control of a professional engineer after each period of 2000 operating hours or 12 months after the date on which it starts operating, whichever occurs first.
- (3)** The employer and supplier must ensure that the results of the testing or examination required by subsections (1) and (2) are certified by a professional engineer in a report that clearly identifies the crane and the components to which the information relates.

Wind and temperature limitations

- 19.57(1)** An employer and operator must ensure that operation of a tower crane is stopped when
- (a) the wind velocity at the elevation of the crane exceeds the limit recommended in the manufacturer's specifications or, if there are none, in specifications determined and certified by a professional engineer, or
 - (b) the operator determines that a load can not be safely handled because of the wind.
- (2)** An employer and operator must ensure that operation of a tower crane is stopped when the temperature in the vicinity of the crane is below the limit recommended in the manufacturer's specifications or, if there are none, in specifications determined and certified by a professional engineer.

Multiple cranes

- 19.58(1)** Where 2 or more tower cranes are erected in such a manner that the radii of operations overlap, the employer must ensure that
- (a) the operators are provided with a visual or auditory means of communicating with each other, and
 - (b) the operators are able to communicate with each other when both cranes are in operation.
- (2)** The operators of a tower cranes shall operate the cranes in such a manner that there are no collisions between the cranes or their loads.

Vehicle Hoists

Safety standards

- 19.59** An employer must ensure that a vehicle hoist meets the requirements of the following:
- (a) ANSI Standard ANSI/ALI ALCTV-1998, *American National Standard for Automotive Lifts — Safety Requirements for Construction, Testing and Validation*; or
 - (b) ANSI Standard ANSI/ALI ALOIM-2000, *Automotive Lifts — Safety Requirements for Operation, Inspection and Maintenance*.

Controls

- 19.60(1)** An employer must ensure that a pneumatic or hydraulic vehicle hoist has controls operated by constant manual pressure and the control returns to the neutral position when released.
- (2)** An employer and an operator must ensure that the operator of a vehicle hoist
- (a) remains at the controls while the vehicle hoist is in motion, and
 - (b) does not block the controls during raising and lowering.

Safe use

- 19.61** A worker must not be under a suspended load unless the load is supported by
- (c) a vehicle hoist designed for that purpose, or
 - (b) stands or blocks, other than jacks, that are designed, constructed and maintained to support the load and placed on firm foundations.

Inspection

- 19.62** An employer must ensure that a vehicle hoist
- (a) is inspected and tested monthly or more often if required by the manufacturer, and
 - (b) has a paper or electronic log book kept for it, noting the inspections, maintenance and repairs made to it.

Winching Operations

Safe practices

- 19.63** An operator of a winch must ensure that before
- (a) vehicle-mounted winch lines are hooked or unhooked from an object, the vehicle is prevented from moving, and
 - (b) any winch drum is set in motion, no person is standing in the bight.

Part 20 - Rigging

Training

- 20.1** An employer must ensure that a worker who is assigned rigging duties has been adequately trained and understands safe rigging practices and procedures

Breaking strength

- 20.2(1)** An employer must ensure that rigging is not subjected to a load of more than
- (a) 10 percent of the breaking strength of the weakest part of the rigging, if a worker is being raised or lowered, and
 - (b) 20 percent of the breaking strength of the weakest part of the rigging in all other situations.
- (2)** Despite subsection (1)(b), an employer may use a dedicated rigging assembly designed and certified for a particular lift or project by a professional engineer, but the dedicated rigging assembly must be re-rated to comply with subsection (1)(b) before it is used for another lift or project.

Load ratings

- 20.3(1)** Subject to subsection (2), an employer must ensure that the maximum load rating of the rigging, as determined by the rigging manufacturer or a professional engineer, is legibly and conspicuously marked on the rigging.
- (2)** If it is not practicable to mark the rigging, the employer must ensure the maximum load rating of the rigging is available to the workers at the work site.

Termination efficiency

- 20.4** An employer must ensure that the working load limit of wire rope is reduced appropriately, based on the manufacturer's specifications for the termination type used for the particular application.

Inspection

- 20.5** An employer must ensure that rigging to be used during a work shift is inspected thoroughly at the beginning of the shift to ensure that it is functional and safe.

Prohibition

- 20.6** A worker must not use rigging that does not comply with this Part.

Rigging - general

- 20.7** An employer must ensure that
- (a) slings and rigging components are stored to prevent damage,
 - (b) slings with knots are not used,
 - (c) a sling used to lift a load at an angle other than vertical has its lifting capacity reduced in accordance with the manufacturer's specifications, and
 - (d) a load consisting of 2 or more pieces of material over 3 meters in length is slung using a 2 legged sling arrangement, positioned so that the load is

horizontal during the lift and each sling is choked around the load with a double wrap.

Rigging protection

- 20.8** An employer must ensure that sharp edges on loads to be hoisted are guarded to prevent damage to the slings or straps of the rigging.

Sling standard

- 20.9** An employer must ensure that wire rope, alloy steel chain, synthetic fibre rope, metal mesh slings and synthetic fibre slings meet the requirements of ASME Standard B30.9-1996, *Slings*.

Synthetic slings

- 20.10** An employer must ensure that synthetic fibre slings are permanently and legibly marked with the following
- (a) the manufacturer's name or mark;
 - (b) the manufacturer's code or stock number;
 - (c) the maximum load rating for the types of hitches permitted;
 - (d) the type of synthetic fibre the sling is made of.

Rope wound on drum

- 20.11(1)** An employer must ensure that rope on a winding drum is securely fastened to the drum.
- (2)** An employer must ensure that the number of wraps of rope remaining at all times on a drum
- (a) complies with the manufacturer's specifications for the rope and the drum, or
 - (b) is not less than 5 full wraps, if there are no manufacturer's specifications.

Cable clips

- 20.12(1)** An employer must ensure that U-bolt type clips used for fastening wire rope are installed
- (a) so that the U-bolt section of the clip bears on the short or "dead" side of the rope,
 - (b) so that the saddle of a clip bears on the long or "live" side of the rope,
- and
- (c) using the number and with the spacing that complies with the specifications in Schedule 5.
- (2)** An employer must ensure that cable clips used for fastening wire rope are installed, and torqued to the manufacturer's specifications or, in the absence of manufacturer's specifications, to the values specified in Schedule 5.
- (3)** An employer must ensure that double-saddle clips (fist clips) used for fastening wire rope are installed using the number and the spacing and torque that complies with the specifications in Schedule 5.
- (4)** An employer must ensure that double base clips used for fastening wire rope are installed with a spacing that is not less than 6 times the diameter of the rope.

Ferrules

- 20.13(1)** If a ferrule is used to form an eye loop in a wire rope and
- (a) the ends of the splice are visible beneath the ferrule, or
 - (b) the ferrule is identified as covering a “Flemish eye” splice,
- an employer must ensure that the ferrule is commercially manufactured of steel and properly swagged onto the splice.
- (2)** Despite subsection (1), if an aluminum alloy ferrule must be used, an employer must ensure that the ferrule is
- (a) commercially manufactured,
 - (b) identified as being made of aluminum alloy, and
 - (c) properly swagged onto the splice.

Matching components

- 20.14(1)** An employer must ensure that the wire ropes, sheaves, spools and drums used in rigging have a diameter of not less than the diameter specified by the manufacturer for use in that circumstance.
- (2)** An employer must ensure that the rope used in rigging is of the correct size for the sheave, spool or drum over which the rope passes.
- (3)** An employer must ensure that the grooving of wire rope sheaves is of the correct size for the wire rope used.
- (4)** An employer must ensure that end fittings and connectors used on a wire rope conform to the manufacturer’s specifications as to number, size and method of installation.
- (5)** An employer must ensure that rigging blocks are constructed and installed so that the ropes cannot jump off the sheaves.

Safety latches

- 20.15(1)** An employer must ensure that a hook has a safety latch, mousing or shackle if the hook could cause injury if it is dislodged while in use.
- (2)** Despite subsection (1), if a competent worker disconnecting the hook would be in danger if the hook has a safety latch, mousing or shackle, the employer may use another type of hook.
- (3)** Despite subsection (1), an employer may use a sorting hook for hoisting a skeleton steel structure or for performing similar operations if a sorting hook is safer to use than a hook with a safety latch, mousing or shackle.
- (4)** During a hoisting operation in a caisson, an employer
- (a) must not use a spring-loaded safety latch hook, and
 - (b) must use a shackle assembly consisting of a pin fully shouldered into the eyes of the shackle and secured by a nut that is prevented from rotating by a cotter pin.

Makeshift rigging and welding

- 20.16** An employer must ensure that rigging does not have
- (a) makeshift fittings or attachments, including those constructed from reinforcing steel rod, that are load bearing components,
 - (b) rigging and fittings that are repaired by welding unless they are certified safe for use by a professional engineer after the repair is completed, or
 - (c) alloy steel chain that is welded or annealed.

Below the hook devices

- 20.17** An employer must ensure that a spreader bar or other specialized lifting device
- (a) is constructed, inspected, installed, tested, maintained and used according to the requirements of *ASME B30.20-1993, Below-the-Hook Lifting Devices*, or certified by a professional engineer,
 - (b) bears a nameplate or other permanent marking displaying the manufacturer's name, serial number, weight of the device if more than 45 kg, and the working load of the device, and
 - (c) is considered in the calculation of the total load weight.

Rejection Criteria

Synthetic fibre slings

- 20.18(1)** An employer must ensure that a synthetic fibre web sling is permanently removed from service if it is damaged or worn as follows:
- (a) the length of the edge cut exceeds the web thickness;
 - (b) the depth of an abrasion is more than 15 percent of the webbing thickness, taken as a proportion of all plies;
 - (c) the total depth of the abrasion on both sides of the webbing is more than 15 percent of the webbing thickness, taken as a proportion of all plies;
 - (d) the depth of the warp thread damage is up to 50 percent of the webbing thickness and the damage
 - (i) is within 25 percent of the sling width of the edge, or
 - (ii) covers 25 percent of the sling width,
 - (e) the warp thread damage is as deep as the sling is thick
 - (i) in an area that is within 25 percent of the sling width of the edge, or
 - (ii) over an area that is more than 12.5 percent of the width of the sling;
 - (f) weft thread damage allows warp threads to separate over an area that is wider than 25 percent of the sling width and longer than twice the sling width.
- (2)** An employer must ensure that a synthetic fibre web sling is permanently removed from service if
- (a) part of the sling is melted, charred or damaged by chemicals,
 - (b) stitches in load bearing splices are broken or worn, or
 - (c) end fittings are excessively pitted or corroded, cracked, distorted or broken.
- (3)** An employer must ensure that a synthetic fibre web sling is permanently removed from service if it is damaged in such a way that the total effect of the damage on the sling is approximately the same as the effect of any one of the types of damage referred to in subsections (1) or (2).
- (4)** An employer must ensure that a synthetic fibre web sling that is permanently removed from service under this section is physically altered to prevent its further use as a sling.

Wire rope

- 20.19(1)** An employer must ensure that wire rope is permanently removed from service if
- (a) wear or corrosion affects individual wires over more than one third of the original diameter of the rope,
 - (b) there is evidence that the rope structure is distorted because of kinking, bird-caging or any other form of damage,
 - (c) there is evidence of heat or arc damage, or
 - (d) the normal rope diameter is reduced, from any cause, by more than
 - (i) 0.4 millimetres if the normal rope diameter is 8 millimetres or less,
 - (ii) 1 millimetre if the normal rope diameter is more than 8 millimetres and less than 20 millimetres,
 - (iii) 2 millimetres if the normal rope diameter is 20 millimetres or more and less than 30 millimetres, and
 - (iv) 3 millimetres if the normal rope diameter is 30 millimetres or more.
- (2)** An employer must ensure that a running wire rope is permanently removed from service
- (a) if 6 or more randomly distributed wires are broken in one rope lay, or
 - (b) if 3 or more wires are broken in one strand in one rope lay.
- (3)** An employer must ensure that a stationary wire rope such as a guy line is permanently removed from service
- (a) if 3 or more wires are broken in one rope lay in sections between end connections, or
 - (b) if more than one wire is broken within one rope lay of an end connection.
- (4)** An employer must ensure that wire rope that does not rotate because of its construction is permanently removed from service
- (a) if there is evidence of the damage referred to in subsection (1),
 - (b) if 2 randomly distributed wires are broken in 6 rope diameters, or
 - (c) if 4 randomly distributed wires are broken in 30 rope diameters.

Metal mesh slings

- 20.20** An employer must ensure that a metal mesh sling is removed from service if
- (a) there is a broken weld or a broken brazed joint along the sling edge,
 - (b) a wire in any part of the mesh is broken,
 - (c) corrosion has reduced a wire diameter by 15 percent,
 - (d) abrasion has reduced a wire diameter by 25 percent,
 - (e) there is a loss of flexibility because the mesh is distorted,
 - (f) the depth of the slot is increased by more than 10 percent because the choker fitting is distorted,
 - (g) the width of the eye opening is decreased by more than 10 percent because either end fitting is distorted,
 - (h) the original cross-sectional area of metal is reduced by 15 percent or more at any point around the hook opening or end fitting,
 - (i) either end fitting is distorted, or
 - (j) an end fitting is cracked.

Electric arc damage

- 20.21** An employer must ensure that a component of rigging that has been contacted by an electric arc is removed from service unless a professional engineer certifies that it is safe to use.

Damaged hooks

20.22 An employer must ensure that a worn, damaged or deformed hook is permanently removed from service if the wear or damage exceeds the specifications allowed by the manufacturer or as specified below:

- (a) the throat opening has increased by more than 15% of the original size,
- (b) the hook has twisted more than 10 degrees from its original plane,
- (c) the hook has lost more than 10% of its cross-sectional area, or
- (d) the hook has wear or damage that exceeds any criteria specified by the manufacturer.

Part 21 - Entrances, Walkways, Stairways and Ladders

Entrances, Walkways, Stairways

Safe entry and exit

- 21.1(1)** An employer must ensure that provision has been made for every worker to enter a work area safely and leave a work area safely at all times.
- (2)** An employer must ensure that a work area's entrances and exits are of adequate strength, in good condition and in working order.
- (3)** An employer must ensure that a work area's entrances and exits are free from materials, equipment, accumulations of waste or other obstructions that might endanger workers or restrict their movement.
- (4)** An employer must ensure that, if a worker could be isolated from a primary escape route,
(a) there is a ready, convenient and safe secondary means of escape from the work area, and
(b) the secondary escape route is readily useable at all times.
- (5)** An employer must ensure that all workers are familiar with escape routes from the work area and the work site.

Doors

- 21.2(1)** An employer must ensure that doors to and from a work area can be opened without substantial effort and are not obstructed.
- (2)** An employer must ensure that a door used to enter or leave an enclosed area that poses a hazard to workers entering the area
(a) is kept in good working order, and
(b) has a means of opening it from the inside at all times.
- (3)** Where there is two-way opening of a door, an employer must ensure that there is a window in the door or another effective means of ensuring safe two-way passage.

Walkways, runways and ramps

- 21.3(1)** An employer must ensure that a walkway, runway or ramp
(a) is strong enough to support the equipment and workers who may use it,
(b) is at least 600 millimetres wide,
(c) is wide enough to ensure the safe movement of equipment and workers,
(d) has the appropriate toe boards and guardrails required by Part 27, and
(e) is solidly attached to the supporting structures or points.
- (2)** An employer must ensure that the surface of a walkway, runway or ramp has sufficient traction or devices installed to allow workers to move on it safely.

Stairways

- 21.4(1)** An employer must ensure that
(a) the width of the treads and the height of the rise of a stairway are uniform throughout its length, and
(b) the treads of a stairway are level.

- (2) An employer must ensure that
 - (a) a stairway with 5 or more risers has the appropriate handrail required by Part 27, and
 - (b) a stairway with open sides has a handrail and an intermediate rail or equivalent safeguard on the full length of each open side.
- (3) An employer must ensure that temporary stairs are at least 600 millimetres wide.
- (4) An employer must ensure that a stairway is designed and constructed to meet the requirements of the National Building Code.
- (5) An employer must ensure that a metal stairway
 - (a) in a structure under construction has temporary wooden treads set into the full length and width of the steps and landings, and
 - (b) that has treads or landings made of perforated material has openings not larger than 12 mm.

Handrails on stairways

21.5(1) This section applies to stairways with 5 or more risers.

- (2) An employer must ensure that a stairway is equipped with a handrail that
 - (a) extends the entire length of the stairway,
 - (b) is secured and cannot be dislodged,
 - (c) is between 800 millimetres and 920 millimetres above the front edge of the treads, and
 - (d) is substantial and constructed of lumber that is not less than 38 millimetres by 89 millimetres or other material with properties the same as or better than those of lumber.
- (3) An employer must ensure that posts supporting a handrail
 - (a) are spaced not more than 3 metres apart at their vertical centres, and
 - (b) are constructed of lumber that is not less than 38 millimetres by 89 millimetres or other materials with properties the same or better than those of lumber.

Ladders — General

Restriction on use

21.6 An employer must ensure that workers do not use a ladder to enter or leave an elevated or sub-level work area if the area has another safe and recognizable way to enter or leave it.

Prohibition on single rail

21.7 A person must not make or use a ladder with cleats fastened across a single rail or post.

Prohibition on painting

21.8(1) Subject to subsections (2) and (3), a person must not paint a wooden ladder.

- (2) A wooden ladder may be preserved with a transparent protective coating.
- (3) Identification markings may be painted on one side of each side rail, to a maximum of 1/3 of the rail.

Inspection and use

- 21.9(1)** An employer must ensure that a ladder is inspected before each use and where defects are noted, the ladder is removed from service and repaired or replaced.
- (2)** An employer and worker must ensure that a ladder is used in accordance with these regulations or the manufacturer's specifications.

Use near energized electrical equipment

- 21.10** An employer must ensure that a ladder used during the servicing of energized or potentially energized electrical equipment is made of nonconductive material.

Ladders on extending booms

- 21.11(1)** An employer must ensure that where
- (a) a ladder is a permanent part of an extending boom on powered mobile equipment, no worker is on the ladder during the articulation, extension or retraction of the boom, and
 - (b) outriggers are incorporated in a piece of equipment to provide stability, no worker climbs the ladder until the outriggers are deployed.
- (2)** Subsection (1)(a) does not apply to professional fire fighters working on fire fighting equipment.

Crawl Board or Roof Ladder

Safe use

- 21.12** An employer must ensure that a crawl board or roof ladder used for roof work
- (a) is securely fastened by hooking the board or ladder over the ridge of the roof or by another equally effective means, and
 - (b) is not supported by an eaves trough.

Fixed Ladders

Design criteria

- 21.13(1)** An employer must ensure that a fixed ladder installed on or after April 30, 2006 meets the requirements of PIP Standard STF05501 (February 2002), *Fixed Ladders and Cages*, published by the Construction Industry Institute.
- (2)** Despite the material and process standards referenced in PIP Standard STF05501, an employer may use applicable Canadian material and process standards if the employer ensures that the fixed ladder is designed and installed in accordance with established engineering principles.
- (3)** If a fixed ladder is made of a material other than steel, an employer must ensure that the design is certified by a professional engineer as being as strong as or stronger than that required by PIP Standard STF05501.
- (4)** An employer must ensure that a self-closing double bar safety gate, or equally effective means, is provided at ladderway floor openings and platforms of fixed ladders installed on or after April 30, 2006.
- (5)** Subsection (4) does not apply at landings.

- (6) Section 22.5 applies to a fixed ladder on a scaffold.

Fixed ladders in manholes

- 21.14** Despite section 21.13, an employer and supplier must ensure that fixed ladders used in pre-cast reinforced concrete manhole sections installed on or after April 30, 2006 meets the requirements of ASTM Standard C478-02, *Standard Specification for Reinforced Concrete Manhole Sections*.

Rest platform exemption

- 21.15** If each worker working on a drilling rig, service rig or other structure on a fixed ladder is equipped with and wears a climb assist device that complies with the manufacturer's specifications or specifications certified by a professional engineer, an employer is not required to
- (a) provide the ladder with rest platforms, or
 - (b) have the side rails extend not less than 1050 millimetres above the point at which the workers get on or off.

Portable Ladders

Prohibition

- 21.16(1)** A worker must not perform work from either of the top 2 rungs, steps or cleats of a portable ladder except as noted in subsection (2).
- (2) Despite subsection (1), a worker may work from either of the top 2 rungs, steps or treads of a stepladder,
- (a) if the stepladder has a railed platform at the top, or
 - (b) if the manufacturer's specifications for the stepladder permit it.

Use of ladders

- 21.17(1)** An employer and worker must ensure that
- (a) a ladder is of adequate strength and length for the work being done,
 - (b) a worker faces the ladder when climbing or descending it, and
 - (c) when working from a ladder the center of gravity of the body is kept between the side rails of the ladder.

Constructed portable ladder

- 21.18(1)** An employer and worker must ensure that a constructed portable ladder
- (a) is constructed of lumber that is free of loose knots or knot holes,
 - (b) with a length of 5 metres or less has side rails constructed of lumber measuring not less than 38 millimetres by 89 millimetres,
 - (c) more than 5 metres long has side rails constructed of lumber measuring not less than 38 millimetres by 140 millimetres,
 - (d) has side rails that are not notched, dapped, tapered or spliced,
 - (e) has side rails at least 500 millimetres apart at the bottom, and
 - (f) has rungs that are
 - (i) constructed of lumber measuring not less than 21 millimetres by 89 millimetres,
 - (ii) held by filler blocks or secured by a single continuous wire, and
 - (iii) uniformly spaced at a centre to centre distance of 280 millimetres to 310 millimetres.

- (2) An employer must ensure that a 2-way constructed portable ladder that is wide enough to permit traffic in both directions at the same time,
- (a) has a centre structural rail along the length of the ladder,
 - (b) is at least 1 metre wide, and
 - (c) is constructed of materials that are substantial enough in size to accommodate the maximum intended load.

Manufactured portable ladder

- 21.19(1)** An employer must ensure that a portable ladder is approved to
- (a) CSA Standard CAN3-Z11-M81 (R2001), *Portable Ladders*,
 - (b) ANSI Standard A14.1-2000, *American National Standard for Ladders — Wood — Safety Requirements*,
 - (c) ANSI Standard A14.2-2000, *American National Standard for Ladders — Portable Metal — Safety Requirements*, or
 - (d) ANSI Standard A14.5-2000, *American National Standard for Ladders — Portable Reinforced Plastic — Safety Requirements*
- (2) An employer must ensure that manufactured portable ladders are
- (a) marked, showing the grade and intended usage, and
 - (b) used in accordance with the manufacturer's instructions and specifications.
- (3) An employer must ensure that a portable extension ladder
- (a) has no more than three sections,
 - (b) has locks that securely hold the sections of the ladder in an extended position, and
 - (c) when extended, maintains a minimum overlap as follows:
 - (i) where the ladder is 11 m (36 ft.) or less, the overlap is at least 1 m,
 - (ii) where the ladder exceeds 11 m and is less than 15 m, the overlap is at least 1.25 m, and
 - (iii) where the ladder exceeds 15 m and is less than 20 m, the overlap is at least 1.5 m.

Securing and positioning

- 21.20** A worker and employer must ensure that
- (a) a portable ladder is secured against movement and placed on a base that is stable,
 - (b) the base of an inclined portable ladder is no further from the base of the wall or structure than $\frac{1}{4}$ of the height to where the ladder contacts the wall or structure, and
 - (c) the side rails of a portable ladder extend at least 1 metre above a platform, landing or parapet if the ladder is used as a means of access to the platform, landing or parapet.

Fall protection

- 21.21(1)** An employer must ensure that a worker working from a portable ladder from which the worker may fall 3 metres or more uses a personal fall arrest system.
- (2) Subsection (1) does not apply while the worker is moving up or down the portable ladder.
- (3) Despite subsection (1), if it is not reasonably practical to use a personal fall arrest system, a worker may work from a portable ladder without fall protection if
- (a) the work is a light duty task of short duration at each location,
 - (b) the worker's centre of balance is at the centre of the ladder at all times even with an arm extended beyond the side rails of the ladder, and

(c) the worker generally has one hand available to hold on to the ladder or other support.

Part 22 - Scaffolds and Temporary Work Platforms

Scaffolds

CSA Standard applies

- 22.1** Subject to sections 22.2 and 22.3, an employer must ensure that scaffolds erected to provide working platforms during the construction, alteration, repair or demolition of buildings and other structures comply with CSA Standard CAN/CSA-S269.2-M87 (R1998), *Access Scaffolding for Construction Purposes*.

Design

- 22.2(1)** An employer must ensure that a single-pole, double-pole wooden or metal scaffold is
- (a) supported against lateral movement by adequate bracing,
 - (b) anchored by one tie-in for each 4.6 metre vertical interval and one tie-in for each 6.4 metre horizontal interval,
 - (c) anchored by one tie-in for each 3 metre vertical interval and one tie-in for each 3 metre horizontal interval if the scaffold is hoarded, and
 - (d) set plumb on a base plate, jackscrew or other load dispersing device on a stable service.
- (2)** An employer must ensure that ropes or wire ropes used in scaffolding are
- (a) protected against fraying or other damage, and
 - (b) made of heat or chemical resistant material if there is a possibility of exposure to heat or chemicals.
- (3)** An employer must ensure that wooden scaffolds are constructed of unpainted dressed lumber.
- (4)** An employer must ensure that a scaffold of a type not otherwise referred to in these regulations is designed and certified by a professional engineer, and prior to use
- (a) the drawings and specifications of the scaffold are submitted to the Chief Safety Officer for acceptance, and
 - (b) the scaffold is constructed in accordance with the engineered drawings and specifications and any other conditions the Chief Safety Officer may attach.
- (5)** Where scaffolding or temporary work platforms may be damaged from contact by powered mobile equipment or vehicles, an employer must ensure that reasonable measures are taken to protect the scaffolding or temporary work platforms

Load

- 22.3(1)** An employer must ensure that a scaffold is designed and constructed to support at least 4 times the load that may be imposed on it.
- (2)** An employer must ensure that the load to which a scaffold is subjected to never exceeds the equivalent of $\frac{1}{4}$ of the load for which it is designed.
- (3)** An employer must ensure that a scaffold used to carry the equivalent of an evenly distributed load of more than 367 kilograms per square metre is
- (a) designed and certified by a professional engineer, and
 - (b) constructed, maintained and used in accordance with the certified specifications.

- (4) Subsection (3) applies to a type of scaffold that is not otherwise specifically referred to in these regulations.
- (5) An employer must ensure that all workers on a scaffold are informed of the maximum load that the scaffold is permitted to carry.

Tagging requirements

- 22.4(1)** An employer must ensure that a bracket scaffold, double-pole scaffold, needle-beam scaffold, outrigger scaffold, single-pole scaffold, suspended scaffold or swingstage scaffold is colour coded using tags at each point of entry indicating its status and condition as follows:
- (a) a green tag with “Safe for Use”, or similar wording, to indicate it is safe for use;
 - (b) a yellow tag with “Caution: Potential or Unusual Hazard”, or similar wording, to indicate the presence of a potential or unusual hazard;
 - (c) a red tag with “Unsafe for Use”, or similar wording, to indicate it is not safe to use.
- (2) An employer must ensure that a bracket scaffold, double-pole scaffold, needle-beam scaffold, outrigger scaffold, single-pole scaffold, suspended scaffold or swingstage scaffold erected but not immediately put into service, or not used for more than 21 consecutive calendar days, has a red tag at each point of entry until it is inspected and tagged by a competent worker for use.
 - (3) An employer must ensure that a bracket scaffold, double-pole scaffold, needle-beam scaffold, outrigger scaffold, single-pole scaffold, suspended scaffold or swingstage scaffold is inspected and tagged by a competent worker before it is used for the first time and at intervals of not more than 21 calendar days while workers work from the scaffold or materials are stored on it.
 - (4) A tag attached to a scaffold under this section expires 21 calendar days after the date of the inspection it records.
 - (5) A tag required by this section must include
 - (a) the duty rating of the scaffold,
 - (b) the date on which the scaffold was last inspected,
 - (c) the name of the competent worker who last inspected the scaffold,
 - (d) any precautions to be taken while working on the scaffold, and
 - (e) the expiry date of the tag.
 - (6) A worker must not use a scaffold if it has
 - (a) a red tag,
 - (b) a green or yellow tag that has expired, or
 - (c) no tag at all.
 - (7) Subsection (6) does not apply to a competent worker who is involved in the erection, inspection or dismantling of a scaffold.

Ladders on scaffolds

- 22.5(1)** An employer must ensure that a vertical ladder that gives access to a working level of a scaffold is used by a worker only to move up or down between levels of the scaffold.

- (2) Workers moving between levels of a scaffold on a vertical ladder
 - (a) must not extend a part of their body, other than an arm, beyond the side rails of the ladder, and
 - (b) must maintain a three-point stance on the ladder at all times.
- (3) An employer must ensure that a vertical ladder that is integral to a scaffold that provides access to a working level of a scaffold,
 - (a) is not more than 6.5 metres in height above the scaffold level on which the base of the ladder rests,
 - (b) extends at least 1 metre above the uppermost working level of the scaffold, and
 - (c) has rungs that are uniformly spaced at a centre distance of 250 millimetres to 305 millimetres.
- (4) An employer must ensure that an accessory ladder attached to a scaffold that provides access to a working level of the scaffold
 - (a) is securely attached to the scaffold,
 - (b) extends at least 1 metre above the uppermost working level of the scaffold,
 - (c) does not lean away from the scaffold,
 - (d) has rungs that are uniformly spaced at a centre to centre distance of 250 millimetres to 305 millimetres, and
 - (e) is provided with fall protection if the ladder is more than 6.5 meters in height.

Working from a ladder

- 22.6(1) An employer must ensure that no worker performs work from a ladder that is used to give access to the working levels of a scaffold.
- (2) A worker must not perform work from a ladder that is used to give access to the working levels of a scaffold.

Scaffold planks

- 22.7(1) An employer must ensure that a commercially manufactured scaffold plank is used, stored, inspected and maintained according to the manufacturer's specifications.
- (2) An employer must ensure that a solid sawn lumber scaffold plank is
 - (a) graded as scaffold grade or better, and
 - (b) sized 51 millimetres by 254 millimetres.
- (3) An employer must ensure that a solid sawn lumber scaffold plank
 - (a) is used, stored, inspected and maintained according to the manufacturer's specifications, or
 - (b) if there are no manufacturer's specifications, is made of at least number one grade lumber that is 51 millimetres by 254 millimetres with a wane limited to 20 percent of the width of the wide face of the plank and the warp limited to ensure a flat surface.
- (4) An employer must ensure that a scaffold plank
 - (a) is visually inspected by a competent worker before it is installed in a scaffold,
 - (b) is subjected to and passes a load test before it is installed in a scaffold if a visual inspection reveals damage that could affect its strength or function,
 - (c) extends not less than 150 millimetres and not more than 300 millimetres beyond a ledger, and
 - (d) is secured to prevent movement in any direction that may create a danger to a worker.

- (5) Despite subsection (4)(c), an employer must ensure that an overlapping scaffold plank extends not less than 300 millimetres beyond a ledger.

Scaffold platform

22.8(1) An employer must ensure that all light duty scaffold platforms are not less than 500 millimetres wide.

- (2) An employer must ensure that all heavy duty scaffold platforms are not less than 1 metre wide.

Metal scaffolding

22.9 An employer must ensure that

- (a) metal scaffolding is erected, used, inspected, maintained and dismantled in accordance with the manufacturer's specifications or specifications certified by a professional engineer, and
- (b) the structural parts of metal scaffolding are securely fastened together and braced as designed by the manufacturer.

Bracket scaffolds

22.10(1) An employer must ensure that a bracket scaffold

- (a) is constructed, installed and used in accordance with the manufacturer's specifications or specifications certified by a professional engineer,
- (b) is securely attached to the support wall in a manner that prevents the bracket from dislodging, and
- (c) is used only as a light duty scaffold.

- (2) An employer must ensure that the brackets on a bracket scaffold are spaced at intervals of not more than 3 metres.

Double-pole scaffolds

22.11(1) An employer must ensure that uprights and ledgers

- (a) of light duty double-pole scaffolds are spaced not more than 3 metres apart, and
- (b) of heavy duty double-pole scaffolds are spaced not more than 2.3 metres apart.

- (2) An employer must ensure that the dimensions of parts of wooden double-pole scaffolds are not less than those specified in Schedule 6, Tables 1, 2, 3 and 4.

Free-standing or rolling scaffolds

22.12(1) An employer must ensure that

- (a) the height of a free-standing or rolling scaffold is not more than 3 times its smallest base dimension,
- (b) if outriggers are used to attain the 3 to 1 ratio, the outriggers are firmly attached and ensure the stability of the scaffold,
- (c) if a vehicle is used instead of scaffold wheels to form a rolling scaffold, all parts of the scaffold are securely fastened together and the scaffold is securely attached to the vehicle,

(d) if outriggers are required to maintain the stability of a vehicle mounted scaffold, the outriggers are securely attached to the frame of the vehicle, lowered and supporting the frame of the vehicle in case a tire should fail, and
(e) a free-standing or rolling scaffold is equipped with locking wheels or there are blocks for the wheels.

- (2) A worker must not remain on a rolling scaffold while it is being moved unless
 - (a) the height of its work platform is not more than twice its smallest base dimension, and
 - (b) the surface over which it travels is firm, level and free of hazards that may cause the scaffold to topple.
- (3) A worker using a free-standing or rolling scaffold must engage the wheel locking devices or block the scaffold against movement while the worker is on the scaffold.

Ladderjack scaffolds

- 22.13(1) An employer must ensure that ladders used for ladderjack scaffolds are
 - (a) erected in accordance with the manufacturer's specifications, or
 - (b) if there are no manufacturer's specifications, are not more than 3 metres apart.
- (2) An employer must ensure that brackets in a ladderjack scaffold are designed to
 - (a) be supported by the side rails of the ladder, or
 - (b) have at least 90 millimetres of width resting on the ladder rung.
- (3) An employer must ensure that a ladderjack scaffold is not more than 5 metres high.
- (4) An employer must ensure that there are not more than 2 workers at a time on a ladderjack scaffold.
- (5) Despite section 22.7, an employer may use a single commercially manufactured extendable painter's plank or a commercially manufactured aluminum or laminated plank on a ladderjack scaffold.
- (6) An employer must ensure that a ladder used for a ladderjack scaffold is rated heavy duty.

Needle-beam scaffolds

- 22.14(1) An employer must ensure that beams supporting a needle-beam scaffold
 - (a) are constructed of lumber, or a material that has properties of equal or greater strength than those of lumber,
 - (b) are not less than 89 millimetres by 140 millimetres lumber, and
 - (c) are placed on their edge.
- (2) An employer must ensure that planks forming the working platform of a needle-beam scaffold are pinned to prevent shifting.
- (3) An employer must ensure that ropes supporting a needle-beam scaffold have
 - (a) a breaking strength of at least 39 kilonewtons, and
 - (b) a diameter of not less than 16 millimetres.
- (4) An employer must ensure that beam ends of a needle-beam scaffold are provided with stops to prevent the ropes from slipping off the beam.

Outrigger scaffolds

22.15(1) This section applies to outrigger scaffolds, including suspended outrigger scaffolds.

- (2) If a reference in this section is made to lumber, a material that has properties equal to or greater than those of lumber may be used in its place.
- (3) An employer must ensure that
- (a) thrustouts are constructed of lumber that is 89 millimetres by 140 millimetres and placed on their edge,
 - (b) thrustouts do not extend more than 1.2 metres beyond the edge of the bearing surface,
 - (c) thrustouts are securely braced at the fulcrum point against movement or upset,
 - (d) the inboard ends of thrustouts are securely anchored against horizontal or vertical movement or upset,
 - (e) the inboard portion from the fulcrum point to the point of anchorage is not less than 1.5 times the length of the outboard portion,
 - (f) the maximum distance between thrustouts is 2.3 metres,
 - (g) if a working platform is suspended or thrust out, the platform is
 - (i) supported by vertical lumber hangers that are 38 millimetres by 140 millimetres or larger and not more than 3 metres long secured to the side of each thrustout and extending at least 300 millimetres above the top of each thrustout, and
 - (ii) secured to a block that rests on the top edge of each thrustout as an additional support,
 - (h) a suspended platform is supported by lumber beams that are 38 millimetres by 140 millimetres that are
 - (i) secured to the vertical hangers at least 300 millimetres above the bottom of the hangers, and
 - (ii) resting on blocks that are secured to the side of the hangers below each beam as an additional support,
 - (i) working platforms are completely planked between the hangers, and
 - (j) a suspended platform is braced to prevent swaying.
- (4) An employer must ensure that
- (a) counterweights are not used to secure the outriggers in place,
 - (b) stops to prevent lateral movement of the hangers are fixed to
 - (i) the thrustout and block referred to in subsection 3(g)(ii), and
 - (ii) the ledgers and the blocks referred to in subsection (3)(h), and
 - (c) materials are not stored on outrigger scaffolds.

Pump jack scaffolds

- 22.16** An employer must ensure that a pump jack scaffold
- (a) is used only as a light duty scaffold'
 - (b) is erected, maintained and used in strict adherence to the manufacturer's specifications and instructions,
 - (c) is erected using only the manufactured metal poles or synthetic poles with a wooden face or other material certified by the manufacturer, and
 - (d) has with it on site all the documentation from the manufacturer to indicate the proper erection and use.

Roofing brackets

- 22.17** An employer must ensure that a roofing bracket is
- (a) constructed to support the loads that may be put on it,
 - (b) provided with effective non-slip devices, and
 - (c) secured to the roof with an adequate number and size of nails.

Single-pole scaffolds

- 22.18** An employer must ensure that
- (a) a wooden single-pole scaffold is used only as a light duty scaffold and is not more than 9 metres in height,
 - (b) the uprights on a wooden single-pole scaffold are spaced not more than 3 metres apart, and
 - (c) the dimensions of members of wooden single-pole scaffolds are not less than those specified in Schedule 6, Tables 5 and 6.

Suspended scaffolds

22.19(1) This section applies to suspended scaffolds other than suspended outrigger scaffolds or suspended swingstage scaffolds.

- (2)** An employer must ensure that
- (a) a commercially manufactured suspended scaffold is erected, used, operated and maintained in accordance with the manufacturer's specifications or specifications certified by a professional engineer, and
 - (b) a suspended scaffold that is not commercially manufactured is designed and certified by a professional engineer.
- (3)** An employer must ensure that
- (a) the upper end of the suspension rope terminates in a spliced loop in which a steel thimble or eye is securely inserted,
 - (b) the suspension rope is secured to a thrustout by a bolt passing through the shackle, the steel thimble or the eye and the bolt is drawn up tightly to the end plate of the shackle by a securing nut,
 - (c) the planks of the platform are laid tightly together and overlap the supporting ledgers at each end of the scaffold by at least 300 millimetres, and
 - (d) working platforms are not less than 1 metre wide.
- (4)** An employer must ensure that all parts of a suspended scaffold are inspected daily by a competent person who signs the report and records and files the findings.
- (5)** An employer must ensure that
- (a) thrustouts are securely anchored to the building,
 - (b) counterweights are not used for anchoring a thrustout, and
 - (c) a stop bolt is placed at the outer end of each thrustout.
- (6)** An employer must ensure that the working parts of a hoisting mechanism are left exposed so that
- (a) defective parts of the mechanism can be easily detected, and
 - (b) an irregularity in the operation of the mechanism can be easily detected.
- (7)** An employer must ensure that a suspended scaffold platform has an enclosure that
- (a) is on the 3 sides of the platform that are not adjacent to the building,
 - (b) is made of wire mesh that complies with section 27.17 or another material that is at least as effective at containing materials or equipment, and

(c) extends not less than 1 metre above the platform.

Swingstage scaffolds

22.20(1) An employer must ensure that

- (a) a commercially manufactured swingstage scaffold is erected, used, operated and maintained in accordance with the manufacturer's specifications or specifications certified by a professional engineer,
- (b) a swingstage scaffold that is not commercially manufactured is designed and certified by a professional engineer, and
- (c) operating procedures are developed and communicated to the workers for a swingstage scaffold referred to in clause (b).

(2) If it is necessary for the safe operation of a swingstage scaffold with a platform, an employer must ensure that the platform is designed to prevent the swingstage scaffold from swinging or swaying away from the building or structure.

Requirements for swingstage scaffold

22.21(1) An employer must ensure that a swingstage scaffold is used only as a light duty scaffold.

- (2)** An employer must ensure that a swingstage scaffold is suspended by at least 2 upper attachment points placed so that the suspension ropes are parallel.
- (3)** An employer must ensure that a swingstage platform is at least 500 millimetres wide and fastened to the stirrups.
- (4)** An employer must ensure that a platform is equipped with rollers or fenders that bear against the side of the building or structure to hold the platform at a distance from the wall sufficient to avoid an obstacle, but not so far as to allow a worker to fall through the space between the wall and the platform.
- (5)** An employer must ensure that a thrustout, clamp or parapet hook is tied back or otherwise secured to a solid part of the structure and cannot move or be dislodged.
- (6)** An employer must ensure that counterweights
 - (a) are firmly attached to the thrustouts,
 - (b) are heavy enough to counterbalance 4 times the maximum weight likely to be on the scaffold,
 - (c) are designed and manufactured specifically for that purpose, and
 - (d) do not consist of bagged or loose material.
- (7)** An employer must ensure that power units on a swingstage scaffold are equipped with
 - (a) manually operated constant pressure controls, and
 - (b) positive drives for raising and lowering the scaffold.
- (8)** An employer must ensure that a swingstage scaffold platform has an enclosure that
 - (a) is on the 3 sides of the platform that are not adjacent to the building,
 - (b) is made of wire mesh that complies with section 22.17 or another material that is at least as effective at containing materials or equipment, and
 - (c) extends not less than 1 metre above the platform.

Safety on swingstage scaffolds

- 22.22(1)** An employer must ensure that where workers are required to be on a swingstage scaffold, the hoisting equipment is equipped with automatically operating locking mechanisms so that the suspension ropes cannot slip or run free.
- (2)** An employer must ensure that if workers are required to be on a manually operated swingstage scaffold,
- (a) the hoisting mechanism is securely locked in a positive drive position, and
 - (b) the scaffold has a secondary anti-fall device that connects the scaffold to the suspension rope at a point above the hoisting mechanism.
- (3)** An employer must ensure that a powered swingstage scaffold has a manually operated secondary mechanism or an escape device, other than the vertical lifeline used for fall protection, if workers cannot reach a safe exit when there is a mechanical failure or power failure.
- (4)** An employer must ensure that a worker on the stage of a swingstage scaffold can use the manually operated secondary mechanism or escape device referred to in subsection (3) to move the scaffold to a point at which the worker can exit safely.
- (5)** An employer must ensure that a suspension rope is long enough to reach the next working surface below the scaffold.
- (6)** An employer must ensure that the end of a suspension rope is doubled back and held securely by a cable clamp so that the hoisting machine cannot run off the end of the rope.
- (7)** An employer must ensure that 2 or more swingstage scaffolds are not linked together by bridging the distance between them.

Workers on swingstage scaffolds

- 22.23(1)** Before starting to work on a swingstage scaffold, a worker must inspect the scaffold to ensure that
- (a) counterweights meet the requirements of section 22.21, and
 - (b) the thrustouts or parapet hooks are secured in accordance with section 22.21.
- (2)** A worker on a swingstage scaffold must ensure that
- a) all ropes from the scaffold that extend to the ground or a landing are prevented from tangling, and
 - (b) when the scaffold is being moved up or down on its suspension ropes, the stage is not out of level by more than 10 percent of its length.
- (3)** A person on a swingstage scaffold must
- (a) remain between the stirrups at all times,
 - (b) not bridge the distance between the scaffold and any other scaffold,
 - (c) not use a vertical lifeline used for fall protection as a means of entering or leaving a swingstage, and
 - (d) not use bagged or loose materials as counterweights on the scaffold.
- (4)** An employer must ensure that if a worker may fall 3 metres or more while working from a suspended swingstage scaffold, the worker's personal fall arrest system is connected to a vertical lifeline.

- (5) Despite subsection (4), an employer may allow a worker to connect a personal fall arrest system to a horizontal lifeline or anchorage on the swingstage scaffold when using a swingstage scaffold where the failure of one suspension line will not substantially alter the position of the swingstage scaffold.

Elevating Platforms and Aerial Devices

Worker safety

- 22.24(1)** An employer must ensure that a worker does not travel in a basket, bucket, platform or other elevated or aerial device that is moving on a road or work site if road conditions, traffic, overhead wires, cables or other obstructions create a danger to the worker.
- (2) A person must not travel in a basket, bucket, platform or other elevated or aerial device that is moving on a road or work site if road conditions, traffic, overhead wires, cables or other obstructions create a danger to the person.

Standards

- 22.25(1)** An employer must ensure that a self-propelled work platform with a boom-supported elevating platform that telescopes, articulates, rotates or extends beyond the base dimensions of the platform meets the requirements of
- (a) CSA Standard CAN/CSA-B354.4-02, *Self-Propelled Boom-Supported Elevating Work Platforms*, or
 - (b) ANSI Standard ANSI/SIA A92.5-1992, *Boom-Supported Elevating Work Platforms*.
- (2) Subsection (1) does not apply to a work platform mounted on a motor vehicle.
- (3) An employer must ensure that a self-propelled integral chassis elevating work platform with a platform that cannot be positioned laterally completely beyond the base and with its primary functions controlled from the platform meets the requirements of
- (a) CSA Standard CAN/CSA-B354.2-01, *Self-Propelled Elevating Work Platforms*, or
 - (b) ANSI Standard ANSI/SIA A92.6-1999, *Self-Propelled Elevating Work Platforms*.
- (4) An employer must ensure that a manually propelled, integral chassis elevating work platform with a platform that cannot be positioned laterally completely beyond the base, that may be adjusted manually or using power and that must not be occupied when moved horizontally meets the requirements of
- (a) CSA Standard CAN3-B354.1-M82 (R2000), *Elevating Rolling Work Platforms*, or
 - (b) ANSI Standard ANSI/SIA A92.3-1990, *Manually Propelled Elevating Aerial Work Platforms*.
- (5) An employer must ensure that a telescopic aerial device, aerial ladder, articulating aerial device, vertical tower, material-lifting aerial device or a combination of any of them, when mounted on a motor vehicle, whether operated manually or using power, meets the requirements of CSA Standard CAN/CSA-C225-00, *Vehicle-Mounted Aerial Devices*.
- (6) An employer must ensure that a mast climbing elevating work platform that may be adjusted manually or using power meets the requirements of ANSI Standard ANSI/SIA A92.9-1993, *Mast-Climbing Work Platforms*.

- (7) An employer must ensure that a vehicle-mounted bridge inspection and maintenance elevating work platform meets the requirements of ANSI Standard ANSI/SIA A92.8-1993 (R1998), *Vehicle-Mounted Bridge Inspection and Maintenance Devices*.
- (8) An employer must ensure that an order picker meets the requirements of ASME Standard B56.1-2000, *Safety Standard for Low Lift and High Lift Trucks*.
- (9) An elevating work platform of a type not referred to in subsections (1) to (8) must meet a standard the use of which is approved by a Chief Safety Officer.

Permanent suspension powered work platforms

- 22.26(1)** An employer must ensure that the platform of a permanent suspension powered work platform
 - (a) is constructed, installed, operated, tested, inspected, maintained, altered and repaired in accordance with CSA Standard CAN/CSAZ271- 98, *Safety Code for Suspended Elevating Platforms*, or
 - (b) if it was installed before April 30, 2004, is certified by a professional engineer.
- (2) For the purposes of subsection (1), the “rated capacity” in CSA Standard CAN/CSA-Z271-98 is to be taken to mean the total weight of
 - (a) workers and hand tools, with a minimum aggregate weight of 115 kilograms per worker, and
 - (b) water and other equipment that the work platform is designed to lift at the rated speed.

Fork-mounted work platforms

- 22.27(1)** An employer must ensure that a cage or platform mounted on the forks of powered mobile equipment and intended to support material only is designed and constructed so that it is securely attached to the lifting carriage or forks of the powered mobile equipment so that the cage or platform cannot accidentally move laterally or vertically and the powered mobile equipment cannot tip.
- (2) An employer must ensure that a work platform mounted on the forks of powered mobile equipment and intended to support a worker
 - (a) is commercially manufactured or designed and certified by a professional engineer if not commercially manufactured,
 - (b) is designed and constructed to a safety factor of 4 and the fork lift is capable of lifting at least 4 times any anticipated load,
 - (c) has guardrails and toe boards, and
 - (d) has a screen or similar barrier that prevents a worker from touching any drive mechanism.
- (3) An employer must ensure that the operator of the powered mobile equipment remains at the controls while a worker is on the elevated fork mounted work platform.
- (4) A person must not be on a fork-mounted work platform while the powered mobile equipment to which the platform is attached is moving horizontally.

Suspended man baskets

- 22.28(1)** An employer must ensure that
- (a) a commercially manufactured suspended man basket is erected, used, operated and maintained in accordance with the manufacturer's specifications or specifications certified by a professional engineer, or
 - (b) a suspended man basket that is not commercially manufactured is designed and certified by a professional engineer.
- (2)** Despite section 5.17, if it is not practicable to provide a separate personal fall arrest system using a vertical lifeline for each worker in the man basket, an employer must ensure that
- (a) a separate support is attached between the suspended man basket and the hoist line above the hook assembly that is capable of withstanding the weight of the man basket, materials, equipment and workers should the hook assembly fail, and
 - (b) each worker within the man basket is wearing a separate personal fall arrest system attached to the man basket.
- (3)** An employer must ensure that a suspended man basket
- (a) is suspended only from a crane having hoisting gear capable of raising and lowering under power and not from one controlled only by brakes,
 - (b) is only suspended from a crane that is approved by the manufacturer for that purpose, and
 - (c) is used on a crane with a fixed boom

Boatswain's chairs

- 22.29(1)** An employer must ensure that
- (a) a commercially manufactured boatswain's chair is assembled, used and maintained in accordance with the manufacturer's specifications or specifications certified by a professional engineer, or
 - (b) a boatswain's chair that is not commercially manufactured is designed and certified by a professional engineer.
- (2)** An employer must ensure that a boatswain's chair provides stable support for the user.
- (3)** An employer must ensure that a rope used to suspend a boatswain's chair is
- (a) made of synthetic fibre with a breaking strength of at least 27 kilonewtons, and
 - (b) is compatible for use with the rigging hardware in the suspension system.
- (4)** An employer must ensure that a wire rope used to suspend a boatswain's chair
- (a) is of a type recommended for suspending boatswain's chairs by the rope manufacturer, and
 - (b) is suitable for the hoist being used.
- (5)** An employer must ensure that a worker on a boatswain's chair is provided with and uses a personal fall arrest system.

Walking stilts

- 22.30** An employer and a worker must ensure that walking stilts
- (a) are used only on solid surfaces that are clean, level and free of tripping or slipping hazards,

- (b) are not worn on stairs, used on scaffolds, worn outside the confines of a building or structure, used near the edge of a floor or mezzanine unless the guardrails have been extended to a height of 2 meters, and
- (c) are no more than 76 cm in height.

Temporary supporting structures

- 22.31(1)** An employer must ensure that a temporary supporting structure and every part of it including metal scaffold components are designed, constructed and braced in accordance with CSA Standard S269.1-1975 (R1998), *Falsework for Construction Purposes*.
- (2) Subsection (3) applies to a temporary supporting structure unless the requirements of CSA Standard S269.1-1975 (R1998), *Falsework for Construction Purposes* are more stringent.
 - (3) An employer must ensure that a temporary supporting structure is certified by a professional engineer if the temporary supporting structure
 - (a) consists of shoring that is more than 3.7 metres in height,
 - (b) may transmit loads to another part of the structure that may not provide adequate support, or
 - (c) is a structure designed to act as a unit composed of parts so connected to one another that a load applied to any part of it may alter the stresses induced in other parts.
 - (4) A professional engineer certification for the purposes of subsection (3) must show
 - (a) the size and specifications of the temporary supporting structure, including the type and grade of all materials for its construction,
 - (b) the loads for which the temporary supporting structure is designed,
 - (c) the sequence of loading or unloading the temporary supporting structure, if the loading or unloading sequence is critical to its stability, and
 - (d) the shoring sequence, as necessary, after the temporary supporting structure is stripped.

Fly form deck panels

- 22.32(1)** An employer must ensure that a fly form deck panel
 - (a) is capable of resisting a minimum horizontal load of 3.6 kilonewtons applied in any direction at the upper edge,
 - (b) has a safety factor against overturning of at least 2 to 1, and
 - (c) has a safety factor against sliding of at least 1.5 to 1.
- (2) An employer must ensure that attachments to the panel are completed and secured before the fly form deck panel is detached from the hoist used to position the panel.
 - (3) An employer must ensure that erection drawings and procedures respecting a fly form deck panel are readily available to the workers who will assemble, fly, use, dismantle or reuse the panel.
 - (4) The erection drawings and procedures referred to in subsection (3) must include
 - (a) a plan view, longitudinal section and cross section of the panel,
 - (b) the calculated position of the panel's centre of gravity,
 - (c) step-by-step procedures for all phases of assembly, flying, use, dismantling, repair and reuse of the panel,
 - (d) procedures for installing the panel on non-typical floors, and

(e) any supplementary specifications for using the panels that are prepared by the manufacturer, a professional engineer or the employer.

- (5) An employer must ensure that no person is on a fly form deck panel while it is being flown.
- (6) A person must not be on a fly form deck panel while it is being flown.

Part 23 - Overhead Power Lines

Safe limit of approach distances

- 23.1(1)** Before work is done or equipment is operated within 7.0 metres of an energized overhead power line, an employer must contact the power line owner or operator to
- (a) determine the voltage of the power line, and
 - (b) establish the safe limit of approach distance listed in Schedule 4, Tables 1 to 4.
- (2) An employer must notify the operator of an energized overhead power line before work is done or equipment is operated in the vicinity of a power line at distances less than the safe limit of approach distances listed in Schedule 4, Tables 1 to 4 and obtain the operator's assistance in protecting the workers involved.
- (3) An employer must ensure that earth or other materials are not placed under or beside an overhead power line if doing so reduces the safe clearance to less than the safe limit of approach distances listed in Schedule 4, Tables 1 to 4.
- (4) A worker must follow the direction of the employer in maintaining the appropriate safe clearance when working in the vicinity of an overhead power line.

Transported loads, equipment and buildings

- 23.2(1)** The safe limit of approach distances listed in Schedule 4, Tables 1 to 3 do not apply to a load, structure, equipment or building while it is being transported under energized overhead power lines if the total height, including equipment transporting it, is less than 4 metres.
- (2) The safe limits of approach listed in Schedule 4, Tables 1 to 3 apply to work being done with a load, structure, equipment or building under or near energized overhead power lines, regardless of height.
- (3) Where a load, structure, equipment or building is being moved and the limits of approach listed in Schedule 4, Tables 1 to 3 are being encroached upon and workers are involved, an employer must ensure that the operator of the power line is contacted and provides assistance in protecting the workers.

Limits of approach

General limits

- 23.3** An employer must ensure that workers and equipment do not work within the limits of approach as specified in Schedule 4, Table 1.

Utility workers

- 23.4(1)** An employer must ensure that utility workers do not work within the limits of approach as specified in Schedule 4, Table 2.
- (2) Despite subsection (1), a utility worker may only work up to the limits of approach specified in Schedule 4, Table 2 when all the following apply:
- (a) the equipment is energized to a potential of not more than 72kV,
 - (b) de-energizing, rerouting or guarding of the equipment is not practicable for the work being performed,
 - (c) the work is not being done for the owner of the power system,

- (d) the work is of a type that is performed regularly, and
- (e) workers follow the established safe work procedures.

Electrical workers

- 23.5(1)** An employer must ensure that journeyman electrical workers do not work within the limits of approach as specified in Schedule 4, Table 3.
- (2)** Despite subsection (1), a qualified electrical worker or a worker under their direct control may work within the distances as specified in Schedule 4, Table 3 when authorized by the owner or operator of the power system and using safe work procedures that are certified by a professional engineer.

Utility arborists

- 23.6** An employer must ensure that utility arborists and their equipment do not work within the limits of approach as specified in Schedule 4, Table 4.

Part 24 – Electrical Safety

General Electrical Requirements

Poles and structures

- 24.1(1)** Prior to a worker climbing or being supported by a pole or structure, or before any work is done that will affect its stability, an employer must ensure that
- (a) the pole or structure is tested for soundness and stability, and
 - (b) if there is any doubt as to soundness or stability, the pole or structure is effectively supported before any wires or cables are changed, and the supports are left in place until workers are clear of the pole or structure.
- (2)** Prior to a worker climbing or working on a pole supported only by pike poles an employer must ensure that
- (a) there are no other alternatives for support,
 - (b) a hazard assessment is conducted in accordance with Part 2,
 - (c) there are an adequate number of people and pike poles available on site, and
 - (d) a competent person
 - (i) is in charge of the work, and
 - (ii) does the work.

Obstructions on poles

- 24.2(1)** An employer must ensure that mailboxes, signs, clotheslines, or other obstructions on or close to poles on which workers are required to work are removed prior to climbing.
- (2)** An employer must ensure that tags authorized by the owner which are placed on a pole for identification purposes are less than 1.7 m above grade, on the side of the pole which a climbing worker will face.

Informing workers

- 24.3** An employer must ensure that a worker is informed of the potential electrical hazards before being permitted to do work in proximity to energized electrical conductors or equipment.

Service rooms

- 24.4** An employer must ensure that service rooms and electrical vaults are used only for the purpose for which they were intended.

Space around equipment

- 24.5(1)** An employer must ensure that passageways and working space around electrical equipment are kept clear of obstructions, arranged so as to give authorized persons ready access to all parts requiring attention, and not used for storage.
- (2)** An employer must ensure that flammable material is not stored or placed close to electrical equipment.

Testing equipment

- 24.6(1)** Electrical testing equipment may be used if an employer ensures that it meets the requirements of

- (a) *CSA Standard C22.2 No. 160-M1985 (Reaffirmed 1992), Voltage and Polarity Testers, or*
- (b) *CSA Standard CAN/CSA-C22.2 No. 231 Series-M89, CSA Safety Requirements for Electrical and Electronic Measuring and Test Equipment.*

- (2) Electrical testing equipment not meeting a standard specified in subsection (1) may be used if an employer ensures that it has
 - (a) fusing or circuitry designed to protect the operator in the event of a fault resulting from inadvertent misuse of the meter, or a fault on the circuit being tested,
 - (b) clearly and unambiguously marked measurement ranges,
 - (c) lead wire insulation rated to the maximum voltage reading of the meter,
 - (d) lead wires that are not cracked or broken, and having a current carrying capacity (ampacity) that meets or exceeds the maximum current measurement of the meter, and
 - (e) a minimum exposure of metal on lead wire probes.
- (3) An employer must ensure that appropriate safe work procedures are established and followed for testing electrical equipment and circuits.

Insulated aerial device

- 24.7(1)** An employer must ensure that an insulated aerial device is dielectrically tested at least annually in accordance with *CSA Standard CAN/CSA-C225-M88 Vehicle Mounted Aerial Devices* and its insulating capability certified by the testing agency.
- (2) An employer must ensure that an insulated aerial device which has not passed the testing required by subsection (1) is considered non-insulated and any markings or identification on the device indicating insulated capability must be removed or effectively covered over and the user informed of the non-insulated status of the device.

Working on Low Voltage Electrical Equipment

Disconnection and lockout

- 24.8(1)** An employer must ensure that low voltage electrical equipment is completely disconnected and locked out as required by these regulation before starting work on it.
- (2) Except as specified in subsection (3), if it is not practicable to completely disconnect low voltage electrical equipment, an employer must ensure that work is performed by qualified, authorized workers in accordance with written safe work procedures which
 - (a) require the use of appropriate electrical protective equipment, including rubber gloves and cover up, and other necessary live line tools,
 - (b) provide that, if practicable, uncontrolled liquid is not permitted close to any worker working on the equipment, and
 - (c) if applicable, control the use of metal ladders, wooden ladders with wire reinforced side rails, metal scaffolds or metal work platforms.
- (3) An employer must ensure that work is not done on energized parts of electrical equipment associated with lighting circuits operating at more than 250 volts-to-ground without prior written notification to a chief safety officer.

Warning signs

- 24.9** Before completing installation and after energizing low voltage electrical equipment, an employer must ensure that conspicuous signs visible to workers are placed close to the equipment stating "Danger, Energized Equipment" or similar wording to that effect.

Working close to energized equipment

- 24.10(1)** An employer must ensure that un-insulated, energized parts of low voltage electrical equipment are guarded by approved cabinets or enclosures unless the energized parts are in a suitable room or similar enclosed area that is only accessible to qualified and authorized persons.
- (2)** An employer must ensure that each entrance to a room and other guarded location containing un-insulated and exposed, energized parts is marked with a conspicuous warning sign limiting entry to qualified and authorized persons.
- (3)** If un-insulated energized parts are not guarded with approved cabinets or enclosures, an employer must ensure that
- (a) suitable barriers or covers are provided if a worker unfamiliar with the hazards is working within 1 m (3.3 ft) of the un-insulated, energized parts, or
 - (b) the worker is informed of the potential hazards, and provided with and follows appropriate written safe work procedures.

Identification of controls

- 24.11** An employer must ensure that each electrical distribution switch, circuit breaker and control is clearly marked to indicate the equipment it serves.

Grounding portable equipment

- 24.12(1)** An employer must ensure that portable electrical equipment, required to be grounded and not permanently connected to the wiring system, is effectively grounded by the use of approved cords and polarized plugs inserted in grounded polarized receptacles.
- (2)** Despite subsection (1), portable electrical equipment having double insulation or equivalent protection, and so marked, need not be grounded.

Ground fault circuit interrupters

- 24.13(1)** When used outdoors or in a wet or damp location, an employer must ensure that portable electrical equipment, including temporary lighting, is protected by an approved ground fault circuit interrupter of the class A type installed at the receptacle or on the circuit at the panel, unless another acceptable means of protection is provided.
- (2)** An employer must ensure that a ground fault circuit interrupter is not used in place of grounding except as permitted by the *Electrical Protection Act* and regulations made under it.

Working on High Voltage Electrical Equipment

Isolation and lockout

- 24.14(1)** An employer must ensure that high voltage electrical equipment is, if practicable, completely isolated, grounded, and locked out before starting work on it.

- (2) Where it is not practicable to completely isolate high voltage electrical equipment, an employer must ensure that
- (a) written safe work procedures are in place and followed,
 - (b) two or more qualified and authorized persons are present while the work is being done, unless the procedures being followed under paragraph (a) specifically permit the work to be done by one person,
 - (c) appropriate electrical protective equipment, including rubber blankets, hoses, hoods, gloves and live line tools are selected, used, stored, tested, and maintained in accordance with the appropriate standard, and
 - (d) the use of metal ladders, wire reinforced side rail wooden ladders, metal scaffolds or metal work platforms is in accordance with the procedures established under paragraph (a).

Warning signs

- 24.15(1)** Before completing installation and after energizing high voltage electrical equipment, an employer must ensure that conspicuous signs visible to workers are placed close to the equipment stating "Danger -- Energized Equipment" or similar wording to that effect.

Working on De-Energized High Voltage Power Systems

Isolation and lockout

- 24.16(1)** Before working on a power system that for reasons of safety must be de-energized, the person in charge must ensure that the part of the system being worked on is isolated and grounded, and locked out as required by these regulations.
- (2) An employer must ensure that barriers or distinctive identification are used to differentiate high voltage electrical equipment which has been de-energized for safety reasons from similar energized equipment at the work location if the lack of such identification would result in undue risk to workers.
- (3) If it is impracticable to lock out a power system or part of the power system, an employer must ensure that
- (a) the boundaries of the power system or part are clearly defined,
 - (b) written work procedures governing the issue of safety protection guarantees, and which address the requirements of sections 24.17 to 24.21 are followed, and
 - (c) all major equipment used to establish safety protection guarantees are uniquely identified at a conspicuous place on or near the equipment.

Person in charge

- 24.17(1)** An employer must ensure that one person is assigned at any one time the exclusive authority as the person in charge to establish the conditions for, and to issue safety protection guarantees for, the power system or a part of it.
- (2) The person in charge must
- (a) ensure that the status of the power system or assigned part of the power system is accurately represented on a mimic display,
 - (b) maintain a log of switching details, safety protection guarantees and operational events, and
 - (c) authorize the commencement of any work on the power system or assigned part of it.

- (3) An employer must ensure that there is an effective communication system between the person in charge and the workers doing the work.
- (4) An employer must ensure that only a worker specifically authorized by the owner of the system receives a safety protection guarantee or does work on the power system.

Switching sequences

- 24.18** An employer must ensure that if a switching sequence requires the operation of 3 or more devices, a written switching order is prepared, communicated to and followed by the workers.

Isolating devices

- 24.19(1)** An employer must ensure that isolating devices used for safety protection guarantees provide for visual verification of the opening of the isolation point.
- (2) An employer must ensure that lockable isolating devices are locked in the position or condition required to protect workers before work commences under a safety protection guarantee.
- (3) An employer must ensure that a distinctive "DO NOT OPERATE" tag is placed securely on each isolating device used for a safety protection guarantee.

Grounding and blocking

- 24.20(1)** After a safety protection guarantee is in effect, an employer must ensure that the equipment to be worked on is tested to verify isolation before grounding and blocking begins.
- (2) After testing to verify isolation, the person at the worksite in charge of each crew must verify that required grounding and blocking devices are in place before work begins.
- (3) An employer must ensure that grounding and blocking of any equipment that may be hazardous to workers is carried out as close as practicable to the worksite.
- (4) If grounding and blocking is not safe or practicable, an employer must ensure that written safe work procedures are developed, communicated to and followed by the workers.
- (5) The person in charge may only remove grounding and blocking devices prior to the completion of the work for the purpose of conducting tests.

Multiple authorities

- 24.21** If a safety protection guarantee involves 2 or more power systems, or 2 or more persons in charge of different parts of a system, an employer must ensure that appropriate written procedures are established, communicated and followed to ensure that any safety protection guarantee will be effective.

Working Close to Energized High Voltage Equipment and Conductors

Minimum clearance

- 24.22(1)** An employer must ensure that at least the minimum applicable distance specified in Schedule 4, Table 1 is maintained between exposed, energized high voltage electrical equipment and conductors and any worker, work, tool, machine, equipment or material, unless otherwise permitted by this Part.
- (2)** An employer must accurately determine the voltage of any energized electrical equipment or conductor and the minimum distance from it required by subsection (1).

Assurance in writing

- 24.23(1)** If the minimum distance in Schedule 4, Table 1 cannot be maintained because of the circumstances of work or the inadvertent movement of persons or equipment, an employer must ensure that
- (a) an assurance in writing is obtained and is signed by a representative of the owner of the power system, and
 - (b) the safeguards specified in the assurance are in place before work commences and effectively maintained while the work is taking place.
- (2)** The assurance referred to in subsection (1) must state that while the work is being done the electrical equipment and conductors will be displaced or rerouted from the work area, if practicable.
- (3)** If compliance with subsection (2) is not practicable, an employer must ensure that
- (a) the assurance states that the electrical equipment will be isolated and grounded, or
 - (b) where isolation and grounding is not practicable the assurance states that the electrical equipment will be visually identified and guarded.
- (4)** Where guarding is used, an employer must ensure that
- (a) neither equipment nor unqualified persons touch the guarding, and
 - (b) a safety watcher is designated, or range limiting or field detection devices are used.
- (5)** An employer must ensure that the assurance is available for inspection, as close as practicable to the work area, and known to all persons with access to the area.

Assurance not practicable

- 24.24(1)** If exposed high voltage electrical equipment and conductors cannot be isolated, rerouted or guarded, an employer must ensure that work is not done within the minimum distance in Schedule 4, Table 1 until approval is obtained from the chief safety officer and the following precautions are taken:
- (a) the area within which equipment or materials are to be moved must be barricaded and supervised to restrict entry only to those workers necessarily engaged in the work;
 - (b) a safety watcher must be designated; and
 - (c) a positive means must be provided for the safety watcher to give a clear, understandable stop signal to workers in the area, and the watcher must give the stop signal by no other means.

- (2) While equipment is in motion in an area in proximity to energized electrical equipment or conductors, an employer must ensure that no person other than the equipment operator touches any part of the equipment or the material being moved by it.
- (3) No person may move a load or any rigging line from its position of natural suspension if it is in proximity to an energized electrical conductor or equipment.

Specially trained

- 24.25** A worker who has taken a course of instruction approved by the chief safety officer may work up to the adjusted limits of approach in Schedule 4, Table 2 when all the following conditions apply:
- (a) the high voltage electrical equipment is energized to a potential of not more than 75kV;
 - (b) a professional engineer has determined that rerouting, de-energizing or guarding of the equipment is not practicable for the type of work being performed;
 - (c) the work is not being done for the owner of the power system;
 - (d) the work is of a type that must be done regularly; and
 - (e) the worker follows written safe work procedures acceptable to the chief safety officer.

Authorization by owner

- 24.26** A qualified electrical worker and workers under their direct supervision may work up to the limits specified in Schedule 4, Table 3 provided the worker is authorized by the owner of the power system and uses procedures acceptable to the chief safety officer.

Emergency work

- 24.27(1)** Sections 24.22 to 24.26 do not apply to emergency actions close to energized high voltage electrical equipment or conductors carried out by workers who have undergone a course of instruction approved by the chief safety officer.
- (2) During emergency actions, an employer must ensure that all reasonable precautions are taken to control the hazards including, where practicable,
 - (a) restricting entry into the area within which equipment or materials are to be moved to workers necessarily engaged in the work,
 - (b) designating a safety watcher,
 - (c) when equipment is in motion, preventing a person other than the equipment operator from touching any part of the equipment or the material being moved by it, and
 - (d) requiring the equipment operator to operate the controls from the seat provided on the equipment, or from a metal stand that is integral with the frame of the equipment and clear of the ground, or from a metallic mat bonded to the frame of the machine and located on the ground beside the machine.

Tree Pruning and Falling near Energized Conductors

Preliminary inspection

- 24.28 (1)** Before commencing tree pruning or falling close to energized high voltage overhead conductors, an employer must ensure that the worksite is inspected by a qualified person, authorized by the owner of the power system, to identify any hazardous areas, including situations where any part of a tree to be pruned or felled is within the

applicable minimum distance from an energized conductor as specified in Schedule 4, Table 1, or may fall within that distance.

- (2) Immediately before commencing work, an employer must ensure that an inspection is performed by a qualified person to verify the results of the initial inspection done under subsection (1) are still valid.

Work in a hazardous area

- 24.29** An employer must ensure that tree pruning or falling does not commence in a hazardous area until
- (a) an assurance is issued by the owner of the power system that any reclose feature is disabled, and
 - (b) workers are informed of the voltages of the conductors.

Qualifications

- 24.30(1)** An employer must ensure that tree pruning or falling within the minimum distances in Schedule 4, Table 1 from overhead energized high voltage conductors are carried out by a worker authorized by the owner of the power system to do such work.
- (2) An employer must ensure that the worker referred to in subsection (1) is a qualified electrical worker, a certified utility arborist, or an apprentice utility arborist working under the direct supervision of a certified utility arborist or a qualified electrical worker.

Site crew requirements

- 24.31** An employer must ensure that tree pruning or falling is not permitted within the minimum distances in Schedule 4, Table 1 from overhead high voltage energized conductors, unless
- (a) a certified utility arborist or a qualified electrical worker is present at the site and directing the work, and
 - (b) at least one additional qualified person, trained in appropriate emergency rescue procedures, is present.

Limits of approach

- 24.32(1)** An employer must ensure that a certified utility arborist and any conductive tool does not work closer to an energized high voltage conductor than the applicable limit of approach in column B of Schedule 4, Table 4.
- (2) An employer must ensure that an apprentice utility arborist, except as provided in subsection (3), and any tool being used, does not get closer to an energized high voltage conductor than the applicable limit of approach in column C of Schedule 4, Table 4 or to any vegetation that is closer than the column C limit or that could swing closer while being cut.
 - (3) An apprentice utility arborist may work up to the limit of approach permitted for a certified utility arborist in subsections (1) and (5) when in the presence of and under the direct supervision of a certified utility arborist or a qualified electrical worker with tree pruning and falling training.
 - (4) Vegetation closer to an energized high voltage conductor than the applicable limit in column B of Schedule 4, Table 4 must be cut using approved insulated tools.

- (5) An employer must ensure that an approved insulated tool used by a certified utility arborist is only used
 - (a) up to the limit of approach in column A of Schedule 4, Table 4, and
 - (b) from an insulated aerial device to remove vegetation closer than the limit of approach in column A of Schedule 4, Table 4, up to but not touching an energized high voltage conductor of 75 kV or less.
- (6) An employer must ensure that vegetation touching an energized high voltage conductor or within the applicable limit in column A of Schedule 4, Table 4 for a conductor at a potential of 75 kV or more, is removed only with the line isolated and grounded or by a qualified electrical worker using approved live line methods.
- (7) An employer must ensure that vegetation encroaching past the limits of approach in column B of Schedule 4, Table 4 that cannot be removed using an insulated aerial device is restrained from encroaching past the limit of approach in column A before removal.
- (8) An employer must ensure that a tree is topped before being felled, or other precautions are taken to prevent the tree or any part of it from falling closer than the limit of approach in column A of Schedule 4, Table 4.

Tree pruning and falling equipment

- 24.33(1)** An employer must ensure that an insulated tool is used, stored, tested and maintained as required by section 24.14(2) (c).
- (2) An employer must ensure that insulated hand tools and insulated aerial devices are maintained in clean condition and are dielectrically tested to the industry standard.
 - (3) An employer must ensure that an insulated aerial device is not operated or used within the limits of approach listed in Schedule 4 Table 4.

Note: An insulated aerial device is not considered an insulated tool.

Control Systems

General requirements

- 24.34(1)** An employer must ensure that a control system is designed, installed, operated and maintained in accordance with an acceptable industry standard.
- (2) An employer must ensure that only qualified and authorized persons design, install, operate and maintain a control system.
 - (3) When designing a control system, an employer must ensure that the types of potential system failure and the effects of failures on the control system and the controlled equipment are analysed.
 - (4) Where practicable and required to minimize risk to workers, an employer must ensure that a control system is designed so that
 - (a) the controlled equipment cannot be inadvertently activated,
 - (b) an effective basic diagnostic capability is incorporated,
 - (c) hardwired emergency stop devices are provided at operator stations, and
 - (d) operator controls other than emergency stop devices can be activated at only one station at a time.

- (5) An employer must ensure that a control system is used to prevent automatic startup after a power interruption or low voltage occurrence, if automatic startup in such circumstances is likely to create a hazard to workers.
- (6) An employer must ensure that a control system, where practicable, is designed so that the controlled equipment does not create a hazard to workers if the system fails or is shut down.
- (7) An employer must ensure that equipment operated by a new or altered control system is not used until the control system has been thoroughly checked and tested to verify that it will function in the intended manner.
- (8) An employer must ensure that there is up-to-date documentation which is readily available to affected workers describing the design, installation, operation and maintenance of a control system.
- (9) An employer must ensure that control system hardware is protected from circumstances that could adversely affect the performance of the system including mechanical damage, vibration, extreme temperatures or humidity levels, high electromagnetic field levels, and power disturbances.
- (10) An employer must ensure that written safe work procedures are developed for the use of equipment operated by a control system, including lockout procedures as required by these regulations.

Programmable control systems

- 24.35(1)** An employer must ensure that the documentation provided for a programmable control system includes a copy of the control program that will allow the equipment to be reprogrammed if necessary to ensure the safe operation of the system.
- (2) An employer must ensure that only qualified and authorized persons have access to the installed control system software.

Automatic control systems

- 24.36** Where practicable and required to prevent a hazard to workers, an employer must ensure that a control system is designed so that during an automatic sequence
- (a) the operator may make an emergency stop of the controlled equipment,
 - (b) the operator may, if safe, be allowed manual control of the equipment, and
 - (c) the sequence will abort when a protective timer completes its assigned time without an expected event occurring.

Remote control systems

- 24.37(1)** An employer must ensure that the maximum distance from which the operator controls equipment operated by a remote control system is that specified by the manufacturer.
- (2) An employer must ensure that written safe work procedures are established
 - (a) that specify the maximum distance from which the operator is allowed to remotely control the equipment, and
 - (b) to ensure that workers remain at a safe distance from remotely controlled moving parts, and any remotely controlled mobile machine.

Wireless remote control

- 24.38** An employer must ensure that a wireless remote control system incorporates
- (a) error checking to prevent the controlled equipment from responding to corrupt data, and
 - (b) identification coding methods to prevent a transmitter other than the designated transmitter from operating the equipment.

Electrofishing

General requirements

- 24.39(1)** An employer must ensure that
- (a) only trained and certified workers conduct electrofishing operations,
 - (b) workers are provided with a statement of their responsibilities and written safe work procedures, and
 - (c) workers are trained in and are knowledgeable of their responsibilities and work procedures.
- (2)** An employer must ensure that safe operating procedures from the manufacturer are readily available for electrofishing equipment.

Part 25 - Control of Hazardous Energy (Lock Out)

Definitions - In this Part

- 25.1(1)** “hazardous energy” means electrical, mechanical, hydraulic, pneumatic, chemical, nuclear, thermal, gravitational, or other form of energy that, when inadvertently released, could cause or lead to injury to workers due to
- (a) unintended motion of,
 - (b) energizing of,
 - (c) start-up of, or
 - (d) release of
- stored or residual energy in machinery, equipment, powered mobile equipment, piping, pipelines, or process systems;
- (2)** “isolated” means the use of a mechanical device to restrain, regulate, direct, or dissipate hazardous energy;
- (3)** “securing” means ensuring that an energy-isolating device cannot be released or activated by
- (a) removing any activating device,
 - (b) attaching to the energy-isolating device a lock that is operated by a key or similar device, or
 - (c) attaching to the energy-isolating device a mechanism that is not a lock and is designed to withstand inadvertent opening without the use of excessive force, unusual measures, or destructive techniques.

Hazard assessment

- 25.2** Where the unexpected energization or start up of machinery, equipment or system, or the unexpected release of an energy source could cause injury to a worker, an employer must ensure that a hazard assessment is conducted in accordance with Part 2 of these regulations.

Lock out procedures

- 25.3(1)** Where safe work procedures are identified as needed during a hazard assessment, an employer must ensure that they are developed, implemented and communicated to the workers involved in the work process.
- (2)** Where safe work procedures are developed for a particular task, an employer must ensure that each worker is provided with a written copy of the procedures prior to the work commencing.

Lock out not required

- 25.4** An employer and worker must ensure that lock out procedures are used unless
- (a) an energy isolating device is under the direct control of the worker at all times while the work is being performed, and
 - (b) equipment or machinery that receives power through a easily disconnected energy supply such as an electrical cord or quick release air or hydraulic line is disconnected from its power source and the connection is kept under the control of the worker at all times.

Isolation

- 25.5(1)** If machinery or equipment or powered mobile equipment is to be repaired, adjusted, inspected, unjammed, tested, cleaned, dismantled, serviced or maintained, an employer must ensure that no worker performs such work on the machinery or equipment or powered mobile equipment until it has come to a complete stop and
- (a) all hazardous energy at the point at which the work is to be carried out is isolated by placement and/or operation of an energy-isolating device and the energy-isolating device is secured in accordance with section 25.7, 25.8, or 25.9;
 - or
 - (b) the machinery or equipment or powered mobile equipment is otherwise rendered inoperative in a manner that prevents its accidental activation and provides equal or greater protection than the protection afforded under subsection (1)(a).
- (2)** An employer must develop and implement procedures and controls that ensure machinery or equipment or powered mobile equipment is serviced, tested or adjusted safely if
- (a) the manufacturer's specifications require the machinery or equipment or powered mobile equipment to remain operative when it is serviced, tested or adjusted, or
 - (b) there are no manufacturer's specifications and it is not reasonably practicable to stop or render the machinery or equipment or powered mobile equipment inoperative.
- (3)** If piping or a pipeline containing harmful substances under pressure is to be replaced, repaired, inspected, tested, cleaned, dismantled, serviced or maintained, an employer must ensure that no worker performs such work on the piping or pipeline until flow in the piping or pipeline has been stopped or regulated to a safe level, and the point at which the work is to be carried out is isolated and secured in accordance with section 25.12.

Verifying Isolation

- 25.6** A worker must not perform work on machinery or equipment or powered mobile equipment to be repaired, adjusted, inspected, unjammed, tested, cleaned, dismantled, serviced or maintained until
- (a) the actions required by section 25.5(1) are completed,
 - (b) it is tested to ensure that it is inoperative, and
 - (c) the worker is assured that it is inoperative.

Securing Isolation

Securing by Individual Workers

- 25.7(1)** Once all required energy-isolating devices have been placed in accordance with section 25.5(1), an employer must ensure that a worker involved in work at each point that requires control of hazardous energy secures each energy-isolating device with a personal lock.
- (2)** Once each energy-isolating device is secured as required by subsection (1), the worker must verify that the hazardous energy source has been effectively isolated.
- (3)** If more than one worker is working at each point that requires hazardous energy to be controlled,
- (a) each worker must attach a personal lock to each energy-isolating device, and

- (b) the first worker applying a lock must verify that the hazardous energy source has been effectively isolated.
- (4) If a worker who has placed a personal lock is reassigned before the work is completed, or the work is extended from one shift to another, an employer must ensure that
 - (a) another worker, authorized by the employer to do so, attaches a personal lock to the energy-isolating device prior to removal of the reassigned or departing worker's lock, or
 - (b) there is an effective and orderly transfer of control of the initial worker's lock.
- (5) An employer must ensure that each lock used has a unique mark or identification tag on it that identifies the worker to whom the securing device is assigned.
- (6) An employer must ensure that the name of the worker to whom a lock or identification tag is assigned is readily available during the time the energy sources are isolated.
- (7) Upon completion of the work requiring isolation of hazardous energy, an employer must ensure that the machinery or equipment or powered mobile equipment is returned to operation in accordance with section 25.11.

Securing by a Group

- 25.8(1) If a number of workers are working on machinery or equipment, or a number of energy-isolating devices must be secured, an employer may use a group procedure in accordance with subsections (2) to (6).
- (2) An employer must ensure that the group procedure referred to in subsection (1) is readily available to workers at the place where the group procedure is used.
- (3) Once all required energy-isolating devices have been placed by a designated worker in accordance with section 25.5(1), an employer must ensure that a designated worker has
 - (a) secured all energy isolating devices,
 - (b) verified that all energy sources are effectively isolated,
 - (c) secured any keys for the devices used under (a) to a key securing system such as a lock box, and
 - (d) completed, signed and posted a checklist that identifies the machinery or equipment covered by the hazardous energy control procedure.
- (4) Each worker working at each point that requires control of hazardous energy must apply a personal lock to the key securing system referred to in subsection (3)(c) before working on the machinery or equipment.
- (5) Where a worker who has placed a personal lock is reassigned before the work is completed, or the work is extended from one shift to another, an employer must ensure that there is an effective and orderly transfer of control of the reassigned or departing worker's lock.
- (6) Upon completion of the work requiring isolation of hazardous energy, a worker referred to in subsection (4) must remove the personal lock from the key securing system.
- (7) Upon completion of the work requiring isolation of hazardous energy, an employer must ensure that the machinery or equipment is returned to operation in accordance with section 25.11

Securing by Complex Group Control

- 25.9(1)** When it is not reasonably practicable to secure energy-isolating devices in accordance with section 25.6 or 25.7 because of
- (a) the physical size and extent of the machinery, equipment, piping, pipeline or process system,
 - (b) the relative inaccessibility of the energy-isolating devices,
 - (c) the number of workers involved in the work requiring hazardous energy control,
 - (d) the number of energy-isolating devices involved,
 - (e) an extended length of time of the isolation, or
 - (f) the interdependence and interrelationship of the components in the system or between different systems,
- a complex group control process, approved by the Chief Safety Officer, may be used.
- (2)** Prior to initiating a complex group control process, an employer must complete a hazard assessment to identify the type and location of hazardous energy sources.
- (3)** When using a complex group control process, an employer must ensure that
- (a) procedures are implemented to ensure continuous safe performance of the work requiring isolation of hazardous energy,
 - (b) a work permit or master tag procedure is implemented so that
 - (i) each involved worker personally signs on the job before commencing the work and signs off the job upon completion of the work, or
 - (ii) a crew leader signs on and off the job for a crew or team of workers, and
 - (c) a worker designated by the employer has
 - (i) placed all required energy-isolating devices in accord with section 25.5(1),
 - (ii) secured the energy-isolating devices, and
 - (iii) verified that all energy sources are effectively isolated.
- (4)** When using a complex group control process, each involved worker may, if desired by the worker, place a personal lock on the energy-isolating devices and verify effective isolation.
- (5)** Upon completion of the work requiring isolation of hazardous energy, an employer must ensure that the machinery or equipment is returned to operation in accordance with section 25.11.

Securing remotely controlled systems

- 25.10(1)** If securing of an energy isolating device as required by subsection 25.5(1) is not reasonably practicable on a system that remotely controls the operation of equipment, an employer must ensure that control system isolating devices and the procedures for applying and securing them provide equal or greater protection than the protection afforded under subsection 25.5(1)(a).
- (2)** Upon completion of the work requiring isolation of hazardous energy, an employer must ensure that the system is returned to operation in accordance with section 25.11.

Returning to operation

- 25.11(1)** A person must not remove a lock or other securing device unless
- (a) the person is the worker who installed it,

- (b) the person is the designated worker under section 25.8(3) or section 25.9(3)(c), or
- (c) the person is acting in accord with the procedures under section 25.10.

- (2) Despite subsection (1), in an emergency or if the worker who installed a lock or other securing device is not available, a worker designated by the employer may remove the lock or other securing device in accordance with a procedure that includes verifying that no workers will be in danger due to the removal.
- (3) An employer must ensure that securing devices are not removed until
 - (a) each involved worker is accounted for,
 - (b) any personal locks placed by a worker under sections 25.7, 25.8(4) or 25.9(4) are removed,
 - (c) procedures are implemented to verify that no workers would be in danger before a worker
 - i. under section 25.7(1),
 - ii. designated under section 25.8(3),
 - iii. designated under section 25.9(3)(c), or
 - iv. in accordance with procedures under section 25.10,removes the securing devices and the machinery or equipment or powered mobile equipment is returned to operation.
- (4) Each involved worker must follow the procedures under subsection (3)(c).

Isolating piping

- 25.12(1)** To isolate piping or a pipeline containing harmful substances under pressure, an employer may use:
- (a) a system of blanking or blinding, or
 - (b) a double block and bleed isolation system providing
 - i. 2 blocking seals on either side of the isolation point, and
 - ii. an operable bleed-off between the two seals.
- (2) An employer must ensure that piping that is blanked or blinded is clearly marked to indicate that a blank or blind is installed.
 - (3) An employer must ensure that, when valves or similar blocking seals with a bleed-off valve between them are used to isolate piping, the bleed-off valve is secured in the "OPEN" position and the valves or similar blocking seals in the flow lines are functional and secured in the "CLOSED" position.
 - (4) An employer must ensure that the device used to secure the valves or seals in subsection (3) is
 - (a) a positive, mechanical means of keeping the valves or seals in the required position, and
 - (b) is strong enough and designed to withstand inadvertent opening without the use of excessive force, unusual measures, or destructive techniques.
 - (5) If it is not reasonably practicable to provide blanking, blinding or double block and bleed isolation, an employer must ensure that an alternate means of isolation that provides adequate protection to workers, certified as appropriate and safe by a professional engineer, is implemented.

Part 26 - Tools, Equipment and Machinery

Contact with clothing, etc.

- 26.1(1)** If contact between moving parts of machinery, electrically energized equipment or part of the work process and a worker's clothing, jewellery or hair is likely, an employer must ensure that the worker
- (a) wears clothing that fits closely to the body,
 - (b) does not wear bracelets, rings, dangling neckwear, a wristwatch or similar articles, and
 - (c) keeps head and facial hair is short or confined and so it cannot be snagged or caught.
- (2)** If contact between moving parts of machinery, electrically energized equipment or part of the work process and a worker's clothing, jewellery or hair is likely, a worker must
- (a) wear clothing that fits closely to the body,
 - (b) not wear bracelets, rings, dangling neckwear, a wristwatch or similar articles, and
 - (c) have head and facial hair that is short or confined and cannot be snagged or caught.
- (3)** Despite subsections (1) and (2), a worker may wear a medical alert bracelet that has a breakaway or tear away band.
- (4)** An employer and a worker must ensure that the appropriate personal protective equipment is worn or used when operating a tool or piece of equipment.

Machines close together

- 26.2** An employer must ensure that a worker is not in danger because the machines installed at a work site are close to each other or to a worker.

Moving workers

- 26.3** An employer must ensure that machinery or equipment used to move, raise or lower workers is designed by the manufacturer or certified by a professional engineer as being appropriate for that purpose

Starting machinery

- 26.4(1)** An employer must ensure that an audible and visible alarm system is installed to warn workers that the machine is about to start if
- (a) a machine operator does not have a clear view of the machine or parts of it from the control panel or operator's station, and
 - (b) moving machine parts may endanger workers.

Preventing machine activation

- 26.5** An employer must install a positive means to prevent the activation of equipment if
- (a) a worker is required, during the course of the work process, to feed material into the machine, or
 - (b) a part of the worker's body is within the danger zone of the machine.

Emergency stopping devices

- 26.6** An employer must ensure that emergency stopping devices, such as those on a conveyor system,
- (a) are tested by a competent person at intervals prescribed by the equipment manufacturer or a professional engineer,
 - (b) are maintained to ensure they function as designed,
 - (c) have records kept to indicate testing and maintenance,
 - (d) are described and demonstrated to operators of the equipment prior to them operating the equipment, and
 - (e) located within easy reach of the operator.

Operator responsibilities

- 26.7(1)** Before starting machinery, an operator must ensure that starting the machinery will not endanger the operator or any other worker.
- (2)** While operating machinery, an operator must ensure that its operation will not endanger the operator or any other worker.

Controls

- 26.8** An employer must ensure that an operational control on equipment
- (a) is designed, located or protected to prevent unintentional activation, and
 - (b) is suitably identified to indicate the nature or function of the control.

Immobilizing machinery

- 26.9** A worker must not leave a machine, or a part of or extension to a machine, unattended or in a suspended position unless the machine or part is immobilized and secured against accidental movement.

Drive belts

- 26.10(1)** A worker must not shift a drive belt on a machine manually while the machine or motor is energized.
- (2)** An employer must ensure that a permanent drive belt shifter
- (a) is provided for all loose pulleys on a machine, and
 - (b) is constructed so that the drive belt cannot creep back onto the driving pulley.

Continuous-feed machinery

- 26.11** An employer must ensure that the drive mechanism of a powered, continuously-fed feeder device permits the feeder mechanism to be stopped independently of the processing mechanism.

Conveyors

Elevated conveyor belts

- 26.12(1)** If an elevated conveyor belt passes over a walkway, an employer must ensure that the conveyor
- (a) has side walls high enough to prevent materials from falling from it, and

(b) runs in a trough strong enough to carry the weight of a broken chain, rope, belt or other material that falls from the conveyor.

- (2) A worker must use a walkway to cross over a conveyor belt if
- (a) the conveyor belt is moving, or
 - (b) the conveyor belt is motionless and has not been locked out.

Crossing conveyor belts

26.13(1) A worker must cross over a conveyor belt using a bridge that is at least 1 metre wide and has adequate guardrails.

- (2) An employer must ensure that where a worker must cross over a conveyor, a bridge or walkway is built at least 1 metre wide and is equipped with adequate guardrails.
- (3) Despite subsection (1), a worker may cross over a conveyor belt at a location other than a bridge if the worker or other competent person has locked out the belt in accordance with Part 25 – Locking Out.
- (4) A worker must cross under a moving conveyor belt at a designated place where the worker is protected from moving parts of the conveyor and from material falling from the belt.

Starting and stopping conveyors

26.14(1) An employer must ensure that a conveyor is equipped with an emergency stopping system that is designed and installed so that it

- (a) activates if a worker falls onto the conveyor or if a fallen worker on the conveyor moves an arm or leg off to a side of the conveyor,
- (b) activates by the pull of the wire, cable or cord in any direction or by a slack cable condition if a pull wire or cord is used as an emergency stopping device, and
- (c) reactivates only after the controls have been manually reset after an emergency stop and an inspection confirms it is safe to do so.

- (2) An employer must ensure that each time a conveyor is started, an audible and visible warning alarm is sounded and there is a short time delay prior to movement of the conveyor.

Actuated fastening tools

26.15 A worker must ensure that the trigger of an actuated fastening tool is not held or fixed in the “ON” position unless the manufacturer’s specifications permit the tool to be used that way.

Grinders

26.16(1) An employer must ensure that

- (a) a grinder is operated in accordance with the manufacturer’s specifications, and subject to subsection (2), equipped with a grinder guard,
- (b) the maximum safe operating speed of the grinding accessory in revolutions per minute is equal to or greater than the maximum speed of the grinder shaft in revolutions per minute, and
- (c) if a hand held grinder is used, the object being ground cannot move.

- (2) An employer must ensure that the guard of a hand held grinder covers the area of the grinder accessory contained within an arc of at least 120 degrees of the accessory's circumference.
- (3) An employer must ensure that if a tool rest is installed on a fixed grinder, the manufacturer's specifications are followed if they exist, or the tool rest is
 - (a) installed in a manner compatible with the work process,
 - (b) securely attached to the grinder,
 - (c) set at or within 3 millimetres of the face of the wheel, and
 - (d) set at or above the centre line of the wheel.
- (4) A worker must ensure that
 - (a) the side of an abrasive wheel is not used to grind material unless the wheel has been designed for that purpose,
 - (b) a tool rest is not adjusted while a grinder accessory is in motion,
 - (c) the guards on a grinder are kept effectively in place, and
 - (d) non-ferrous material not is ground with abrasive wheels unless they are designed for that purpose.

Chainsaws

- 26.17(1) An employer must ensure that a chain saw
 - (a) is operated, adjusted and maintained in accordance with the manufacturer's specifications, and
 - (b) is designed or equipped with a chain brake or other mechanism that minimizes the risk of injury from kickback when the saw is in use.
- (2) A worker must ensure that
 - (a) the chain of a chain saw is adjusted with the motor turned off,
 - (b) a chainsaw is not used to cut material that is less than 3 cm in diameter, and
 - (c) a chainsaw is used in accordance with the manufacturers specifications.

Brush saws

- 26.18(1) An employer must ensure that a brush saw is used by workers when cutting brush that is less than 3 cm in diameter.
- (2) A worker must ensure that
 - (a) the guard on a brush saw is kept in place,
 - (b) a brush saw is not operated within 10 meters of another worker, and
 - (c) the blade of a brush saw is inspected prior to use and replaced at the first sign of a crack or heat stress.

Circular saw blades

- 26.19(1) An employer must ensure that a circular saw blade with a crack of any size adjacent to the collar line, or with a crack elsewhere that exceeds the limits specified in Schedule 8, Table 1, is
 - (a) removed from service, and
 - (b) replaced or repaired.
- (2) If a circular saw blade has a crack near the periphery that does not exceed the limits specified in Schedule 8, Table 1, an employer must ensure that
 - (a) the blade is removed from service and replaced,
 - (b) the crack in the blade is repaired, or

- (c) the crack is prevented from getting longer by slotting, center punching, drilling or another effective means.
- (3) An employer must ensure that a circular saw that is repaired under subsection (1) or (2) is re-tensioned as necessary by a competent worker.

Band saw blades

- 26.20(1)** An employer must ensure that a band saw blade with a crack that exceeds the limits specified in Schedule 8, Table 2, other than a shake band saw blade, is
 - (a) removed from service and replaced, or
 - (b) the crack in the blade is repaired.
- (2) An employer must ensure that a band saw blade with a crack that does not exceed the limits specified in Schedule 8, Table 2, other than a shake band saw blade, is
 - (a) removed from service until the crack is repaired, or
 - (b) the crack is prevented from getting longer by centre punching or another means.
- (3) An employer must ensure that a band saw that is repaired under subsection (1) or (2) is re-tensioned as necessary by a competent worker.

Band saw wheels

- 26.21(1)** Unless a manufacturer specifies or a professional engineer certifies otherwise, an employer must ensure that a cast steel band saw wheel measured 25 millimetres inboard from the rim edge has a minimum rim thickness
 - (a) of 14 millimetres for wheels up to and including 1.8 metres in diameter,
 - (b) of 16 millimetres for wheels more than 1.8 metres in diameter and up to and including 2.75 metres in diameter, and
 - (c) of 17.5 millimetres for wheels more than 2.75 metres in diameter.
- (2) An employer must ensure that a band saw wheel that is more than 1.2 metres in diameter is tested for cracks at least once every 12 calendar months by a competent person.
- (3) An employer must ensure that a band saw wheel that has been exposed to excessive heat is removed from service until the wheel manufacturer or a professional engineer certifies it is safe for continued use.

Power-fed circular saws

- 26.22(1)** An employer must ensure that a power fed circular rip saw with horizontal power-driven in-feed rolls has a sectional non-kickback device located in front of the saw blade across the full width of the feed rolls.
- (2) An employer must ensure that a power fed circular resaw has
 - (a) a splitter that is as high as the top of the saw, and
 - (b) a cover.

Cut-off saws

- 26.23(1)** An employer must ensure that a hand-operated cut-off saw, other than a radial arm saw, is equipped with a device that returns the saw automatically to the back of the table when the saw is released at any point in its travel.

- (2) An employer must ensure that a limit device is used to prevent a swing or sliding cut-off saw from traveling past the outside edge of the cutting table.

Sawmill head rig

- 26.24(1)** An employer must ensure that a circular head saw has adjustable guides and a splitter that
- (a) is located not more than 75 millimetres from the back of the head saw, and
 - (b) extends not less than 250 millimetres above the carriage bench.
- (2) An employer must ensure that the upper half of a top saw on a circular head rig is covered.
- (3) An employer must ensure that circular head saw guide adjustment controls are operated remotely from the guides.

Sawmill log carriage

- 26.25(1)** An employer must ensure that a sawmill log carriage has
- (a) a substantial buffer stop at each end of the carriage travel,
 - (b) a carriage with a safety device that keeps the head blocks not less than 30 millimetres from the saw,
 - (c) each head block equipped with a dog, and
 - (d) sweepers at the front and back of the carriage to clear obstructions from the track.
- (2) A worker must not use frayed or worn rope, whether fibre or wire, on carriage drives.
- (3) An employer must ensure that a sawyer's lever, operating the carriage drive mechanism, is designed and constructed to operate in the opposite direction from the direction the carriage travels if the operator's position with respect to the carriage could put the operator in danger.
- (4) An employer must ensure that
- (a) a sawmill with a device for turning logs has a hold-down device installed on the carriage, and
 - (b) a secure restraining device maintains the carriage drive control mechanism and the log-turning control in neutral if the operator is not at the controls.

Hot tar and bitumen road tankers

- 26.26(1)** An employer must ensure that a hot tar kettle or bitumen road tanker
- (a) is operated by a competent person, and
 - (b) has an enclosed pipe
 - (i) for transferring the hot tar or bitumen, and
 - (ii) securely fixed in place when transferring tar or bitumen to a roof.
- (2) An employer must ensure that where a kettle or road tanker is fitted with a propane-fired burner
- (a) the propane cylinder is placed at least 3 meters from a source of fire or ignition,
 - (b) there is a regulator on the propane cylinder, and
 - (c) there is an adequate fire extinguisher at the unit at all times.

Robots

- 26.27(1)** An employer must ensure that the design, construction, installation, testing, start-up, operation and maintenance of an industrial robot system comply with CSA Standard Z434-03, *Industrial Robots and Robot Systems – General Safety Requirements*.
- (2)** An employer must ensure that a robot system has safeguards that
- (a) prevent a worker from entering the restricted work envelope while the robot system is in motion, or
 - (b) inhibit the range of the robot system if
 - (i) part of a worker's body is within the restricted work envelope, and
 - (ii) the robot system is in motion.
- (3)** The safeguards required by subsection (2) may consist of interlock barriers, limiting devices or presence-sensing devices.
- (4)** The safeguards required by subsection (2) must include line markings on the floor on which the robot or robot system is mounted that clearly identify the restricted work envelope.
- (5)** Subject to subsection (6), an employer must ensure that a robot's primary controls, including a restart control,
- (a) are located outside the restricted work envelope,
 - (b) are arranged so that the robot and robot system are clearly visible to the worker who operates the primary controls, and
 - (c) cannot be activated inadvertently.
- (6)** If a worker is required or permitted to enter the restricted work envelope, an employer must ensure that the robot cannot be activated by anyone except the worker in the restricted work envelope.
- (7)** An employer must ensure that a worker who operates a robot or robot system is provided with a readily accessible emergency stop device.
- (8)** An employer must ensure that the controls of a robot include a slow speed option.

Teaching a robot

- 26.28** Where a worker is teaching a robot, an employer must ensure that
- (a) only the worker teaching the robot is allowed to enter the restricted work envelope,
 - (b) no worker enters the restricted work envelope while the robot is under power,
 - (c) the robot system is under the sole control of the worker teaching the robot,
 - (d) if the robot is under drive power, it operates at slow speed only or at a speed that is deliberately selected and maintained by the worker teaching the robot,
 - (e) the robot cannot respond to a remote interlock or signal that would activate the robot, and
 - (f) the worker is outside the restricted work envelope before the robot is returned to automatic operation.

Part 27 - Safeguards

Safeguards

Installation requirements

27.1(1) This section does not apply to belts, ropes or chains operated from a cathead.

- (2) An employer must ensure that safeguards are provided if a worker may accidentally, or through the work process, come into contact with
- (a) moving parts of machinery or equipment, including power transmission parts,
 - (b) points of machinery at which material is cut, shaped or bored,
 - (c) surfaces with temperatures that may cause skin to freeze, burn or blister,
 - (d) energized electrical cables,
 - (e) debris, material or objects thrown from equipment,
 - (f) material being fed into or removed from process equipment, or
 - (g) machinery or equipment that may be hazardous.
- (3) An employer must ensure that the design, installation, operation and maintenance of safeguards comply with CSA Standard Z432-94 (R1999) Safeguarding of Machinery.
- (4) Subsection (2) does not apply to machinery or equipment that already has a safeguard that
- (a) automatically stops the machinery if a worker comes into contact with a moving part or a point at which material is cut, shaped or bored,
 - (b) prevents a worker from coming into contact with a hazard referred to in subsection (2), or
 - (c) eliminates the hazards referred to in subsection (2) before a worker can be injured.

Alternatives

- 27.2(1)** Where an employer determines that an effective safeguard cannot be provided in a particular circumstance, the employer must ensure that an alternative mechanism or system or a change in work procedure is put into place to protect workers from being exposed to hazards that exist if there is no safeguard.
- (2) An employer must ensure that an alternative mechanism or system or a change in work procedure put into place under subsection (1) offers protection to workers that is equal to or greater than the protection from a safeguard referred to in subsection 27.1(4).

Warning signs

- 27.3(1)** An employer must place warning signs on machinery or equipment that starts automatically
- (a) on a clearly visible location at a point of access to the machinery, and
 - (b) giving clear instructions to workers on the nature of the hazard.
- (2) Where a variety of languages are used in a workplace, an employer must ensure that signs installed as per subsection (1) are in a language that is readily understood or are pictograms.

Standards

- 27.4** An employer must ensure that safeguards meet the requirements of *CSA Standard Z432-94, Safeguarding of Machinery*, or another standard acceptable to a Chief Safety Officer.

Tampering with safeguards

- 27.5(1)** A person must not remove a safeguard from a machine that is operating if the safeguard is not designed to be removed when the machine is operating or if the machine was not designed to operate with the safeguard removed.
- (2)** A person must not remove a safeguard or make it ineffective unless removing it or making it ineffective is necessary to perform maintenance, tests, repairs, adjustments or other tasks on equipment.
- (3)** If a person removes a safeguard or makes it ineffective, the person must ensure that
- (a) alternative protective measures are in place until the safeguard is replaced,
 - (b) the safeguard is replaced immediately after the task is completed, and
 - (c) the safeguard functions properly once replaced.
- (4)** If a safeguard for machinery is removed or made ineffective and the machinery cannot be directly controlled by a person, the person who removes the safeguard or makes it ineffective must immediately lock out or lock out and tag the machinery or otherwise render it inoperative.

Controls

- 27.6** An employer must ensure that powered machinery and equipment, other than portable power tools or mobile equipment, has
- (a) stopping and starting controls located within easy reach of an operator,
 - (b) controls and switches clearly marked to identify the function they serve,
 - (c) controls designed, positioned or shielded to prevent inadvertent activation,
 - (d) where two-hand controls are installed, controls that require both controls to be activated and released simultaneously before another machine cycle can be initiated.

Building shafts

- 27.7(1)** An employer must ensure that if a work platform is necessary to ensure the safety of workers in a building shaft, there is
- (a) a main work platform that is completely decked and designed to support any anticipated load, and
 - (b) a second platform not more than 4 metres below the main work platform.
- (2)** An employer must ensure that if there is no work platform at a doorway or opening to a building shaft
- (a) the doorway or opening is enclosed,
 - (b) the enclosure is not less than 2 metres high,
 - (c) there is an access door opening out from the enclosed area, and
 - (d) the doorway or opening is properly signed to indicate the hazard to workers.
- (3)** An employer must ensure that, while a building shaft is being constructed, at least one warning sign indicating an open building shaft is placed at each point of entry to the shaft.

Covering openings

- 27.8(1)** An employer must ensure that an opening or hole through which a worker can fall is protected by
- (a) a securely attached cover designed to support the anticipated loading of the area, or
 - (b) guardrails and toe boards, as specified in section 27.9.
- (2)** If a person removes a cover, guardrail or toe board, or part of them, protecting an opening or hole for any reason, an employer must ensure a temporary cover or other means of protection replaces it immediately.
- (3)** If a temporary cover is used to protect an opening or hole, an employer must ensure a warning sign or marking clearly indicating the nature of the hazard
- (a) is posted near or fixed on the cover, and
 - (b) is not removed unless another effective means of protection is immediately provided.

Guardrails

- 27.9(1)** An employer must ensure that a guardrail required by these regulations
- (a) has a horizontal top member installed between 920 millimetres and 1070 millimetres above the base of the guardrail,
 - (b) has a horizontal intermediate member spaced mid-way between the top member and the base,
 - (c) has vertical members at both ends of the horizontal members with intermediate vertical supports that are not more than 3 metres apart at their centres, and
 - (d) is constructed of lumber that is 38 millimetres by 89 millimetres or material with properties the same as or better than those of lumber.
- (2)** Despite subsection (1), a temporary guardrail does not require a horizontal intermediate member if it has a substantial barrier positioned within the space bounded by the horizontal top member, toe board and vertical members that prevents a worker's falling through the space.
- (3)** An employer must ensure that a guardrail is secured so that it cannot move in any direction if it is struck by or any point on it comes into contact with a worker, materials or equipment.

Hoppers, bins and chutes

- 27.10** If a worker can access materials in hoppers, bins or chutes, an employer must ensure that the hoppers, bins or chutes have horizontal bars, screens or equally effective safeguards that prevent a worker from falling into the hoppers, bins or chutes.

Machine failure

- 27.11** Where a worker may be injured if a machine or a part of it fails, an employer must ensure that a safeguard, that is strong enough to contain or deflect flying particles of material, broken parts of machinery and a shock wave, is installed on the machine.

Protection from falling objects

- 27.12(1)** An employer must ensure that workers in a work area where there may be falling objects are protected from the falling objects by an overhead safeguard.
- (2) An employer must ensure that a safeguard used under subsection (1) is designed to withstand the shock loads from any objects that may fall onto it.
- (3) Despite subsection (1), if the danger from falling objects is in a location in a work site where workers go intermittently or incidentally to their regular duties, an employer may place appropriate and adequate warning signs, horns, flashing lights, barricades or similar devices at the location to warn workers of the hazard.
- (4) An employer must ensure that a safeguard installed under subsection (1) used on a hoist or scaffold
- (a) is made of wire mesh or an enclosure material that is equally or more efficient at containing equipment and materials,
 - (b) is not less than 1 metre high from the floor, platform or working level of the safeguard, and
 - (c) encloses all sides of a cantilever hoist platform or skip, except the side adjacent to the building.
- (5) If the material being hoisted or lowered is of a kind that prevents the sides of a cantilever hoist platform or skip being enclosed as required by subsection (4), an employer must provide another effective alternative safeguard against falling materials for the workers.
- (6) An employer must ensure that a safeguard around the surface opening of an underground shaft serving a tunnel
- (a) is made of wire mesh, or an enclosure material that is equally or more effective at containing equipment and materials, and
 - (b) is not less than 1 metre high from the surface.
- (7) An employer must ensure that a safeguard is installed on all sides of
- (a) the cage of a building shaft hoist or a tower hoist, or
 - (b) a hoist cage in an underground shaft serving a tunnel.
- (8) An employer must ensure that a safeguard used on a cage under subsection (7) is made of
- (a) wire mesh, or
 - (b) an enclosure material that is equally or more effective at containing equipment and materials and protecting workers from hazards associated with the movement of a cage in a shaft.

Push stick or block

- 27.13** If a worker may be injured while feeding materials into cutting or shaping machinery, an employer must ensure the machine worker uses a push stick, push block or other similar means of feeding the material.

Safety nets

- 27.14(1)** An employer must ensure that a safety net
- (a) complies with ANSI Standard A10.11-1989 (R1998), *Construction and Demolition Operations – Personnel and Debris Nets*,

(b) has safety hooks or shackles of drawn, rolled or forged steel with an ultimate tensile strength of not less than 22.2 kilonewtons,
(c) has joints between net panels capable of developing the full strength of the web,
(d) extends not less than 2.4 metres beyond the work area,
(e) extends not more than 6 metres below the work area, and
(f) is installed and maintained so that the maximum deflection under impact load does not allow any part of the net to touch another surface.

- (2) An employer must ensure that the supporting structure to which a personnel safety net is attached is certified by a professional engineer as being capable of withstanding any load the net is likely to impose on the structure.
- (3) Subsection (1) does not apply to properly maintained rescue nets used by fire fighters and other emergency services personnel.

Toe boards

27.15(1) An employer must ensure that

(a) a toe board required by these regulations is not less than 140 millimetres in height above the surface of the work area, and
(b) the space between the bottom of the toe board and the surface of the work area is not more than 6 millimetres high.

- (2) An employer must ensure that toe boards are installed at the outer edge above the work area if a worker may be under a permanent floor, platform, mezzanine, walkway, ramp, runway or other permanent surface where
- (a) guardrails are installed, or
(b) materials can fall more than 1.8 metres.
- (3) An employer must ensure that toe boards are installed at the outer edge above the work area of temporary scaffolding or a temporary work platform if materials can fall more than 3 metres.
- (4) An employer must ensure that toe boards are installed around the top of a pit containing a machine with exposed rotating parts if workers may be working in the pit.
- (5) Subsection (1) does not apply to
- (a) the entrance of a loading or unloading area if the employer takes other precautions to ensure that materials do not fall from the permanent surface, or
(b) the entrance to a ladder.

Wire mesh

27.16 An employer must ensure that wire mesh used in a safeguard required by these regulations is

(a) fabricated of wire at least 1.6 millimetres in diameter, and
(b) spaced to reject a ball 40 millimetres in diameter.

Part 28 - Confined Spaces

Safe work practices and procedures

- 28.1(1)** An employer must develop and implement written safe work practices and procedures governing all aspects of the work, including site-specific conditions, when workers must enter or work in a confined space.
- (2)** An employer must ensure that the safe work practices and procedures
- (a) take into account and apply the requirements of this Part and section 8.9
 - (b) are maintained and periodically reviewed,
 - (c) are submitted to the Chief Safety Officer prior to use, and
 - (d) have a mechanism to
 - (i) identify all existing and potential confined space work locations at a work site,
 - (ii) label or tag each confined space as a confined space, and
 - (iii) warn workers of the hazard associated with the confined space and that entry is allowed only by permit.
- (3)** A worker involved in any aspect of a confined space entry must comply with the requirements and procedures in the safe work practices and procedures developed for the task.

Hazard assessment

- 28.2** Where a worker will enter a confined space to work, an employer must appoint a competent person to
- (a) assess the hazards the worker is likely to be exposed to that
 - (1) are known or likely to be in the confined space, and
 - (ii) will or may be present as a result of the work activity,
 - (b) specify the type and frequency of inspections and tests necessary to determine the likelihood of worker exposure to any of the identified hazards,
 - (c) perform the inspections and tests identified,
 - (d) specify the safety and personal protective equipment required to perform the work, and
 - (e) identify the personal protective equipment and emergency equipment to be used by a worker who undertakes rescue operations in the event of an accident or other emergency.

Training

- 28.3(1)** An employer must ensure that a worker assigned duties related to confined space entry is trained by a competent person in
- (a) recognizing hazards associated with working in confined spaces,
 - (b) performing the worker's duties in a safe and healthy manner, and
 - (c) the safe work practices and procedures for the particular confined space entry.
- (2)** An employer must keep records of the training given under subsection (1).
- (3)** An employer must ensure that competence in the following is represented in the workers responding to a confined space emergency:
- (a) first aid and CPR;
 - (b) the use of appropriate emergency response equipment; and

(c) procedures appropriate to the confined space.

Entry permit system

28.4(1) A person must not enter a confined space at a work site without a valid entry permit.

- (2) An employer must establish an entry permit system for a confined space that
- (a) lists the name of each worker who enters the confined space and the reason for their entry,
 - (b) gives the location of the confined space,
 - (c) specifies the time during which an entry permit is valid,
 - (d) takes into account the work being done in the confined space, and
 - (e) takes into account the safe work practice and procedure requirements for entering, being in and leaving a confined space.
- (3) An employer must ensure that, before a worker enters a confined space an entry permit is properly completed, endorsed by all workers involved in the work, signed by a competent person and a copy kept readily available.
- (4) An employer must ensure that an entry permit for confined space entry is reviewed and signed by a competent person where there is a change in the work or a change in supervisors for the work.

Safety and protection - generally

28.5(1) An employer must ensure that

- (a) if a lifeline is required in a confined space, it is used in a manner that does not create an additional hazard,
- (b) the safety and personal protective equipment required by these regulations and identified on the entry permit is available to workers entering a confined space,
- (c) a worker who enters, occupies or leaves a confined space uses the safety and personal protective equipment,
- (d) the personal protective equipment and emergency equipment required by these regulations is available to workers undertaking rescue operations in a confined space,
- (e) equipment appropriate to the confined space, including personal protective equipment, is available to perform a timely rescue, and
- (f) a communication system is established that is readily available to workers in a confined space and is appropriate to the hazards.

- (2) An employer must ensure that all personal protective equipment and emergency equipment required for use in a confined space is inspected by a competent person before workers enter the confined space to ensure the equipment is in good working order.
- (3) An employer must ensure that written records of the inspections required by subsection (2) are retained.

Protection – hazardous substances and energy

28.6(1) An employer must ensure that workers within a confined space are protected against the release of hazardous substances or energy that could harm them, in accordance with the provisions of Part 25 of these regulations.

- (2) An employer must ensure that the concentration of flammable gases in a confined space is maintained below 10% of the lower explosive limit.
- (3) An employer must ensure that a worker does not enter a confined space unless adequate precautions are in place to protect a worker from drowning, engulfment, entrapment or electrocution.

Unauthorized entry

- 28.7 An employer must ensure that persons who are not authorized by the employer to enter a confined space are prevented from entering by means of signs, barricades or other effective methods.

Traffic hazards

- 28.8 An employer must ensure that workers in a confined space are protected from hazards created by traffic in the vicinity of the confined space.

Testing the atmosphere

- 28.9(1) If the hazard assessment identifies a potential atmospheric hazard and a worker is required or authorized by an employer to enter the confined space, the employer must ensure that a competent worker performs a pre-entry atmospheric test of the confined space within 20 minutes of the entry to
 - (b) verify that the oxygen content is between 19.5 percent and 23.0 percent by volume, and
 - (b) identify the amount of toxic, flammable or explosive substance that may be present.
- (2) The employer must ensure that the testing required by subsection (1) is performed using calibrated test instruments appropriate for the atmosphere being tested and the instruments are used in accordance with the manufacturer's specifications.
- (3) The employer must ensure that where there is potential for change to the atmosphere after a worker enters the confined space a competent worker, at regular intervals appropriate to the potential hazard
 - (a) performs the tests specified in subsection (1), and
 - (b) identifies and records any additional hazards.
- (4) The employer must ensure that when a confined space has been vacated for more than 20 minutes, a pre-entry test of the atmosphere as required by subsection (1) is repeated.
- (5) If tests identify additional hazards, the employer must deal with the identified hazards in accordance with these regulations and industry best practices.
- (6) The employer must ensure that the procedures and practices put in place under subsection (4) are included in the written safe work practice and procedure.
- (7) The employer must ensure that the results of tests required by this section are recorded and kept available for review.

Ventilation and purging

- 28.10(1)** Where the atmospheric testing under section 28.9 identifies that a hazardous atmosphere exists or is likely to exist in a confined space, an employer must ensure that the confined space is ventilated, purged or both before a worker enters the confined space.
- (2)** If ventilating or purging a confined space is impractical or ineffective in eliminating a hazardous atmosphere, the employer must ensure that a worker who enters the confined space uses personal protective equipment appropriate for the conditions within the confined space.
- (3)** Where mechanical ventilation is needed to maintain a safe atmosphere in a confined space during the work process, an employer must ensure it is provided and operated as required by the conditions in the confined space.
- (4)** Where mechanical ventilation is required to maintain a safe atmosphere in the confined space, the employer must ensure that
- (a) the system is providing clean respirable air to the workers,
 - (b) the ventilation system incorporates a method of alerting workers to a failure of the system so that workers have sufficient time to safely leave the confined space, and
 - (c) all workers within the confined space have received training in the evacuation procedures to be used in the event of a ventilation system failure.
- (5)** All workers must evacuate a confined space or use an alternative means of protection if a ventilation system fails.

Inerting

- 28.11(1)** An employer must ensure that a confined space is inerted if it is not reasonably practicable to eliminate an explosive or flammable atmosphere within the confined space through another means.
- (2)** Where a confined space is inerted, an employer must ensure that
- (a) every worker entering the confined space is equipped with supplied air respiratory protection equipment that complies with Part 4,
 - (b) all ignition sources are controlled,
 - (c) the atmosphere within the confined space stays inerted while workers are inside, and
 - (d) the Chief Safety Officer is notified in writing of the procedures to be used in the space being inerted.

Emergency response

- 28.12(1)** An employer must ensure that a worker does not enter or remain in a confined space unless an effective rescue can be carried out.
- (2)** A worker must not enter or stay in a confined space unless an effective rescue can be carried out.
- (3)** An employer must ensure that the emergency response plan includes the emergency procedures to be followed if there is an accident or other emergency, including the procedures in place to evacuate the confined space immediately
- (a) when an alarm is activated,

- (b) if the concentration of oxygen inside the confined space drops below 19.5 percent by volume or exceeds 23 percent by volume,
- (c) if a flammable atmosphere above 10% LEL is present or develops, or
- (d) if there is a significant change in the amount of hazardous substances inside the confined space.

Tending worker

- 28.13(1)** For every confined space entry, an employer must designate a competent worker to be in communication with all workers in the confined space.
- (2) An employer must ensure that the designated worker under subsection (1) has a suitable system for summoning assistance.
 - (3) An employer must ensure that a competent worker trained in the evacuation procedures in the emergency response plan is present outside a confined space, at or near the entrance, if
 - (a) the oxygen content of the atmosphere inside the confined space is less than 19.5 percent or greater than 23.0 percent by volume,
 - (b) the concentration of a substance listed in Schedule 1, Table 2 inside the confined space is greater than 50 percent of its occupational exposure limit, or
 - (c) a hazard other than one listed in clauses (a) or (b) is identified by the hazard assessment and the hazard cannot be eliminated or effectively controlled.
 - (4) An employer must ensure that the tending worker under subsection (3)
 - (a) keeps track at all times of the number of workers inside the confined space,
 - (b) is in constant communication with the workers inside the confined space, and
 - (c) has a suitable system for summoning assistance.
 - (5) A tending worker must not leave the area until all workers have left the confined space or another tending worker is in place.

Entry and exit

- 28.14** An employer must ensure that a safe means of entry and exit is available to all workers required to work in a confined space and to rescue personnel attending to the workers.

Retaining records

- 28.15** An employer must ensure that all records respecting entry and work in a confined space, including entry permits and testing under this Part, are retained for not less than
 - (a) 1 year if no incident or unplanned event occurred during the entry, or
 - (b) 2 years if an incident or unplanned event occurred during the entry.

Part 29 - Demolition

Worker in charge

- 29.1** An employer must ensure that a competent worker designated by the employer is in charge of the demolition work at all times while work is in progress.

Location of equipment

- 29.2** An employer must ensure that temporary offices and tool boxes are outside the range of falling materials.

Hazardous substances

- 29.3** Before demolition begins and while demolition work continues, an employer must ensure that all chemical and biological substances that may be hazardous to workers during demolition are removed from the structure or the part of the structure that is being demolished.

Use of explosives

- 29.4(1)** If a structure is to be demolished using explosives, an employer must ensure that a competent person develops a demolition procedure to protect the health and safety of workers.
- (2)** An employer must ensure that the person in charge of the demolition adheres to the procedures set out for the use of explosives.
- (3)** An employer must ensure that a competent person is placed in charge of the use, storage, handling and firing of any explosives.

Disconnecting services

- 29.5** An employer must ensure that
- (a) all utilities are disconnected before demolition begins, and
 - (b) written confirmation of the disconnection by the person who disconnects the utilities is available at the work site.

Materials chute

- 29.6(1)** An employer must ensure that a materials chute that is at an angle of more than 45 degrees from the horizontal is totally enclosed.
- (2)** An employer must ensure that
- (a) workers cannot enter an area into which material is dropped, thrown or conveyed by a materials chute, and
 - (b) conspicuous warning signs are posted in the area to advise of the danger associated with the materials chute.

Dismantling buildings

- 29.7(1)** An employer must ensure that where a building or structure is being demolished,
- (a) all glass and windows on the exterior walls of the building or structure and adjacent to a public walkway are removed before demolition begins,
 - (b) if the demolition may affect the stability of an adjoining building or structure, the demolition is carried out in accordance with procedures certified by a professional engineer that safeguard the stability of the adjoining structure,
 - (c) where tensioned steel cables or bars are known to be in the building or structure, demolition procedures are certified and supervised by a professional engineer,
 - (d) where there are workers in the building or structure during the demolition, the demolition is performed floor by floor from the top down,
 - (e) steel structures are dismantled column length by column length and tier by tier,
 - (f) a structural member that is being removed
 - (i) is not under stress, other than its own weight, and
 - (ii) is secured or supported to prevent unintentional movement,and
 - (g) unless it is being demolished at the time, a wall or other part of the building or structure is not left unstable or in danger of collapsing unintentionally.
- (2)** A person must not allow materials or debris to accumulate in a building or structure being demolished if the accumulation could result in the collapse of a part of the building or structure.

Building shaft demolitions

- 29.8** An employer must ensure that a free-standing scaffold is used in the demolition of a building shaft from the inside of the shaft.

Part 30 - Diving Operations

General Requirements

Application

- 30.1(1)** This Part applies to diving operations performed by workers who are diving at a work site.
- (2)** This Part does not apply to sport diving or recreational diving but does apply to a worker instructing others in sport diving or recreational diving.
- (3)** If the requirements of this Part conflict with a requirement under another Part, the requirements of this Part prevail.

Standards

- 30.2** An employer must ensure that the following standards are referenced and adhered to with respect to diving operations:
- (a) Z275.4.02 Competency Standard for Diving Operations,
 - (b) Z275.2-04 Occupational Safety Code for Diving Operations, and
 - (c) Z275.1-93(R2004) Hyperbaric Facilities *Occupational Health and Safety*.

Employer responsibilities

- 30.3(1)** An employer engaged in diving operations must ensure that safety procedures are developed, communicated and implemented for diving, that include
- (a) safety procedures and health requirements for each type of diving in which workers may be involved, and
 - (b) emergency, evacuation and rescue procedures.
- (2)** An employer must ensure that the safety procedures are kept at the dive site.
- (3)** An employer must ensure that diving operations are carried out without undue risk.
- (4)** An employer must ensure that copies of the competency documents of all the divers working on a diving operation are available at the dive site for inspection by a safety officer.
- (5)** An employer must ensure that the divers working at a dive site
- (a) meet the minimum requirements of CSA Standard Z275.4-02, *Competency Standard for Diving Operations*,
 - (b) are trained in the theory and use of the diving apparatus they are using, and
 - (c) are competent to use the diving equipment used in the diving operation.
- (6)** An employer must ensure that submersible compression chambers and lock-out submersibles used at a dive site meet the requirements of CSA Standard CAN/CSA-Z275.1-93 (R2004), *Hyperbaric Facilities*.
- (7)** An employer must ensure that a Chief Safety Officer is advised of the date, location, diving equipment to be used and the scope of the dive, at least 24 hours prior to a dive that involves
- (a) construction diving,
 - (b) engineering inspection diving,
 - (c) diving in an contaminated environment,

- (d) diving under ice, under or between nets, or other areas of potential entrapment,
- (e) exceeding the no-decompression limit, or
- (f) the use of mixed gases other than nitrox as a breathing medium.

Medical certificate

- 30.4(1)** Before a diver participates in a diving operation, an employer must ensure that the diver has a current diver's medical certificate.
- (2)** An employer must ensure that a diver's medical certificate
- (a) is issued by a physician competent in dive medicine,
 - (b) certifies that the diver is medically competent to dive,
 - (c) is issued before the diver begins diving in a diving operation, and
 - (d) has not expired.
- (3)** Subject to subsection (4), a diver's medical certificate expires at the end of
- (a) 2 years if the diver is 39 years old or younger, and
 - (b) 1 year if the diver is 40 years old or older.
- (4)** An employer must ensure that a diver's medical condition is reevaluated by a physician whether or not it is expired if
- (a) re-examination of the diver's medical competence to dive is clinically indicated, or
 - (b) the diver is subjected to an event or has a physical condition that may affect the diver's medical competence to dive.
- (5)** A diver must ensure that a copy of the diver's medical certificate is kept at the dive site for inspection by a safety officer.

Diver's fitness

- 30.5** An employer must ensure that a diver, diver's tender or standby diver does not participate in any diving operation if, in the opinion of the dive supervisor, the person is incapable of functioning safely.
- 30.6** A person must ensure that they do not participate in any diving operation if they are emotionally or physically fatigued or if they have consumed or used drugs or alcohol which would impair their ability to work safely.

Diver's training

- 30.7** An employer must ensure that a diver, diving supervisor, and diver's tender are trained in
- (a) the theory and use of the diving apparatus that the diver will be using at the dive, and
 - (b) CPR, oxygen therapy, and diving accident management.

Diver's personal logs

- 30.8(1)** A diver must have, and keep for 2 years after the last entry, a personal log containing a record of
- (a) each dive performed, and
 - (b) all medical recompressions and other medical exposures to a compressed air and mixed gas environment related to a dive.

- (2) A diver must ensure that records in the diver's personal log are in chronological order and each dive is verified and initialled by the dive supervisor.
- (3) A diver must ensure that the records for a dive include the following:
 - (a) the date the dive was undertaken;
 - (b) an employer's name and the dive site;
 - (c) the type of diving apparatus used and the gas medium breathed;
 - (d) the time at which the diver left the surface, reached and left the bottom, and returned to the surface;
 - (e) the maximum depth attained;
 - (f) the time spent at the surface between dives, if there was more than one dive during a day;
 - (g) the decompression tables that were used; and
 - (h) any unusual incidents that occurred during the dive or diving operation.
- (4) A diver must ensure that the diver's personal log is current and available at the site for inspection by a safety officer.

Emergency assistance

- 30.9** While a diving operation is in progress, an employer must ensure that the dive site is provided with
- (a) a current list of facilities with hyperbaric chambers capable of providing emergency treatment, and
 - (b) the location and contact numbers of the nearest hospital and available emergency assistance.

Diving site equipment

- 30.10(1)** An employer must ensure that all diving equipment used in a diving operation is protected at low temperatures against malfunction caused by ambient air or water or by the expansion of gas.
- (2) While diving is in progress at a diving operation, an employer must ensure that the diving base has the following diving equipment:
 - (a) if SCUBA is used, one complete spare set of underwater breathing apparatus with fully charged cylinders to be used for emergency purposes only;
 - (b) oxygen for therapeutic purposes;
 - (c) 1 shot-line of weighted 19 millimetre diameter synthetic line that is long enough to reach the bottom in the deepest water at the dive site;
 - (d) 1 complete set of decompression tables;
 - (e) a heated facility suitable for the use of divers that is located on or as near as possible to the dive site; and
 - (f) other equipment that may be necessary to protect the health and safety of workers at the dive site.
 - (3) An employer must ensure that a hyperbaric chamber at a diving operation has
 - (a) a means of extinguishing a fire,
 - (b) an oxygen monitoring device,
 - (c) an oxygen delivery system with a built-in breathing system, and
 - (d) a supply of air, including an emergency reserve supply, sufficient to complete decompression and treatment procedures.
 - (4) A diver tended on a lifeline must wear a suitable diver's harness, and the lifeline must
 - (a) be securely fastened to the diver's harness,
 - (b) not be attached to the diver's weight belt,

- (c) be securely fastened to a permanent fixture at the surface, and
- (d) be free of knots and splices.

- (5) An employer must ensure that breathing apparatus and associated delivery systems used in a diving operation
 - (a) have air delivery systems that supply over bottom pressures and volumes to the diver in accordance with the manufacturer's specifications, and
 - (b) are not modified unless the modification is approved by the manufacturer.
- (6) An employer must ensure that all diving equipment is tested before each use.
- (7) An employer must ensure that the breathing apparatus accessories and applicable service records are available for inspection by a safety officer.
- (8) An employer must ensure that the service records referred to in subsection (7) are available to workers at the dive site.

Diver's supervisor or tender

- 30.11 During a diving operation an employer must ensure that a diving supervisor
 - (a) remains at the dive area throughout the diving operation,
 - (b) delegates supervisory responsibility to another dive supervisor if required to enter the water, and
 - (c) suspends the diving operation if conditions become unsafe.
- 30.12 Prior to a dive, a diving supervisory must ensure that all persons involved in the dive are briefed about
 - (a) potential hazards of the dive,
 - (b) the intended duration of the dive,
 - (c) the decompression procedures to be used,
 - (d) the location of all divers,
 - (e) the work to be done,
 - (f) specific recall signals and other signals, and
 - (g) the emergency procedures to be followed.
- 30.13(1) During a dive, a diver's supervisor or tender must look after the safety of the diver to whom the diver's supervisor or tender is assigned.
- (2) A diver's supervisor or tender must tend a diver on a lifeline at all times.

Standby diver

- 30.14(1) An employer must ensure that a standby diver
 - (a) is fully equipped and prepared to enter the water within 1 minute,
 - (b) assists the diver and the dive crew when diving operations are in progress, and
 - (c) performs duties as required by the dive supervisor if those duties do not affect the standby diver's ability to provide emergency assistance to a diver.

Two divers as mutual tenders

- 30.15 During a dive of not more than 18 metres and with no entrapment hazard at the dive site, an employer may permit 2 divers in the water to act as diver's supervisors or tenders for each other by ensuring that
 - (a) each diver is free swimming,
 - (b) the no-decompression limit is not exceeded,

- (c) each diver has been trained to effectively rescue a diver in trouble and has demonstrated this ability to the diving supervisor's satisfaction,
- (d) the divers are in close proximity to each other at all times so as to be able to effect rescue, and
- (e) the divers are in constant audio communication with each other and the surface, or when using scuba they maintain constant physical or visual contact with each other.

Divers

- 30.16(1)** A diver must fully understand the signals and procedures in use at a dive site and demonstrate that understanding to the employer.
- (2)** Except in the case of accidental or unavoidable circumstances, a diver must not remain or be permitted to remain at any depth for longer than the maximum time for that dive in the dive plan.
- (3)** A diver must go to the surface under any of the following circumstances:
- (a) if diving gear malfunctions;
 - (b) if the diver does not understand a signal;
 - (c) if the diver is aware of symptoms of physical or psychological distress;
 - (d) if a recall signal is received;
 - (e) when the main air supply is near depletion;
 - (f) if the diver is using the emergency air supply; or
 - (g) if water starts leaking excessively into a dry type diving suit.
- (4)** Divers must inform the diver's tender or diving partner that they are going to the surface.

Diving Tables

- 30.17** An employer must ensure that diving operations, repetitive dives, and treatment of divers
- (a) is carried out in accordance with the tables and procedures published by the Defence and Civil Institute of Environmental Medicine (Canada), and
 - (b) is not conducted using sport diving tables.

Decompression procedures

- 30.18(1)** During diving operations which require decompression, an employer must ensure that a reserve breathing supply with sufficient reserve to bring divers to the surface with appropriate decompression stops is available and ready for immediate use.
- (2)** Whenever planned dives will exceed the no-decompression limit, an employer must ensure that
- (a) the divers are equipped with a bailout bottle containing a minimum 1.4 m³ of breathing medium,
 - (b) an approved double lock hyperbaric chamber in operable condition with overriding outside controls and appropriate air facilities is located so that travel time by available transport will not exceed 30 minutes,
 - (c) if the planned decompression time will exceed 15 minutes the hyperbaric chamber is on the dive site, and
 - (d) a chamber operator is available on the surface at the dive site or at the hyperbaric chamber.
- (3)** A dive must not exceed the no-decompression limit if the hyperbaric chamber is occupied.

Diver care and transportation

- 30.19(1)** The diving supervisor must ensure that on completion of decompression, the diver remains under observation in the general area of the hyperbaric chamber for a period of time to ensure the well-being of the diver.
- (2)** If a diver shows signs of pressure related illness or requires therapeutic recompression, the diving supervisor must ensure that treatment is initiated immediately and a physician knowledgeable in hyperbaric medicine is notified.
- (3)** If it is necessary to transport a diver suffering a diving ailment by air, an employer must ensure that provision is made to furnish the patient with oxygen and the flight altitude is prescribed by the attending physician or the diving supervisor.

Medical alert tag

- 30.20** A diver must wear a medical alert tag or bracelet stating the diver's status and indicating the possibility of decompression sickness or other diving illness, for at least 24 hours after completion of diving.

Breathing medium

- 30.21(1)** If air is used as the respirable medium in a diving operation, an employer must ensure that it meets the requirements of CSA Standard CAN/CSA-Z275.2- 92 (R1999), *Occupational Safety Code for Diving Operations*, except the water vapour standard.
- (2)** If a mixed gas is used as the respirable medium, an employer must ensure that the decompression procedures, schedules and tables used are appropriate for the mixed gas.
- (3)** An employer must ensure that
- (a) air supplied by a compressor for breathing air in a diving operation is tested at least annually to ensure the air meets the requirements in subsection (1), and
 - (b) the compressor air intake is located so that the breathing medium will not be contaminated by gasoline vapours, engine exhausts, or other objectionable impurities
- (4)** An employer must ensure that
- (a) all workers involved with nitrox diving are trained in the procedures specific to the use of nitrox as the respirable medium, and
 - (b) proof of the training and a copy of the procedures are readily available at the dive site.

Compressors

- 30.22** An employer must ensure that compressors used to supply air to divers are
- (a) capable of maintaining a supply of air equal to at least double the volume of air required,
 - (b) capable of developing pressure at least 25% greater than the anticipated pressure requirement, and
 - (c) automatic in operation.

Breathing apparatus

30.23 An employer must ensure that all breathing apparatus and associated delivery systems are correctly installed and tested for function before each use.

Gauges and meters

30.24 An employer must ensure that gauges and meter equipment are tested every 6 months or whenever a malfunction is detected, and errors found are corrected without delay.

Hoists

30.25 Where a hoisting device is required to lower or raise a diver, an employer must ensure that

- (a) it is not used for any other purpose until the diver has been recovered, and
- (b) directions to the hoist operator are only given by either the diver, the diver's tender or the diving supervisor.

Warning devices

- 30.26(1)** An employer must ensure that
- (a) warning devices are used in accordance with this section to define the limits of a diving site, and
 - (b) boats other than those connected with the diving are kept clear of a diving site while diving activity is taking place.
- (2) An employer must ensure that marker buoys are used to display warning devices such as flags, lights, lamps or flares.
- (3) An employer must ensure that where the diving activity is in navigable waters,
- (a) a recognized diver's flag is flown or prominently displayed, and
 - (b) the international code flag "Alpha" is flown if a safety officer requires it.
- (4) Flags and signals that are used for work site identification must be displayed only during diving activity.

Rescue boat

30.27 An employer must ensure that where divers are operating from floating equipment, a suitable power boat, ready for immediate use, is available on the dive site for rescue or escape.

SCUBA Diving

Dive crew

- 30.28(1)** An employer must ensure that a dive crew of 3 or more workers is present at a dive site if
- (a) the depth of the dive is not more than 18 metres,
 - (b) the diver remains within the no-decompression limits, and
 - (c) there is no entrapment hazard at the location of the dive.
- (2) An employer must ensure that, where the buddy system is used in a diving operation, a dive crew
- (a) has 2 or more divers, and

- (b) has a third person who remains at the surface at all times acting as a diver's supervisor or tender.
- (3) An employer must ensure that, if the diver is using a lifeline, float or audio communication with the surface,
 - (a) 1 standby diver and 1 or more diver's supervisors or tenders are at the surface, and
 - (b) 1 diver's supervisor or tender tends to only 1 diver.
- (4) Despite subsection (3), 1 tender may tend 2 divers if the divers and the diver's supervisor or tender have effective 3-way voice communication during the dive.
- (6) The employer must ensure that if a dive does not meet the limitations of subsection (1),
 - (a) a standby diver and diver's supervisor or tender remain at the surface during the dive, and
 - (b) if the buddy system is not used, the single diver is tethered and carries a bailout bottle.
- (7) An employer must ensure that a dive crew has a supervisor who is responsible for the diving operation and who must
 - (a) evaluate hazards at the dive site,
 - (b) prepare a detailed dive plan and ensure it is given to the employer before diving begins at the dive site,
 - (c) brief the dive crew,
 - (d) ensure that the equipment required for the dive is available and in good working condition,
 - (e) supervise and control the entire diving operation, and
 - (f) stop the diving operation if, in the supervisor's opinion, conditions are not safe.
- (8) An employer must ensure that the dive plan is kept at the dive site.
- (9) An employer must ensure that a dive supervisor keeps a log of the diving operation and file it with the employer when the diving operation is completed.
- (10) An employer must ensure that a diver on a lifeline is tended at all times by a diver's supervisor.
- (11) If there is an exceptional risk at a diving operation of a diver being trapped or a diver's life support being interrupted, an employer must ensure that
 - (a) the dive is suspended and a new hazard assessment conducted,
 - (b) a safe work plan is developed, communicated and implemented, and
 - (c) additional dive team members with independent equipment and capable of effecting a rescue are at the dive site.

Communication

- 30.29(1)** A diver using SCUBA must ensure that the buddy system is used and must remain in visual or physical contact with another diver at all times.
- (2) If divers who are buddies lose contact with each other, they must surface immediately.
- (3) A diver using SCUBA must be tended on a lifeline by a diver's supervisor or diver's tender.
- (4) A diver using SCUBA must
 - (a) have audio communication with the surface at all times, or

- (b) be tethered to a synthetic lifeline not less than 10 millimetres in diameter, or a lifeline with equivalent properties,
 - (i) tethered to an identifiable float on the surface, and
 - (ii) constantly visually monitored from a location that allows immediate assistance to be given to the diver in an emergency.

- (5) An employer must ensure that a diver using SCUBA uses an open circuit apparatus that supplies the breathing medium by an automatic demand flow system.

Diver's equipment

- 30.30** Where a diver is using SCBA, an employer must ensure that all of the following equipment appropriate to the diving conditions and as specified by the diving supervisor is used by the diver:

- (a) a SCUBA unit complete with a quick release harness and a submersible pressure gauge,
- (b) a face mask and swimming fins,
- (c) a suitable knife and a depth gauge,
- (d) an exposure suit and an inflatable buoyancy device,
- (e) a weight belt with quick release buckle,
- (f) an underwater watch with elapsed time indicator, and
- (g) an underwater light when night diving.

- 30.31** If a risk of entrapment is present, an employer must ensure that one complete spare set of underwater breathing apparatus with fully charged cylinders is assembled at the dive site.

- 30.32** Where a diving operation is in open water, an employer must ensure that each free swimming diver carries an audible or visual locating device such as a whistle, flare, or strobe light.

SCUBA diving - prohibitions

- 30.33(1)** An employer must ensure that SCUBA is not used by a diver in a diving operation in which the diver

- (a) does not have free access to the surface at all times, or
- (b) may be exposed to a contaminated environment.

- (2) An employer must ensure that SCUBA is not used by a diver in a diving operation if the diver could be adversely affected by underwater or surface work activities or conditions that could otherwise be eliminated or reduced if the diver were using surface supplied air.

- (3) A diver using SCUBA must not dive to a depth of more than 40 metres.

Testing cylinders

- 30.34** An employer must ensure that each scuba cylinder

- (a) is hydrostatically tested at least once every 5 years and visually inspected internally at least once a year,
- (b) has the hydrostatic test date affixed to the cylinder and entered into the maintenance log, and
- (c) has the visual inspection date entered in the maintenance log.

Surface supply diving

Dive crew

- 30.35(1)** Subject to subsection (3), an employer must ensure that a diving operation has a dive crew of 3 or more workers at the dive site if
- (a) the depth of the planned dive is not more than 40 metres,
 - (b) the planned dive remains within the no-decompression limits, and
 - (c) there are no hazards at the dive location.
- (2)** An employer must ensure that the dive crew referred to in subsection (1) includes
- (a) a diver's supervisor or tender,
 - (b) a diver, and
 - (c) a standby diver at the surface unless the diver is permitted to be a standby diver in the water.
- (3)** Subject to subsection (5), an employer must ensure that a diving operation using surface supplied air has a dive crew of 4 or more workers at the dive site if
- (a) the depth of the planned dive is more than 40 metres,
 - (b) the planned dive will exceed the no-decompression limits, or
 - (c) there are hazards at the dive location.
- (4)** An employer must ensure that the dive crew referred to in subsection (3) includes
- (a) a dive supervisor,
 - (b) a diver's supervisor or tender, and
 - (c) 2 divers, 1 of whom is a standby diver at the surface.
- (5)** If the diving operation uses 2 or more divers, an employer must ensure that each diver has a dedicated diver's tender.

Diver's equipment

- 30.36** An employer must ensure that
- (a) diver's boots are patterned, constructed, and fastened to prevent their loss underwater,
 - (b) every diver wears a separate weight belt outside the diving dress, which
 - (i) if released, results in the diver achieving positive buoyancy, and
 - (ii) must be inspected daily before commencing a diving operation,
 - (c) non-return valves are
 - (i) fitted to all surface supplied diving helmets, masks, and hookah diving systems, and
 - (ii) checked before commencing a diving operation,
 - (d) each diver wears a bailout system and carry a suitable knife, and
 - (e) when divers use a stage to carry out decompression diving, the stage has an independent source of emergency breathing gases sufficient to complete any needed decompression of the diver.

Diving Hazards

Hazardous mechanisms

- 30.37** An employer must ensure that before a diver enters the water all hazardous mechanisms are secured against inadvertent movement, and locked out.

Intakes, pipes and tunnels

- 30.38(1)** If a diver is required to approach or enter the intake opening of a pipe, tunnel, duct or similar installation, an employer must ensure that the diver is provided with a means of distinguishing the specific intake from others in the vicinity.
- (2) Despite Clause 3.5.3.4 of CSA Standard Z275.2-04, an employer must ensure that the flow through the intake of a pipe, tunnel, duct or similar installation in the vicinity of a dive
- (a) is stopped and the intake mechanism locked out before the dive begins, and
 - (b) is not restarted until after the diver leaves the water.
- (3) A diver must not enter the water until the flow through the intake of a pipe, tunnel, duct or similar installation in the vicinity of the dive is stopped and the intake mechanism is locked out.
- (4) If a diver is required to approach a hazardous mechanism, a pressure differential structure or the intake opening of a pipe, tunnel, duct or similar installation, an employer must ensure that the diver
- (a) has 2-way voice communication with the surface at all times,
 - (b) is tethered to the surface with not less than a 10 millimetre diameter synthetic line or a line with equivalent properties, and
 - (c) uses surface supplied air.
- (5) If a diver is required to enter a structure or installation as described in subsection (3), an employer must ensure that the diver
- (a) uses surface supplied air diving equipment, and
 - (b) has effective 2-way voice communication with the surface at all times.

Contaminated environments

- 30.39(1)** An employer must ensure the following zones are established before a dive is made in a contaminated environment:
- (a) a contamination reduction zone where workers and equipment are decontaminated;
 - (b) a support zone where the diving operation is supported and diving equipment can be cleaned or disposed of; and
 - (c) an exclusion zone at the surface that is accessible only to authorized and protected personnel and from which divers are tended during a dive into a contaminated environment.
- (2) Before diving begins in a contaminated environment, an employer must ensure that safety procedures are prepared that
- (a) identify the contaminants,
 - (b) specify the special clothing or equipment divers and other workers must use,
 - (c) identify the potential adverse health effects that exposed workers might experience,
 - (d) identify the special medical precautionary measures that must be taken by workers,
 - (e) identify the special first aid measures associated with exposure to the specific contaminants,
 - (f) identify the contamination reduction zone, support zone, and exclusion zone for the operation,
 - (g) specify the protective clothing and equipment divers and other workers must use in each zone,
 - (h) specify the procedures divers and other workers must follow when moving from one zone to another, and

- (i) list the emergency telephone numbers workers can use to reach qualified assistance within adequate response times.
- (3) An employer must ensure that a dive crew of 4 or more workers is present at a dive site operation in a contaminated environment, one of whom is a diver, one a dive supervisor, one a diver's tender and one a standby diver.
- (4) An employer must ensure that if a diving operation is in a contaminated environment
 - (a) emergency breathing apparatus is provided for surface support workers if there is a possibility they may inhale dangerous contaminants during the diving operations,
 - (b) suitable clothing is worn and equipment used by surface support personnel if there is a possibility they may contact dangerous contaminants,
 - (c) an appropriate means of safely decontaminating divers and other workers is available at the dive site,
 - (d) facilities are available in the support zone for disposing of contaminated clothing and equipment,
 - (e) all diving systems and equipment that are exposed to contaminants are inspected for deterioration before each dive in the contaminated environment, and
 - (f) diaphragms of the first and second regulators and associated exhaust valves are inspected for deterioration before each dive in the contaminated environment.

Diving equipment

- 30.40(1)** An employer must ensure that divers who are diving in contaminated environments use surface supplied air equipment including
 - (a) a surface supply diving helmet designed and suitable for such work,
 - (b) a totally enclosed diving suit, made of non-absorbent material, that mates to the helmet with a positive seal and locking device,
 - (c) a 2-way voice communication system, and
 - (d) other protective devices, if reasonably practicable, that minimize the diving equipment's exposure to the contaminant.
- (2) An employer must ensure that a worker
 - (a) entering an exclusion zone wears appropriate personal protective equipment,
 - (b) enters and leaves the exclusion zone only through the contamination reduction zone, and
 - (c) does not bring food, drink or tobacco into an exclusion zone or contamination reduction zone.

Contaminated equipment

- 30.41(1)** A person must not remove contaminated diving systems and equipment from a dive site unless the person is authorized to do so by the dive supervisor.
- (2) A person must not use contaminated diving systems and equipment in a subsequent diving operation unless the diving systems and equipment are free of all contaminants.

Live Boating

General requirements

- 30.42** An employer must ensure that live boating diving operations are conducted only

- (a) during daylight hours,
- (b) in appropriate weather, current and water conditions,
- (c) from a vessel with the necessary maneuverability to ensure the diver's safety, and which is under the control of a competent master, and
- (d) within the no-decompression limits.

Procedures

30.43 A diving supervisor must ensure that

- (a) a procedure or device is in place that will prevent the diver's lifeline or umbilical bundle from becoming entangled in the boat's propulsion system,
- (b) the diver's tender is in a position of unobstructed view to the vessel master and the diving supervisor,
- (c) the propulsion system is disengaged when the diver enters or leaves the water,
- (d) the diver's umbilical or lifeline is monitored, hands on, by a diver's tender,
- (e) there is continuous voice communication,
- (f) no more than 70% of the diver's umbilical or lifeline is deployed during the diving operation,
- (g) the vessel master is competent to perform live boating operations and is under the direct control of the diving supervisor during diving operations, and
- (h) all dive crew members are familiar with their duties and responsibilities with respect to the diver's safety, and they may terminate the dive if the diver's safety is jeopardized.

Altitude Diving

General procedures

30.44(1) The diving supervisor must ensure that altitude diving operations are conducted in accordance with acceptable altitude diving tables.

(2) An employer must ensure that altitude diving procedures address

- (a) acclimatization at the dive site to reduce the diver's nitrogen load caused by the reduced atmospheric pressure at the increased altitude,
- (b) the equivalent ocean depth in order to select the appropriate tables at the altitude,
- (c) accurate methods of calculating the diver's actual depth of dive,
- (d) calculation of the reduction in ascent rate due to the increase in altitude, and
- (e) post dive travel considerations.

Deep Diving

General requirements

30.45 An employer must ensure that divers who take part in deep diving operations

- (a) are tethered to the work base by a breathing gas umbilical,
- (b) have effective two-way voice communications with the surface, and
- (c) are supplied with a mixed gas breathing medium.

Hyperbaric chamber

30.46 An employer must ensure that an approved double lock hyperbaric chamber in operable condition is on a deep dive site.

Transportation to the underwater worksite

- 30.47(1)** If the depth of the dive is less than 73 m (240 ft) and the total "in water" ascent time is less than 1 hour, an employer must ensure that the diver is transported to and from the underwater worksite by a stage, bell, or submersible compression chamber (SCC).
- (2) If the depth or time exceeds the conditions in subsection (1) an employer must ensure that an SCC is used to transport the diver.
- (3) An employer must ensure that the standby diver is stationed at the surface, or if an SCC is used the standby diver must be in the SCC.
- (4) An employer must ensure that the diving supervisor has a means of
- (a) monitoring the depth of the diver and the SCC,
 - (b) controlling the pressures of the breathing mixtures supplied to each diver and the standby diver, and
 - (c) continuously analyzing the breathing mixture.

Rest periods

- 30.48(1)** If non-saturation diving techniques are used in a deep diving operation, the diving supervisor must ensure there is a rest period of at least 24 continuous hours following the completion of decompression.
- (2) If saturation diving techniques are used, the diving supervisor must ensure that
- (a) if the dive is to a depth of 150 m (500 ft) or less, a diver does not exceed 4 hours in the water and 4 hours as an attendant in the SCC,
 - (b) if the dive is deeper than 150 m (500 ft), a diver does not exceed 3 hours in the water and 3 hours as an attendant in the SCC, and
 - (c) in any 24 hour period, there is a rest period of at least 12 continuous hours after the applicable time limits in paragraphs (a) and (b) have been reached.
- (3) A diver must not commence another dive within 7 days of completion of decompression following a saturation dive unless at the discretion of a physician knowledgeable and competent in diving medicine.

Submersible Compression Chambers(SCC) & Lock-Out Submersibles(LOC)

General equipment requirements

- 30.49** An employer must ensure that each SCC and LOS is equipped to permit the transfer of persons under pressure into and from a surface compression chamber, and has
- (a) doors and hatches that act as pressure seals, and that may be opened from either side,
 - (b) valves, gauges, and other fittings necessary to control the internal pressure and to clearly indicate the internal and external pressures,
 - (c) spring loaded pressurization and main exhaust valves which will close when not held in the open position,
 - (d) a reserve breathing mixture for persons occupying or working from the SCC or LOS, which must be protected against inadvertent operation and be capable of being brought on line from within the SCC or LOS without outside assistance,
 - (e) a two-way voice communication system capable of continuously recording and saving the previous 4 hours of conversation, with emergency backup capabilities, through which a person in the SCC or LOS can communicate with the diving supervisor,

- (f) heating and lighting equipment including emergency backup illumination,
- (g) first aid equipment, without towelettes,
- (h) a hoisting device to bring an unconscious or injured diver into the chamber,
- (i) a standby diver's umbilical bundle which must be 3 m (10 ft) longer than the diver's umbilical bundle,
- (j) a strobe light that is activated while the chamber is in the water,
- (k) an emergency locating device with a surface receiver operating at 37.5 kHz,
- (l) instruments to monitor temperature, oxygen and carbon dioxide levels within the chamber, and for an SCC the instrument readings must be readable on the surface,
- (m) primary and emergency carbon dioxide scrubbers,
- (n) hull integrity valves mounted on all gas and other penetrations into the submersible compression chamber,
- (o) a secondary source of power for the diving systems and equipment that can be rapidly brought on line in the event the primary energy source fails, and
- (p) in a diving operation in which an SCC is used, a sufficient quantity of breathing mixture to meet the needs of the occupants of the chamber for at least 24 hours.

Design

- 30.50** An employer must ensure that each SCC and LOS is of a design that
- (a) allows divers to enter and exit without difficulty,
 - (b) allows at least 2 divers, equipped and dressed for the diving operation, to be seated within, and
 - (c) in case of emergency, allows a diver within to disconnect or shear the primary lifting cable and the umbilical bundle.

Lifting gear

- 30.51(1)** An employer must ensure that each SCC and LOS is used in association with lifting gear that
- (a) enables the SCC or LOS to be lowered to the depth at which the diving operation is to be carried out, without excessive lateral, vertical, or rotational movement taking place,
 - (b) is provided with, in addition to the primary lifting cable, a tag rope so designed that in the event of the primary cable breaking during an air water interface transfer, the tag rope will permit the SCC or LOS to descend only to a calm area immediately below the turbulent wave zone, and
 - (c) is provided with a secondary means of being returned to the surface in the event of failure of the main lifting gear.
- (2)** If use of the secondary means in subsection (1)(c) involves shedding weights, an employer must ensure that the controls for shedding weights are operable from within the SCC or LOS and must incorporate a means to prevent the weights from being shed inadvertently.

Secondary lifting equipment

- 30.52** An employer must ensure that
- (a) an LOS is provided with
 - (i) a secondary lifting eye or similar device of at least the same strength as the primary lifting eye, and
 - (ii) a secondary lifting cable that is readily available and of at least the same strength as the primary lifting cable, and is compatible with the secondary lifting eye or similar device,

- (b) an SCC is provided with
 - (i) a secondary lifting eye or similar device of at least the same strength as the primary lifting eye, and
 - (ii) a secondary lifting cable that is attached and capable of returning the SCC to the surface, and
- (c) an alternative means is provided to return the SCC or LOS to the deck.

Diving system procedures

- 30.53(1)** The diving supervisor must ensure that a lock-out diving operation is not conducted from a submersible unless
- (a) the submersible is negatively buoyant on the bottom or positively secured to the work site,
 - (b) the diving supervisor is on board the submersible and present in the one atmosphere chamber during the lockout operation, and
 - (c) a standby diver is monitoring the lock-out operation from the submersible's compression chamber and is dressed and equipped to immediately carry out rescue operations in the event of an emergency.
- (2)** The diving supervisor must ensure that lock-out submersible and atmospheric diving system operations are not conducted unless
- (a) a backup unit with sufficient depth capabilities to effect a rescue is available for use in the event of an emergency,
 - (b) the on-board life-support system of the LOS is capable of sustaining life for a period of time that would enable the backup unit to reach the site of the diving operation and effect rescue, and
 - (c) a breathing mixture is provided that will meet the needs of the occupants for at least 48 hours.

Atmospheric Diving Systems (ADS)

Registration

- 30.54** The employer must ensure that an atmospheric diving system meets the requirements for registration with Lloyd's Registry of Shipping, the American Bureau of Shipping, or Det Norske Veritas.

General equipment requirements

- 30.55** An employer must ensure that an ADS has
- (a) valves, gauges, and other fittings necessary to control the internal pressure, and to clearly indicate the internal and external pressures,
 - (b) a reserve breathing mixture for persons occupying the ADS, a mixture which is protected against inadvertent operation and is capable of being brought on line from inside, without outside assistance,
 - (c) a two-way voice communication system, capable of continuously recording and saving the previous 4 hours of conversation, and with emergency backup capabilities, by which a person inside the atmospheric diving system can communicate with the diving supervisor,
 - (d) lighting equipment including emergency backup illumination,
 - (e) first aid equipment,
 - (f) heating equipment and thermal protection for all occupants,
 - (g) a strobe light that can be activated while the ADS is in the water,
 - (h) an emergency locating device with a surface receiver operating at 37.5 kHz,
 - (i) instruments to enable occupants to monitor the temperature, oxygen and

carbon dioxide within the atmospheric diving system,
(j) a primary and an emergency means of scrubbing carbon dioxide,
(k) a device which allows the occupant to disconnect or shear the primary lifting cable and the umbilical bundle in an emergency, and
(l) in addition to the primary lifting cable, a tag rope or secondary lifting method so designed that in the event of the primary cable breaking during an air water interface transfer, the tag rope or secondary method will permit the ADS to descend only to a calm area immediately below the turbulent wave zone.

Secondary means of surfacing

- 30.56(1)** An employer must ensure that atmospheric diving operations are not conducted unless the atmospheric diving system is provided with a secondary means of returning to the surface in the event the main lifting gear fails.
- (2)** If use of the secondary means involves shedding weights, an employer must ensure that the controls for shedding weights are operable from within and must incorporate a means to prevent the weights from being shed inadvertently.

Secondary lifting equipment

- 30.57** An employer must ensure that an ADS is provided with
- (a) a secondary lifting eye or similar device that is of at least the same strength as the primary lifting eye, and
 - (b) a secondary lifting cable that is readily available and of at least the same strength as the primary lifting cable, and is compatible with the secondary lifting eye or device.

Part 31 - Excavating and Tunnelling

Disturbing the ground

- 31.1** For the purpose of this Part, ground is disturbed if a work operation or activity on or under the existing surface results in a disturbance or displacement of the soil, but not if the disturbance or displacement is a result only of
- (a) routine, minor road maintenance,
 - (b) cultivation to a depth of less than 450 millimetres below the ground surface,
- or
- (c) hand-digging to a depth of no more than 300 millimeters, but not including permanent removal of cover over a buried facility.

Classification of soil type

- 31.2(1)** For the purpose of this Part, soil is classified as “hard and compact” if it closely exhibits most of the following characteristics:
- (a) it is hard in consistency and can be penetrated only with difficulty by a small, sharp object;
 - (b) it is very dense;
 - (c) it appears to be dry;
 - (d) it has no signs of water seepage;
 - (e) it is extremely difficult to excavate with hand tools; and
 - (f) it has not been excavated before.
- (2)** For the purpose of this Part, soil is classified as “likely to crack or crumble” if
- (a) it has been excavated before but does not exhibit any of the characteristics of “soft, sandy, or loose” soil, or
 - (b) it closely exhibits most of the following characteristics:
 - (i) it is stiff in consistency and compacted;
 - (ii) it can be penetrated with moderate difficulty with a small, sharp object;
 - (iii) it is moderately difficult to excavate with hand tools;
 - (iv) it has a low to medium natural moisture content and a damp appearance after it is excavated;
 - (v) it exhibits signs of surface cracking; or
 - (vi) it exhibits signs of localized water seepage.
- (3)** For the purposes of this Part, soil is classified as “soft, sandy, or loose” if it closely exhibits most of the following characteristics:
- (a) it is firm to very soft in consistency, loose to very loose;
 - (b) it is easy to excavate with hand tools;
 - (c) it is solid in appearance but flows or becomes unstable when disturbed;
 - (d) it runs easily into a well-defined conical pile when dry;
 - (e) it appears to be wet;
 - (f) it is granular below the water table, unless water has been removed from it; or
 - (g) it exerts substantial hydraulic pressure when a support system is used.
- (4)** If an excavation or trench contains soil of more than one soil type, for the purposes of this Part an employer must operate as if all of it is the soil type with the least stability.

Notification of excavating or trenching

- 31.3** An employer must ensure that a Chief Safety Officer is notified in writing prior to beginning an excavation or trench more than 6 metres in depth.

Soil stabilization

- 31.4(1)** Subject to subsection (2), an employer must ensure that soil is stabilized in
- (a) an excavation or trench by shoring or cutting back, or
 - (b) a tunnel or underground shaft by shoring.
- (2)** An employer may stabilize the soil in an excavation, trench, tunnel or underground shaft using an artificial soil stabilization technique, including freezing soil by artificial means or grouting if the process used is
- (a) designed by a professional engineer to control soil conditions, and
 - (b) performed in accordance with the professional engineer's specifications.
- (3)** A person must not use natural freezing of the soil as an alternative or partial alternative to a temporary protective structure or to stabilize the soil in an excavation, trench, tunnel or underground shaft.

Permafrost

- 31.5** An employer must ensure that an excavation or trench more than 1.2 metres deep in permafrost is designed by a professional engineer
- (a) unless the sidewalls are shored or cutback in accordance with these regulations, or
 - (b) where ground conditions may change during the project.

Marking an excavation

- 31.6** If there is a danger of a worker or equipment falling into an excavation or trench, an employer must ensure that workers are made aware of the danger through flagging, marking, safeguards or other appropriate and effective means.

Water hazard

- 31.7** An employer must ensure that an excavation or trench that a worker may be required or permitted to enter is kept free of an accumulation of water that may pose a hazard to the worker.

Worker access

- 31.8(1)** An employer must provide workers with a safe means of entering and leaving an excavation, trench, tunnel or underground shaft.
- (2)** An employer must ensure that a worker does not enter an excavation, trench, tunnel or underground shaft that does not comply with this Part.
- (3)** A worker must not enter an excavation, trench, tunnel or underground shaft that does not comply with this Part.

Locating buried facilities

- 31.9(1)** Before the ground is disturbed at a work site, an employer must
- (a) contact the owner or designate of
 - (i) a pipeline that is within 30 metres of the work site, and
 - (ii) any other buried facility that may be affected by the ground disturbance,

- (b) advise the owner or designate of the proposed activities,
 - (c) ask the owner or designate to identify and mark the location of the buried facility, and
 - (d) not begin disturbing the ground until buried facilities have been identified and their locations marked.
- (2) An employer must ensure that workers are aware of locate marks for buried facilities.
- (3) An employer must ensure that steps are taken to re-establish the locate marks for buried facilities if activities at the work site move or destroy the locate marks.
- (4) Despite subsection (1), an employer may use as-built record drawings of the buried facilities for locating the buried facilities if
- (a) the work does not require excavation or removal of the soil or ground, and
 - (b) the ground is penetrated to a depth of 1 metre or less.
- (5) The as-built record drawings referred to in subsection (4) must be certified by the owner of the buried facility as the most current drawings of record that indicate the constructed location of the buried facility.
- (6) Despite subsections (1) and (4), if an employer, on behalf of an electrical utility, undertakes emergency work that
- (a) involves a ground disturbance to a depth of no more than 500mm,
 - (b) is on the horizontal alignment or right-of-way of an electrical utility structure, and
 - (c) the employer has determined that no underground facilities exist in the area affected by the work,
- the employer is exempt from the requirements of this section.

Exposing buried facilities

- 31.10(1)** An employer must ensure that work with mechanical excavation equipment is not permitted within the hand expose zone of a buried facility until the buried facility has been exposed to sight
- (a) by hand digging,
 - (b) by a non-destructive technique acceptable to the owner of the buried facility, or
 - (c) by a method equivalent to clause (a) or (b).
- (2) Despite subsection (1), an employer may use mechanical excavation if
- (a) the only buried facility is an electrical cable or conduit that is grounded and isolated so that its disconnection is visible,
 - (b) the owner of the electrical cable or conduit is notified of the operation before it begins,
 - (c) the buried facility is no longer in use,
 - (d) the owner of the buried facility gives the employer written consent to excavate or remove the facility, and
 - (e) the employer ensures that excavating or removing the buried facility does not present a hazard.
- (3) An employer must ensure that the use of mechanical excavation equipment is not allowed within 600 millimetres of a buried pipeline, a direct bury trunk or a toll fibre optic cable unless the use of the equipment is under the direct supervision of a representative of the owner of the buried pipeline, direct bury trunk or toll fibre optic cable.

- (4) An employer must ensure that any exposed buried facilities are protected and supported so that workers are not injured.
- (5) If a pipeline is exposed during a work operation, an employer must ensure that the pipeline operator or licensee is notified before backfilling the excavation or trench.

Methods of protection

- 31.11(1)** Before a worker begins working in an excavation or trench that is more than 1.2 metres deep and closer to the wall or bank than the depth of the excavation, an employer must ensure that the worker is protected from cave ins or sliding or rolling materials by
 - (a) cutting back the walls of the excavation or trench to reduce the height of the remaining vertical walls, if any, to no more than 1.2 metres,
 - (b) installing temporary protective structures, or
 - (c) using a combination of the methods in clauses (a) and (b).
- (2) Subsection (1) does not apply if a trench is constructed in solid rock throughout the entire trench.

Cutting back walls

- 31.12(1)** Where the walls of an excavation or trench are cut back, an employer must ensure that the walls are sloped from the toe at the bottom of the excavation at an angle of not less than 45 degrees measured from the vertical.
- (2) Despite subsection (1) where the wall of an excavation or trench is kept vertical less than 1.2 metres from the bottom, an employer must ensure that the wall is cutback to a point equal to a point that would yield 45 degrees, taken from the toe at the bottom of the wall.

Loose materials

- 31.13** An employer must ensure that loose materials are scaled and trimmed from the sides of an excavation or trench.

Spoil piles

- 31.14** An employer must ensure that a spoil pile is placed so that
 - (a) the leading edge of the pile is at least 1 metre away from the edge of the excavation or trench,
 - (b) the slope of a spoil pile adjacent to the excavation or trench is at an angle of not more than 45 degrees from the horizontal, and
 - (c) loose materials are scaled and trimmed from the spoil pile.

Power pole support

- 31.15(1)** An employer must ensure that work that disturbs the ground in the vicinity of an overhead power line is performed in a manner that does not reduce the original support provided for power line poles.
- (2) Where an excavation or trench is close to a power pole, an employer must ensure that the owner of the pole or the owner of the facility is contacted to ensure
 - (a) that proper safety precautions are put in place, and
 - (b) the integrity of the pole is maintained.

Safe entry and exit

- 31.16(1)** An employer must ensure that if a worker is required to enter a trench that is more than 1.2 metres deep, a safe point or means of entering and leaving is located not more than 8 metres from the worker.
- (2)** An employer must ensure that if a worker is in a trench that is more than 1.2 metres deep, the trench is supported or sloped so that the worker can reach the safe point or means of entering and leaving safely.

Temporary protective structures

- 31.17(1)** An employer must ensure that temporary protective structures in an excavation
- (a) 3 metres or less deep are of sufficient strength to prevent the walls of the excavation from caving in or otherwise moving into the excavation, and
 - (b) more than 3 metres deep are designed, constructed and installed in accordance with the specifications of a professional engineer.
- (2)** The specifications of a professional engineer for subsection (1)(b) must include
- (a) the size and specifications of the structure, including the type and grade of materials used in its construction, and
 - (b) the loads for which the structure is designed.
- (3)** An employer must ensure that, before beginning an excavation or trench, a foundation that may be affected by the excavating is supported by a temporary protective structure designed, constructed and installed in accordance with the specifications of a professional engineer.

Alternatives to temporary protective structures

- 31.18(1)** Despite section 31.17, an employer may install the following as temporary protective structures in trenches:
- (a) in trenches that vary in depth from 1.2 metres to 6 metres, shoring, stringers and bracing constructed of lumber that complies with Schedule 9, or a material that has equal or greater properties to those of the lumber;
 - (b) 38 millimetre shoring elements may be replaced by exterior grade plywood if
 - (i) the plywood meets the requirements of CSA Standard O121-M1978 (R1998), *Douglas Fir Plywood* or CSA Standard O151-M1978 (R1998), *Canadian Softwood Plywood*,
 - (ii) the plywood is at least 19 millimetres thick,
 - (iii) the trench is not more than 2.7 metres deep,
 - (iv) uprights are installed at intervals of not more than 600 millimetres centre-to-centre,
 - (v) cross braces do not bear directly on the plywood, and
 - (vi) cross braces bearing on uprights or walers are located at all joints in the plywood sheathing.
- (2)** Despite subsection (1)(a), screw jacks, hydraulic equipment or other apparatus may be used as shoring, stringers or bracing if they are at least equivalent in strength and reliability to the shoring, stringers or bracing described in Schedule 9.
- (3)** Despite subsection (1)(a) if the trench is less than 2.4 metres deep and in soil classified as “hard and compact”, an employer does not have to use stringers.

- (4) Despite section 31.17, an employer must ensure that additional protection certified by a professional engineer is installed in trenches to compensate for passing vehicular traffic, working machinery or a heavy object placed within a distance equal to the depth of the trench, measured from the near edge of the bottom of the trench to the traffic, machinery or heavy object.
- (5) Despite section 31.17, an employer must ensure that additional protection certified by a professional engineer is installed in a trench to compensate for the stress created because the trench is adjacent to or abuts a building or other structure.

Installation of shoring, stringers or bracing

- 31.19(1)** An employer must ensure that a worker who installs shoring, stringers or bracing uses a ladder and works down from the top of the trench, installing each brace in descending order.
- (2) An employer must ensure that a worker who removes shoring, stringers or bracing uses a ladder and works upward from the bottom of the trench, removing each brace in ascending order.
- (3) A worker must install shoring, stringers or bracing in accordance with subsection (1) and remove them in accordance with subsection (2).
- (4) Despite subsections (2) and (3), if the quality of the ground in which a trench has been dug has deteriorated during operations to the extent that it is unsafe to use the method of removal required by subsection (2), an employer must ensure that the shoring, stringers or bracing is removed using a method that does not require the worker to be in the trench.

Access for powered mobile equipment

- 31.20** An employer must ensure that the open side of an excavation or trench, or a route used by powered mobile equipment to gain access to an excavation or trench, has a barrier high enough to stop the equipment from sliding or rolling into the excavation or trench.

Dumping block

- 31.21** An employer must ensure that if powered mobile equipment may go over a bank or enter a dump opening while it is discharging its load, the equipment is effectively stopped or controlled by
 - (a) an anchored block,
 - (b) a ridge of material acting as a backstop, or
 - (c) a designated signaller with a stop signal.

Underground shafts

- 31.22(1)** An employer must ensure that, during the excavation of an underground shaft that is between 1.2 metres and 6 metres deep, the walls of the shaft from the top down are retained by temporary protective structures strong enough to prevent the walls from collapsing or caving in.
- (2) An employer must ensure that, during the excavation of an underground shaft 6 metres or more deep, the walls of the shaft from the top down are retained by temporary

- protective structures certified by a professional engineer as strong enough to prevent the walls from collapsing or caving in.
- (3) An employer must ensure that a Chief Safety Officer is notified in writing prior to commencing an underground shaft more than 6 metres in depth.
 - (4) An employer must ensure that
 - (a) a solid fence or equally effective means of preventing workers, materials and equipment from falling into the shaft is provided around an underground shaft opening, and
 - (b) gates not less than 1 metre high are installed at each entrance of an underground shaft and are kept closed when they are not being used.
 - (5) Workers must keep a gate to the entrance of an underground shaft closed when it is not being used.
 - (6) An employer must ensure that an underground shaft is provided with suitable and efficient machinery or other device for keeping the shaft free of accumulations of water.

Drilled or bored underground shaft

- 31.23(1)** An employer must ensure that
 - (a) a worker who is required to enter a drilled or bored underground shaft is protected by a casing or temporary protective structure, and
 - (b) the casing or temporary protective structure extends and remains at least 300 millimetres above surface of the ground where the shaft is drilled or bored.
- (2) An employer must ensure that a casing or temporary protective structure referred to in subsection (1) is certified by a professional engineer as having sufficient strength to resist the shifting of the surrounding materials.
 - (3) Subject to subsection (4), if a worker in a belled area of an underground shaft is exposed to falling materials and is unable to stand clear of the area, an employer must ensure that the worker precedes each load of excavated material to the surface.
 - (4) If a worker referred to in subsection (3) cannot precede each load to the surface, an employer must ensure that
 - (a) the worker accompanies each load if the equipment is designed to safely transport both the worker and the excavated material simultaneously,
 - (b) safe work procedures are prepared that include the procedures to be followed when the worker and the excavated material are moved simultaneously, and
 - (c) a Chief Safety Officer is notified in writing of the procedures prior to them being used.

Prohibition

- 31.24** A worker must not enter a belled area of a drilled or bored underground shaft if the worker is not protected by temporary protective structures or by procedures put in place for protection.

Tunnel

- 31.25(1)** An employer must ensure that, during the excavation of a tunnel, the walls of the tunnel from the top down are retained by temporary protective structures certified by a professional engineer as strong enough to prevent the walls from collapsing or caving in.

- (2)** An employer must ensure that a tunnel is provided with suitable and efficient machinery or other device for keeping the tunnel free from accumulations of water.

Part 32 - Forestry

Felling and bucking

- 32.1(1)** Before a tree is felled, a faller must ensure that there is a clear path of retreat and sufficient space to work for the faller and the faller's trainee, if any.
- (2)** An employer must ensure that workers, except a hand faller and the hand faller's trainee, if any, remain a distance of not less than twice the height of the tallest tree away from the immediate area in which the felling is taking place.
- (3)** If a self-propelled mechanized feller is operating, an employer must ensure that workers remain at least the minimum distance prescribed by the manufacturer of the feller away from the immediate area in which felling is taking place.
- (4)** A worker cutting timber must
- (a) fall or remove snags and trees that create a danger to workers as the cutting progresses,
 - (b) when felling a tree, make a correct undercut between 1/4 and 1/3 of the diameter of the tree at the butt,
 - (c) ensure that the undercut is complete and cleaned out,
 - (d) leave sufficient uncut wood in the felling cut to control the direction in which the tree falls,
 - (e) not work on hillsides immediately below another worker if skidding, sliding or rolling trees or logs may be dangerous,
 - (f) carry and use wedges for hand felling, and
 - (g) closely trim logs before they are put onto a truck, log deck or rollway.
- (5)** A worker who is bucking must
- (a) take measures to protect other workers from the movement of trees during bucking,
 - (b) clear away all brush and other objects that may catch the saw before starting the bucking, and
 - (c) work on the upper side of logs lying on inclines.
- (6)** An employer must ensure that a worker complies with subsections (4) and (5).

Hand felling

- 32.2** An employer must ensure that workers do not do hand felling during environmental conditions that may be hazardous to workers.

Partially cut trees

- 32.3** An employer must ensure that a partially cut tree is not left standing.

Mechanized feller or limber

- 32.4** An employer must ensure that a mechanized feller or limber
- (a) has a cab for the operator with 2 exits through which the operator can readily escape,
 - (b) is designed and equipped to direct the fall of the tree away from the mechanized feller, and

(c) is operated and maintained in accordance with the manufacturer's specifications.

Operator protective structures

- 32.5** An employer must ensure that skidders, grapple skidders and crawlers used in the harvesting of trees meet the requirements of SAE Recommended Practice J1084-APR80, *Operator Protective Structure Performance Criteria for Certain Forestry Equipment*.

Road warnings

- 32.6** A worker must not fell a tree within the range of a road travelled by other workers or the public unless
- (a) a designated signaller is on the road to warn those approaching and to stop traffic until the tree is down and it is safe to continue, or
 - (b) there are 2 flags or warning signs at the side of the road at a distance of 30 metres to 90 metres from each approach to the place where the tree is to be felled.

Logging trucks

- 32.7(1)** An employer must ensure that a logging truck operating at a work site has stakes to contain logs on the truck and trailers and that the stakes are designed and installed so that workers can trip them only from a safe position.
- (2) An employer must ensure that where logs are being transported on a public road, custom built or modified bunks, stakes and trailers, including their mounting arrangements, are certified by a professional engineer.
 - (3) An employer must ensure that logs are loaded so that the outside row is at least one half its diameter below the top of the stakes and the upper layers are in a secure lay below the level of the stakes.
 - (4) An employer must ensure that where logs are being transported on a public road, the load is secured by at least two binders with a breaking strength of at least 53 kN.
 - (5) An employer must ensure that a logging truck operating at a work site has blaze orange streamer markers or red streamer markers to mark log loads during daylight hours.

Traffic safety

- 32.8(1)** An employer must ensure that bridges, elevated platforms and other structures used by vehicles transporting workers, logs or other forest products in forestry operations are constructed and maintained to permit safe transit.
- (2) If 2 or more vehicles may simultaneously use a section of road that is too narrow to permit them to pass each other, an employer must ensure that a traffic control system is installed on the road.
 - (3) A traffic control system under subsection (2) must use
 - (a) turnouts if they are necessary for safety,
 - (b) warning signs at locations where they are needed, and

- (c) instructional signs giving
 - (i) the kilometre markings,
 - (ii) the road names or number markings, and
 - (iii) the radio frequency, if any, used for traffic control.

- (4)** The traffic control system under subsection (2) must require vehicles
 - (a) to operate with their headlights turned on at all times,
 - (b) to have flashing beacons, and
 - (c) to have the flashing beacons operating at all times.

Part 33 - Tree Care Operations

Application

- 33.1** This Part applies to arboriculture activities that involve pruning, repairing, maintaining or removing trees or cutting brush if a worker works at height and depends on the tree for support.

Safe work practices

- 33.2(1)** An employer must develop and implement safe work practices and procedures that include
- (a) the assessment of hazards at the work site,
 - (b) worker training, including hazard recognition,
 - (c) the selection, limitation, operation, and maintenance of tools and equipment,
 - (d) work positioning and fall protection, and
 - (e) emergency rescue.
- (2) If reasonably practicable, an employer must involve affected workers in the development and implementation of the safe work practices and procedures.

Fall protection and work positioning

- 33.3(1)** Where it is not reasonably practicable to comply with the fall protection requirements of section 5.2, an employer must ensure that a worker uses a work positioning system.
- (2) A worker must use or wear the work positioning or fall protection system the employer requires the worker to use or wear.

Harness standards

- 33.4(1)** An employer must ensure that the harness used as part of a work positioning system is approved to
- (a) NFPA Standard 1983, *Standard on Fire Service Life Safety Rope and System Components*, 2001 Edition, as a Class II or Class III life safety harness,
 - (b) CEN Standard EN 813:1997, *Personal protective equipment for prevention of falls from a height. Sit harnesses*,
 - (c) CSA Standard CAN/CSA-Z259.10-M90, *Full Body Harnesses*,
 - (d) ANSI Standard Z359.1-1992, *Safety Requirements for Personal Fall Arrest Systems, Subsystems and Components*, or
 - (e) CEN Standard EN 361:2002, *Personal protective equipment against falls from a height – Full body harnesses*.
- (2) Subsection (1) does not apply to harnesses in use before April 30, 2004, as long as the harness is in safe working order.

Knot exemption

- 33.5** Section 5.18 does not apply to arboriculture activities to which this Part applies.

Part 34 - Radiation Exposure

Prevention and protection

- 34.1** If workers may be exposed to ionizing radiation at a work site, an employer must
- (a) develop and implement safe work practices and procedures to be used when the workers deal with or approach the radiation source,
 - (b) if practicable, involve the workers in the development and implementation of the safe work practices and procedures, and
 - (c) inform the workers of the potential hazards of ionizing radiation and the radiation source.

Exposure limits

- 34.2** An employer must ensure the exposure of employees is kept as low as reasonably achievable below the exposure limits, with annual effective doses not exceeding
- (a) 20 mSv for radiation workers,
 - (b) 150 mSv to the lens of the eye,
 - (c) 500 mSv to the hands and feet,
 - (d) 500 mSv to the skin, averaged over any 1 cm² area at a nominal depth of 7 mg/cm², regardless of the area exposed,
 - (e) 4 mSv to a worker who is pregnant or has declared her pregnancy (until the end of term), and
 - (f) 1 mSv for any non radiation workers.

Training and Instruction

- 34.3** Where a worker may be exposed to ionizing radiation an employer must ensure that
- (a) workers are instructed in the safe operation of the equipment,
 - (b) the safe work procedures are followed,
 - (c) workers are aware of the boundaries of the hazard area,
 - (d) workers use all appropriate personal protective equipment, and
 - (e) the equipment is operated as specified by the manufacturer.

Monitoring Exposure and Exposure Surveys

- 34.4(1)** An employer must ensure that all ionizing radiation workers are provided with and properly use personal dosimeters.
- (2)** An employer must conduct a radiation survey for ionizing radiation in accordance with the standard practice specified under the applicable Health Canada Safety Code/s listed in the *Nuclear Safety and Control Act* (Canada) and the Canadian Nuclear Safety Commission,
- (a) at the times required by the Safety Code or regulations,
 - (b) if equipment has been damaged or modified,
 - (c) if a worker's exposure to ionizing radiation exceeds the action level,
 - (d) when a radioisotope is accidentally released or spilled, or
 - (e) when required by the manufacturer of the equipment.

Records

- 34.5** An employer that conducts radiation surveys and uses personal dosimeters must ensure that
- (a) a copy of all dosimetry records are forwarded to the Workers Compensation Board,
 - (b) records of all radiation surveys are maintained for at least 10 years,
 - (c) for the period that the worker is employed plus 10 years, records of exposure monitoring and personal dosimetry data are maintained on file, and
 - (d) the records are made available to workers.

X-ray equipment - standards for use

- 34.6** An employer that uses ionizing radiation at a work site must ensure that the equipment meets one of the following standards:
- (a) Health Canada Safety Code 20A, X-Ray Equipment in Medical Diagnosis Part A: Recommended Safety Procedures for Installation and Use, 1980, as amended from time to time
 - (b) Health Canada Safety Code 27, Requirements for Industrial X-Ray Equipment Use and Installation, 1987, as amended from time to time;
 - (c) Health Canada Safety Code 28, radiation Protection in Veterinary Medicine - Recommended Safety Procedures for Installation and Use of Veterinary X-Ray Equipment, 1991, as amended from time to time;
 - (d) Health Canada Safety Code 29, Requirements for the Safe Use of Baggage X-Ray Inspection Systems, 1993, as amended from time to time;
 - (e) Health Canada Safety Code 30, Radiation Protection in Dentistry – Recommended Safety Procedures for the Use of Dental X-Ray Equipment, 1999, as amended from time to time;
 - (f) Health Canada Safety Code 31, Radiation Protection in Computed Tomography Installation, 1994, as amended from time to time;
 - (g) Health Canada Safety Code 32, Safety Requirements and Guidance for Analytical X-Ray Equipment, 1994, as amended from time to time; and
 - (h) Health Canada Safety Code 33, Radiation Protection in Mammography, 1995, as amended from time to time.

Exposure - standards

- 34.7** An employer must ensure that worker exposure to non-ionizing radiation is limited to the exposure limits identified in the following standards, or other similar standard acceptable to a Chief Safety Officer:
- (a) Laser exposure must meet
 - (i) *ANSI Standard Z136.1-2000, Safe Use of Lasers*, as amended from time to time *ANSI Standard Z136.2-1997, Safe Use of Optical Fibre Communication Systems Utilizing*
 - (ii) *Laser Diode and LED Sources*, as amended from time to time; *ANSI Standard Z136.3-1996, Safe Use of Lasers in Health Care Facilities*, as amended from time to time; or
 - (iii) *CSA Standard Z386-01, Laser Safety in Health Care Facilities*, as amended from time to time.
 - (b) Ultrasound exposure must meet
 - (i) *Health Canada Guidelines for the Safe Use of Diagnostic Ultrasound*, 2001, as amended from time to time; or

(ii) *Health Canada Safety Code 24, Guidelines for the Safe Use of Ultrasound: Part II – Industrial and Commercial Applications*, 1991, as amended from time to time.

(c) Radiofrequency exposure must meet

(i) *Health Canada Safety Code 25, Guidelines for Limiting Radiofrequency Exposure – Short-Wave Diathermy*, 1983, as amended from time to time;

(ii) *Health Canada Safety Code 26, Guidelines on Exposure to Electromagnetic Fields from Magnetic Resonance Clinical Systems*, 1987, as amended from time to time; or

(iii) *Health Canada Safety Code 6, Limits of Human Exposure to Radiofrequency Electromagnetic Fields in the Frequency Range from 3 kHz to 300 GHz*, 1999, as amended from time to time.

(d) Ultraviolet exposure must be limited as follows

(i) a worker's exposure to ultraviolet produced by equipment or industrial processes must not exceed the threshold limit values specified in the American Conference of Governmental Industrial Hygienists publication entitled *Threshold Limit Values and Biological Exposure Indices*, dated 2005, as amended from time to time;

(ii) arc welding must not be carried out unless workers who may be exposed to radiation from the arc flash are protected by adequate screens, curtains or partitions or wear suitable eye protection;

(iii) a screen, curtain or partition near an arc welding operation must be made of or be treated with a flame resistant material or coating, and must have a nonreflective surface finish; and

(iv) 12 m (40 ft) is the recommended minimum distance from which an electric welding arc should be seen by the unprotected eye.

Part 35 - Health Care and Industries with Biological Hazards

Policies and procedures

- 35.1(1)** In an industry where a worker is or may be exposed to biohazardous materials, an employer must establish policies and procedures dealing with storing, handling, using and disposing of the biohazardous materials.
- (2)** An employer must ensure that workers are trained in the procedures for working with or around biohazardous materials.
- (3)** An employer must ensure that workers are informed of the health hazards associated with exposure to biohazardous material at the work place.

Sharps containers

- 35.2(1)** An employer must provide sharps containers and ensure that they are located as close as reasonably practicable to where sharps are used.
- (2)** A worker must use the sharps container provided.
- (3)** An employer must ensure that a sharps container has a clearly defined fill line and is sturdy enough to resist puncture under normal conditions of use and handling.

Recapping needles

- 35.3** A person must not recap waste needles.

Limited exposure

- 35.4** An employer must ensure that worker exposure to biohazardous materials is kept as low as reasonably practicable.

Vaccination

- 35.5** If a worker is exposed to biohazardous materials, an employer must ensure that vaccination for Hepatitis A or Hepatitis B is made available to the worker.

Post-exposure management

- 35.6** An employer must establish policies and procedures for the post-exposure management of workers exposed to biohazardous material.

Part 36 – Structural Fire fighting

Application

- 36.1** This Part applies to employers and to workers who are employed in firefighting activities on a full or part time basis, including volunteer firefighting in municipal service and industrial fire brigades, but does not apply to forest fire fighting.

General Requirements

Separate committee or representative

- 36.2(1)** Where an employer is required to establish a joint health and safety committee or worker health and safety representative, an employer must ensure that a fire department or industrial fire brigade has a separate committee or worker health and safety representative, as applicable.
- (2)** Subsection (1) does not affect any obligation to establish a workplace health and safety program for the whole of the employer's operations.

Instruction and direction

- 36.3** An employer must ensure that adequate instruction and direction is provided to firefighters in the safe performance of their duties.

Procedures

- 36.4(1)** An employer must ensure that written procedures are established, communicated and followed by a fire department or industrial fire brigade to
- (a) manage and track firefighters at an emergency incident,
 - (b) manage exposure to bloodborne pathogens,
 - (c) manage stress arising from an emergency incident that is likely to cause adverse health effect to firefighters,
 - (d) provide for effective traffic control and crowd control at emergency incidents, and
 - (e) operate firefighting vehicles during emergency and non-emergency travel.
- (2)** An employer must ensure that written procedures are established, communicated and followed by a fire department or industrial fire brigade for the following situations, where applicable:
- (a) fires in buildings,
 - (b) firefighting over water and underground,
 - (c) fires and other emergency incidents involving hazardous substances,
 - (d) rescue from high angles, confined spaces, trenches, excavations and water,
 - (e) disaster planning and response, or
 - (f) electrical emergencies.

Rest and rehabilitation

- 36.5** An incident commander must ensure that suitable provision is made for rest and rehabilitation of firefighters at an emergency incident, including food, drinks and an appropriate thermal setting, dependant upon the situation.

Impounding equipment

- 36.6** If, in the course of an emergency incident, a firefighter suffers serious injury or death, or is involved in an accident involving a risk of serious injury or death, the senior firefighter present must immediately impound the protective and other equipment used by the firefighter and keep the equipment out of service until examined and released by the chief safety officer.

Equipment defects

- 36.7** An employer must ensure that the chief safety officer is notified immediately of any structural failure or manufacturing defects detected in a firefighting vehicle, apparatus, or other emergency equipment referred to in this Part.

Test records

- 36.8** An employer must ensure that test and inspection records required by this part are kept and available at the workplace for inspection by a safety officer or the joint health and safety committee or worker health and safety representative, as applicable.

First aid training

- 36.9** Despite the requirements of Part 10 – First Aid, an employer must ensure that all firefighters are trained and hold valid certification in standard first aid and CPR.

Personal Protective Clothing and Equipment

General requirement

- 36.10(1)** An employer must ensure that firefighters wear personal protective clothing and equipment appropriate to the hazards to which they may be exposed.
- (2)** Firefighters must ensure that they wear personal protective clothing and equipment appropriate to the hazards to which they may be exposed.

Maintenance

- 36.11** An employer must ensure that
- (a) written procedures are developed for the inspection of protective clothing and equipment at regular intervals,
 - (b) procedures for cleaning and drying protective clothing are in accordance with the manufacturer's instructions, and
 - (c) defective items of protective clothing or equipment are removed from service until they are repaired or replaced.

Firefighter responsibility

- 36.12** Firefighters must ensure that the personal protective clothing and equipment used by them is inspected and maintained in good condition.

Safety headwear

- 36.13(1)** An employer must ensure that safety headwear meeting the requirements of *NFPA 1971, Standard on Protective Ensemble for Structural Fire Fighting 2000 Edition*, is worn by firefighters required to operate at the scene of a fire or enter a structure or other hazardous area during an incident.

- (2) An employer must ensure that headwear meeting the requirements of *CSA Z94.1 for Industrial Protective Headwear* for safety headgear is only used by firefighters
- (a) while determining the cause of fires, or carrying out duties associated with preventing fires, or
 - (b) at the discretion of the incident commander, while fighting a fire in vegetation that is not within a structure.

Protective coats, pants and hoods

- 36.14** An employer must ensure that firefighters required to operate at the scene of a fire or enter a structure or other hazardous area during an incident must wear protective coats, pants and hoods meeting the requirements of
- (a) *NFPA 1971, Standard on Protective Ensemble for Structural Fire Fighting 2000 Edition*, or
 - (b) *CGSB Standard CAN/CGSB-155.1-M88, Firefighters' Protective Clothing for Protection Against Heat and Flame*.

Stationwear and personal garments

- 36.15(1)** An employer must ensure that firefighters required to operate at the scene of a fire or enter a structure or other hazardous area during an emergency incident are trained and directed not to wear shirts, trousers, jackets or coveralls that have poor thermal stability or that ignite easily.
- (2) A fire fighter must ensure that articles of clothing or coveralls with poor thermal stability or that ignite easily are not worn at the scene of a fire.
- (3) An employer must ensure that clothing worn by a firefighter at the scene of a fire meets the requirements of *NFPA 1975, Standard for Station/Work Uniforms for Fire and Emergency Services, 2004 Edition*.

Working gloves

- 36.16** An employer must ensure that firefighters required to operate at the scene of a fire or enter a structure or other hazardous area during an emergency incident wear gloves meeting the requirements of *NFPA 1971, Standard on Protective Ensemble for Structural Fire Fighting 2000 Edition*.

Fall protection

- 36.17** An employer must ensure that
- (a) a firefighter working on an aerial ladder wears a personal fall arrest system meeting the requirements of *CSA Standard Z259.1-95(R1999), Safety Belts and Lanyards*, and the securing lanyard must limit a fall to no more than 30 cm,
 - (b) a firefighter located on an aerial platform wears a full body harness and lanyard in accordance with Part 5 – Fall Protection, and
 - (c) rescue ropes, rappelling lines and safety belts and harnesses including safety hooks, rope grabs, lowering devices, and related equipment meet the requirements of *NFPA 1983, Fire Service Life Safety Rope, Harness and Hardware, 2001 Edition*.

Personal alert safety system

- 36.18** When involved in duties which require a self- contained breathing apparatus to be worn, an employer must ensure that

- (a) a firefighter is provided with and uses a Personal Alert Safety System (PASS) meeting the requirements of *NFPA 1982, Personal Alert Safety Systems (PASS) for Fire Fighters, 1998 Edition, and*
- (b) the PASS device is tested at least weekly and prior to each use.

Respiratory Protection

General

- 36.19** Firefighters who may be exposed to an oxygen deficient atmosphere or to harmful concentrations of air contaminants must wear a self-contained breathing apparatus of a positive pressure type having a rated minimum duration of 30 minutes.

Fitness to use SCBA

- 36.20** An employer must ensure that a physician's certificate of fitness to use self-contained breathing apparatus is provided to the employer by a firefighter who
- (a) experiences breathing difficulty while using the apparatus, or
 - (b) is known to have heart disease, impaired pulmonary function, or any other condition that might make it dangerous for the firefighter to use self-contained breathing apparatus.

Sealing and fit testing

- 36.21(1)** An employer must ensure that firefighters who use a self-contained breathing apparatus are clean shaven to ensure that the mask forms a positive seal against the face.
- (2)** An employer must ensure that
- (a) fit tests are performed in accordance with
 - (i) *CSA Standard CAN/CSA-Z94.4.02, Selection, Use, and Care of Respirators*, or
 - (ii) *NFPA 1981, Standard on Open-Circuit Self-Contained Breathing Apparatus for Fire and Emergency Services, 2002 Edition*,
 - (b) personal protective equipment that is worn with self-contained breathing apparatus and might interfere with a proper fit is worn during the fit test, and
 - (c) only corrective eyewear designed for use with self-contained breathing apparatus is worn.

Entry into buildings or dangerous areas

- 36.22(1)** Where self-contained breathing apparatus must be used to enter a building, similar enclosed location or an area where a dangerous situation is or may be present, an employer must ensure that
- (a) the entry is made by a team of at least two firefighters,
 - (b) effective voice communication is maintained between firefighters inside and outside the enclosed location,
 - (c) during the initial attack stages of an incident at least two firefighters remain outside,
 - (d) a suitably equipped rescue team of at least two firefighters is established on the scene
 - (i) before sending in a second entry team, and
 - (ii) not more than 10 minutes after the entry of the initial team, and
 - (e) the rescue team required by subsection (d) does not engage in any duties that limit their ability to make a prompt response to rescue an endangered firefighter.

- (2) Despite the requirements of subsection (1) (c), firefighters may be allowed to enter a building or similar enclosed location to perform a rescue or initial fire attack where
- (a) the need is imminent,
 - (b) there are additional fire fighters enroute to the scene, and
 - (c) the incident commander and the fire fighters have jointly conducted a hazard assessment, and are satisfied that it can be accomplished safely.

Air quality and sampling

- 36.23** An employer must ensure that air used for breathing purposes meets the requirements of *CSA Standard Z180.1.00, Compressed Breathing Air and Systems* and must be tested at least semi-annually.

Spare equipment

- 36.24** Where self-contained breathing apparatus are used, an employer must ensure that
- (a) there are a minimum of 4 apparatus available at the scene of a fire, and
 - (b) at least one spare compressed air cylinder, having a rated minimum duration of 30 minutes, is maintained at full rated capacity and available for each self-contained breathing apparatus.

Maintenance and records

- 36.25** An employer must ensure that,
- (a) self-contained breathing apparatus, including regulators is serviced and repaired by qualified persons,
 - (b) compressed air cylinders are inspected in accordance with *CSA Standard CAN/CSA-Z94.4-93, Selection, Use, and Care of Respirators (sections 10.3.4-10.4, inclusive)*,
 - (c) compressed air cylinders are hydrostatically tested in accordance with *CSA Standard CAN/CSA-B339-88, Cylinders, Spheres, and Tubes for the Transportation of Dangerous Goods*,
 - (d) complete maintenance and repair records for each self-contained breathing apparatus and all air cylinders are kept in accordance with the requirements of *CSA Standard CAN/CSA-Z94.4-93, Selection, Use, and Care of Respirators (section 10.3.5.1-b to f, inclusive)*, and
 - (e) for the purpose of this section, *NFPA 1981, Standard on Open-Circuit Self-Contained Breathing Apparatus for Fire and Emergency Services, 2002 Edition*, may be referenced and utilized.

Transportation

Seating

- 36.26(1)** An employer must ensure that firefighters being transported by firefighting vehicles ride in properly secured seats that are equipped with seat belts and provide not less than 41 cm seating width for each occupant.
- (2) A fire fighter must ensure that seat belts are worn while riding in a firefighting vehicle.
- (3) An employer must ensure that the seats of all new firefighting vehicles ordered after April 1, 2006 are equipped with headrests or other effective whiplash protection.

Communication

- 36.27** An employer must ensure that crew cabs on firefighting vehicles have an effective means of voice communication between the driver and passengers.

Enclosed crew cabs

- 36.28** An employer must ensure that
- (a) enclosed crew cabs on firefighting vehicles are equipped with interior lights and adequate ventilation, and
 - (b) new firefighting vehicles ordered after April 1, 2006 have fully enclosed crew cabs meeting the requirements of *NFPA 1901, Automotive Fire Apparatus, 2003 Edition*.

Stowing equipment

- 36.29** An employer must ensure that all tools and equipment on a firefighting vehicle are properly stored and adequately secured.

Safe movement of vehicles

- 36.30** A firefighting vehicle must not be moved if the vision of the driver is obscured, except on a signal from a designated person, who must ensure that the vehicle can be moved safely.

Aerial Devices and Ground Ladders

General

- 36.31** An employer must ensure that an aerial device used for firefighting meets the requirements of *NFPA 1904, Aerial Ladder and Elevating Platform Fire Apparatus, 1991 Edition*.

Annual inspection and certification

- 36.32** An employer must ensure that a fire department aerial device is inspected and tested
- (a) in accordance with the requirements of *NFPA 1914, Testing Fire Department Aerial Devices, 2002 Edition*,
 - (b) at intervals not exceeding 12 months, and
 - (c) certified safe for use by a professional engineer or equipment manufacturer.

Operator location

- 36.33** During the operation of an aerial device, an employer must ensure that an operator is present at the lower controls in sight of and in voice contact with any firefighters upon the device.

Ground ladders

- 36.34** An employer must ensure that ground ladders used by firefighters
- (a) meet the requirements of *NFPA 1931, Manufacturer's Design of Fire Department Ground Ladders, 2004 Edition*, and
 - (b) are used, tested and maintained in accordance with the requirements of *NFPA 1932, Use, Maintenance, and Service Testing of In-Service Fire Department Ground Ladders, 2004 Edition*.

Other Equipment

Flashlights and hand lanterns

- 36.35** An employer must ensure that battery operated flashlights and hand lanterns that are CSA approved for hazardous locations classified under the *CSA Standard C22.1-94, Canadian Electrical Code Part 1*, as Class 1, Division 2, Groups A, B, and C are provided as follows:
- (a) one flashlight for each firefighter; and
 - (b) at least 4 hand lanterns for each firefighting vehicle.

Plaster hooks and pike poles

- 36.36** An employer must ensure that plaster hooks and pike poles are fitted with electrically non-conductive shafts.

Part 37 – Rope Access Work

Definitions

- 37.1** In this Part the following definitions apply:
- (a) “industrial rope access work” means work activities at height that incorporate a working line, safety line and a full body harness in combination with other devices for ascending, descending or traversing to and from a place of work.
 - (b) “non-industrial rope access work” means work activities at height that incorporate a working line and sit harness in combination with other devices during
 - (i) mountaineering, caving and canyoning activities requiring the use of rope access techniques, or
 - (ii) climbing on artificial structures designed and built for the purpose of sport climbing.

General Requirements

Exemptions

- 37.2** Workers involved in training or performing rope access work may use equipment and practices other than those specified in Part 5.
- 37.3** Workers involved in emergency rescue services or training for the purposes of emergency rescue may use equipment and practices other than those specified in this Part.

Rope access safe work plan

- 37.4** An employer must develop procedures in a rope access safe work plan for a work site if
- (a) a worker at the work site may fall 3 metres or more,
 - (b) there is an unusual possibility of injury if a worker falls less than 3 metres, or
 - (c) the hazard assessment of the work site’s terrain pursuant to Part 2 indicates the need for low angle single-line technique.
- 37.5** A rope access safe work plan must specify
- (a) the hazards associated with the work to be performed,
 - (b) the rope access system to be used at the work site,
 - (c) the procedures used to assemble, maintain, inspect, use and disassemble the rope access system,
 - (d) the members of the work team by name and identify their duties,
 - (e) the appropriate personal protective equipment to be used, and
 - (f) emergency response .
- 37.6** An employer must ensure that a rope access safe work plan is available at the work site before work with a risk of falling begins.

Safe work practices

- 37.7** An employer must develop and implement safe work practices that include
- (a) the assessment of hazards at the work site in accordance with Part 2,
 - (b) worker training, including hazard recognition, the selection, limitations, operation, inspection and maintenance of tools and equipment,
 - (c) work positioning and fall protection, and

(d) the rescue procedures to be used if a worker falls or is suspended following a fall and needs to be rescued.

Instruction of workers

37.8 An employer must ensure that a worker is trained in the rope access safe work plan, the safe work practices and the safe use of the rope access system before allowing the worker to work in an area where a rope access system is to be used.

Head protection

37.9 Despite section 4.8, an employer must ensure that a worker wears protective headwear that is appropriate to the hazards and approved to one of the following standards:

- (a) ANSI Standard Z89.1-2003, American National Standard for Industrial Head Protection for Type I head protection;
- (b) ANSI Standard Z89.1-1997, American National Standard for Industrial Head Protection for Type I head protection;
- (c) CSA Standard CAN/CSA-Z94.1-92 (R1998), Industrial Protective Headwear;
- or
- (d) CEN Standard EN 12492: 2000 Mountaineering equipment. Helmets for mountaineers. Safety requirements and test methods.

37.10 An employer must ensure that the protective headwear required by section 37.9 is equipped with a retention system having at least three separate points of attachment to the helmet shell and includes a chin strap.

37.11 An employer must ensure that a worker secures the protective headwear according to the manufacturer's specifications.

Tools and equipment

37.12(1) An employer must ensure that equipment to be used by a worker during work activities is not suspended from the worker's working line or safety line.

(2) An employer must ensure that equipment weighing more than 8 kilograms and to be used by a worker during work activities is suspended from a separate line secured to a suitable anchorage.

Equipment compatibility

37.13 An employer must ensure that all components of a rope access system are compatible with one another.

Inspection and maintenance

37.14 An employer must ensure that the components of a rope access system are

- (a) inspected by the worker as required by the manufacturer before the system is used on each work shift,
- (b) kept free from substances and conditions that could contribute to their deterioration, and
- (c) re-certified as specified by the manufacturer.

Maximum arrest force, fall factor, clearance, anchorage strength

- 37.15** An employer must ensure that a rope access system
- (a) limits
 - (i) the maximum arresting force on a worker to 6 kilonewtons, or
 - (ii) the fall factor on a worker to 1.78, unless doing so exposes the worker to other greater hazards, and
 - (b) prevents the worker from striking a lower surface that could cause injury, unless doing so exposes the worker to other greater hazards.
- 37.16(1)** An employer must ensure that an anchorage to which a rope access system is attached has an ultimate load capacity of at least 16 kilonewtons per worker attached, in the direction in which the load may be applied.
- (2)** Despite subsection (1), if it is not practicable for the anchorage to have the specified ultimate load capacity, an anchorage may be used that has an ultimate load capacity per attached worker of two times the estimated maximum arresting force created by a fall in the direction of the rope pull, unless doing so exposes the worker to other greater hazards.

Static and dynamic rope

- 37.17** An employer must ensure that the working line and safety line are of the same diameter.
- 37.18** An employer must ensure that low stretch or static rope is approved to one of the following standards:
- (a) CEN Standard EN 1891: 1998, Personal protective equipment for the prevention of falls from a height. Low stretch kernmantel ropes;
 - (b) NFPA Standard 1983: 1990, Standard on Fire Service Life Safety Rope, Harness, and Hardware; or
 - (c) UIAA (Union Internationale des Associations d'Alpinisme) Standard 107: 2004, Mountaineering and Climbing Equipment – Low Stretch Ropes.
- 37.19** An employer must ensure that dynamic rope is approved to
- (a) CEN Standard EN 892: 2004, Mountaineering equipment. Dynamic mountaineering ropes. Safety requirements and test methods, or
 - (b) UIAA Standard 101: 2004, Mountaineering and Climbing Equipment – Dynamic Ropes.

Cow's tails

- 37.20** An employer must ensure that if made of rope, a cow's tail is made of dynamic rope that is approved to
- (a) CEN Standard EN 892: 2004, Mountaineering equipment. Dynamic mountaineering ropes. Safety requirements and test methods, or
 - (b) UIAA Standard 101: 2004, Mountaineering and Climbing Equipment – Dynamic Ropes.

Removal from service

- 37.21(1)** An employer must ensure that equipment used as part of a rope access system is removed from service if it is defective, and
- (a) returned to the manufacturer,
 - (b) destroyed, or
 - (c) rendered unusable.

- (2) An employer must ensure that equipment used as part of a rope access system that is removed from service is not returned to service unless a professional engineer or the manufacturer certifies that the equipment is safe to use

Worker rescue

37.22 An employer must ensure that a worker can be promptly rescued in case of equipment malfunction or a fall.

37.23 An employer must ensure that a worker is trained to perform self-rescue.

Industrial rope access work

Safe work practices

37.24 An employer must ensure that safe work practices for industrial rope access work are based on practices described in

- (a) Safe Practices for Rope Access Work, October 2003, published by the Society of Professional Rope Access Technicians ,
- (b) International guidelines on the use of rope access methods for industrial purposes, June 2001, published by the Industrial Rope Access Trade Association,
- (c) Industrial Rope Access Technique, IRAA Industry Code, September 2000, published by the Industrial Rope Access Association , or
- (d) NFPA Standard 1006: 2003, Standard for Rescue Technician Professional Qualifications.

37.25 If a requirement in section 37.24 conflicts with the requirements of these regulations, the requirements of the regulations take precedence.

37.26 An employer must ensure that at least two workers trained in industrial rope access work are present when rope access equipment and techniques are used.

Worker competency

37.27 An employer must ensure that the training required to comply with section 37.8 includes the applicable skills, but not the practical experience hours, described in

- (a) Clause 7 of Certification Requirements for Rope Access Work, January 2005, published by the Society of Professional Rope Access Technicians
- (b) Appendix D of Industrial Rope Access Technique, IRAA Industry Code, September 2000, published by the Industrial Rope Access Association,
- (c) Clauses 15.3, 16.3 or 17.3 as appropriate, of General requirements for certification of personnel engaged in industrial rope access methods, 2005, published by the Industrial Rope Access Trade Association, or
- (d) NFPA Standard 1006: 2003, Standard for Rescue Technician Professional Qualifications.

Safety line

37.28(1) An employer must ensure that a safety, secondary, belay, or backup line, or other appropriate fall arrest device is used when the working line is the primary means of support, unless the employer can demonstrate that the safety line or other fall arrest device would create a greater hazard or would otherwise be impractical.

- (2) An employer must ensure that when a safety line is used in conjunction with the working line, each line is provided with a separate anchorage connection and is separately fixed to the worker's harness.
- (3) Subsections (1) and (2) do not prohibit both the working line and safety line from being attached to a single harness attachment point.
- (4) The employer may allow a worker to connect the safety line to the sternal or frontal attachment point of the full body harness in accordance with the harness manufacturer's specifications.

Standards

- 37.29** An employer must ensure that a full body harness is used during industrial rope access work and is approved to one of the following standards:
 - (a) NFPA Standard 1983, Standard on Fire Service Life Safety Rope and System Components, 2001 Edition, as a Class III safety harness;
 - (b) CSA Standard CAN/CSA-Z259.10-M90, Full Body Harnesses;
 - (c) CEN Standard EN 361:2002, Personal protective equipment against falls from a height – Full body harnesses; or
 - (d) ANSI Standard Z359.1-1992, Safety requirements for personnel fall arrest systems, subsystems and components.
- 37.30** An employer must ensure that connecting components used in industrial rope access work consist of carabiners, D-rings, O-rings, oval rings, self-locking connectors approved to one of the following standards:
 - (a) CEN Standard EN 362: 2004, Personal protective equipment against falls from height. Connectors;
 - (b) CEN Standard EN 12275:1998, Mountaineering equipment. Connectors. Safety requirements and test methods;
 - (c) UIAA Standard 121: January 2004, Mountaineering and Climbing Equipment – Connectors;
 - (d) CSA Standard Z259.12-01, Connecting Components for Personal Fall-Arrest Systems; or
 - (e) NFPA Standard 1983: 1990, Standard on Fire Service Life Safety Rope, Harness, and Hardware.
- 37.31** An employer must ensure that carabiners used as part of an industrial rope access system are
 - (a) a screw-gate type, or
 - (b) self-locking and self-closing, requiring at least two consecutive, deliberate actions to open.

Non-industrial rope access work

Safe work practices

- 37.32** An employer must ensure that the safe work practices for non-industrial rope access work are approved by a Chief Safety Officer.

Worker competency

- 37.33** An employer must ensure that the training required to comply with section 37.8 includes the applicable skills described in
- (a) Technical Handbook for Professional Mountain Guides (June 1999), published by the Association of Canadian Mountain Guides (ACMG) if the work involves guiding activities within the scope of the publication,
 - (b) Climbing Gym Instructor Technical Manual (June 2003), published by the Association of Canadian Mountain Guides (ACMG) if the work involves climbing activities within the scope of the publication, or
 - (c) Cave Guiding Standards for British Columbia and Alberta (March 2003), published by the Canadian Cave Conservancy and the British Columbia Cave Rescue Companion Rescue Workshop (2005), published by British Columbia Cave Rescue, if the work involves caving activities within the scope of these publications.

Standards

- 37.34** An employer must ensure that a sit harness used for non-industrial rope access work is approved to one of the following standards:
- (a) CEN Standard EN 813: 1997, Personal protective equipment for prevention of falls from a height. Sit harnesses ;
 - (b) CEN Standard EN 12277: 1998, Mountaineering equipment - Harnesses - Safety requirements and test methods ; or
 - (c) UIAA Standard 105: January 2004, Mountaineering and Climbing Equipment – Harnesses .
- 37.35** An employer must ensure that connecting components used for non-industrial rope access work consists of carabiners approved to
- (a) CEN Standard EN 12275:1998, Mountaineering equipment. Connectors. Safety requirements and test methods, or
 - (b) UIAA Standard 121: January 2004, Mountaineering and Climbing Equipment – Connectors.

Note to readers

- 37.36(1)** The following publications are recognized as providing a set of safe work practices suitable for safeguarding workers during specified activities:
- (a) the Technical Handbook for Professional Mountain Guides (June 1999), published by the Association of Canadian Mountain Guides (ACMG) as providing a set of safe work practices suitable for safeguarding workers during mountaineering and canyoning activities that involve the use of rope access techniques while climbing on snow, ice, and/or rock.
 - (b) The Climbing Gym Instructor Technical Manual (June 2003), published by the Association of Canadian Mountain Guides (ACMG) as providing a set of safe work practices suitable for safeguarding workers during rope access climbing on artificial structures such as climbing walls designed and built for the purpose of sport climbing.
 - (c) The Cave Guiding Standards for British Columbia and Alberta (March 2003), published by the Canadian Cave Conservancy and the British Columbia Cave Rescue Companion Rescue Workshop (2005), published by British Columbia Cave Rescue as providing a set of safe work practices suitable for safeguarding workers during caving activities involving recreational rope access techniques.
- (2)** These regulations apply to worker safety and not the safety of the client. Only those portions of these publications that deal with worker safe work practices are applicable.

Schedule 1 Chemical Substances

Table 1 Substances and processes requiring a safe work practice
[See section 7.11(1)]

- Arsenic and arsenic compounds
- Asbestos
- Benzene
- Beryllium
- 1,3-Butadiene
- Cadmium
- Coal tar pitch volatiles
- 1,2-Dibromoethane (Ethylene dibromide)
- Ethylene oxide
- Hexachlorobutadiene
- Hydrazines
- Hydrogen sulphide
- Isocyanates
- Lead and lead compounds
- Methyl bromide
- Methyl hydrazine
- Perchlorates
- Silica-crystalline, respirable
- Styrene in styrene resin fabrication
- Vinyl chloride (Chloroethylene)
- Zinc chromate

Table 2 Occupational exposure limits for chemical substances

[See Definitions, “occupational exposure limit (OEL)”]; sections 7.1(1), 7.1(3), 7.2, 7.3(1), 7.3(2)

(1) A person using this Table may apply either the “mg/m³” or “ppm” measure defined as follows:

“mg/m³” means milligrams of substance per cubic metre of air measured at ambient work site conditions;

“ppm” (parts per million) means parts of a vapour or gas by volume at standard conditions (25°C and an absolute barometric pressure of 101.3 kilopascals) per parts of contaminated air by volume at ambient work site conditions.

(2) “f/cc” means fibres per cubic centimetre of air; “CAS” means Chemical Abstracts Service.

(3) The numbers 1, 2, and 3 in the “Substance Interaction” column have the following meanings:

1 — substance may be readily absorbed through intact skin;

2 — substance is a simple asphyxiant that may create an atmosphere deficient in oxygen. Available oxygen in the range of 19.5 percent to 23 percent by volume must be present.

3 — occupational exposure limit is based on irritation effects and its adjustment to compensate for unusual work schedules is not required.

Schedule 1, Table 2							
Substance	CAS number	8-hour Occupational exposure limit			15-minute or ceiling (c) occupational exposure limit		Substance interaction 1, 2, 3
		ppm	mg/m ³	f/cc	ppm	mg/m ³	
Acetaldehyde	75-07-0	-	-	-	(c) 25	(c) 45	3
Acetic acid	64-19-7	10	25	-	15	37	3
Acetic anhydride	108-24-7	-	-	-	(c) 5	(c) 21	3
Acetone	67-64-1	750	1800	-	1000	2400	-
Acetone cyanohydrin	75-86-5	-	-	-	(c) 4.7	(c) 16.4	1
Acetonitrile	75-05-8	40	67	-	60	101	-
Acetophenone	98-86-2	10	49	-	-	-	-

Schedule 1, Table 2

Substance	CAS number	8-hour Occupational exposure limit			15-minute or ceiling (c) occupational exposure limit		Substance interaction 1, 2, 3
		ppm	mg/m ³	f/cc	ppm	mg/m ³	
Acetylene	74-86-2	-	-	-	-	-	2
Acetylene dichloride (1,2-Dichloroethylene)	540-59-0 156-59-2 156-60-5	200	793	-	-	-	-
Acetylene tetrabromide (1,1,2,2-Tetrabromoethane)	79-27-6	1	14	-	-	-	-
Acetylene tetrachloride (1,1,2,2-Tetrachloroethane)	79-34-5	1	6.9	-	-	-	1
Acetylsalicylic acid (Aspirin)	50-78-2	-	5	-	-	-	-
Acrolein	107-02-8	-	-	-	(c) 0.1	(c) 0.23	1
Acrylamide	79-06-1	-	0.03	-	-	-	1
Acrylic acid	79-10-7	2	5.9	-	-	-	1
Acrylic acid, n-butyl ester (n-Butyl acrylate)	141-32-2	2	11	-	-	-	-
Acrylic acid, ethyl ester (Ethyl acrylate)	140-88-5	5	20	-	15	61	-
Acrylic acid, methyl ester (Methyl acrylate)	96-33-3	2	7	-	-	-	1
Acrylonitrile (Vinyl cyanide)	107-13-1	2	4.3	-	-	-	1
Adipic acid	124-04-9	-	5	-	-	-	-
Adiponitrile	111-69-3	2	8.8	-	-	-	1
Aldrin	309-00-2	-	0.25	-	-	-	1
Allyl alcohol	107-18-6	0.5	1.19	-	-	-	1, 3

Schedule 1, Table 2

Substance	CAS number	8-hour Occupational exposure limit			15-minute or ceiling (c) occupational exposure limit		Substance interaction 1, 2, 3
		ppm	mg/m ³	f/cc	ppm	mg/m ³	
Allyl chloride	107-05-1	1	3	-	2	6	-
Allyl glycidyl ether	106-92-3	1	4.7	-	-	-	-
Allyl propyl disulfide	2179-59-1	2	12	-	3	18	3
Alumina (Aluminum oxide)	1344-28-1	-	10	-	-	-	-
Aluminum Metal Dust	7429-90-5	-	10	-	-	-	3
Pyro powders, as Al		-	5	-	-	-	-
Welding fumes, as Al		-	5	-	-	-	3
Soluble salts, as Al		-	2	-	-	-	3
Alkyls, not otherwise classified, as Al		-	2	-	-	-	3
Aluminum oxide (Alumina)	1344-28-1	-	10	-	-	-	-
Aminoethanol (Ethanolamine)	141-43-5	3	7.5	-	6	15	3
Aminopyridine	504-29-0	0.5	2	-	-	-	-
Amino-1,2,4 triazole (Amitrole)	61-82-5	-	0.2	-	-	-	-
Amitrole	61-82-5	-	0.2	-	-	-	-
Ammonia	7664-41-7	25	17	-	35	24	3
Ammonium chloride fume	12125-02-9	-	10	-	-	20	3
Ammonium perfluorooctanoate	3825-26-1	-	0.01	-	-	-	1

Schedule 1, Table 2

Substance	CAS number	8-hour Occupational exposure limit			15-minute or ceiling (c) occupational exposure limit		Substance interaction 1, 2, 3
		ppm	mg/m ³	f/cc	ppm	mg/m ³	
Ammonium persulfate	7727-54-0	-	0.1	-	-	-	-
Ammonium sulfamate	7773-06-0	-	10	-	-	-	3
Amosite (Asbestos)	12172-73-5	-	-	0.1	-	-	-
n-Amyl acetate (1-Pentyl acetate)	628-63-7	100	532	-	-	-	3
Sec-Amyl acetate (2-Pentyl acetate)	626-38-0	125	665	-	-	-	3
Tert-Amyl acetate (1,1-dimethylpropyl acetate)	625-16-1	50	266	-	100	532	3
Aniline & homologues	62-53-3	2	7.6	-	-	-	1
o-Anisidine	90-04-0	0.1	0.5	-	-	-	1
p-Anisidine	104-94-9	0.1	0.5	-	-	-	1
Antimony & compounds, as Sb	7440-36-0	-	0.5	-	-	-	-
Antimony trioxide, as Sb	1309-64-4	-	0.5	-	-	-	-
ANTU (α -Naphthylthiourea)	86-88-4	-	0.3	-	-	-	-
Argon	7440-37-1	-	-	-	-	-	2
Arsenic, elemental & inorganic compounds (except arsine), as As	7440-38-2	-	0.01	-	-	-	-
Arsine	7784-42-1	0.05	0.16	-	-	-	-

Schedule 1, Table 2

Substance	CAS number	8-hour Occupational exposure limit			15-minute or ceiling (c) occupational exposure limit		Substance interaction 1, 2, 3
		ppm	mg/m ³	f/cc	ppm	mg/m ³	
Asbestos, All forms	1332-21-4 12172-73-5 12001-29-5 12001-28-4 12172-67-7	-	-	0.1	-	-	-
Asphalt (Petroleum; Bitumen)fume	8052-42-4	-	5	-	-	-	-
Atrazine	1912-24-9	-	5	-	-	-	3
Azinphos-methyl (Guthion)	86-50-0	-	0.2	-	-	-	1
Barium and soluble compounds, as Ba	7440-39-3	-	0.5	-	-	-	-
Barium sulfate	7727-43-7	-	10	-	-	-	-
Benomyl	17804-35-2	0.84	10	-	-	-	-
Benzene	71-43-2	1	3.2	-	5	16	1
p-Benzoquinone (Quinone)	106-51-4	0.1	0.44	-	-	-	-
Benzotrichloride (Benzyl trichloride)	98-07-7	-	-	-	(c) 0.1	(c) 0.8	-
Benzoyl chloride	98-88-4	-	-	-	(c) 0.5	(c) 2.8	3
Benzoyl peroxide	94-36-0	-	5	-	-	-	3
Benzyl acetate	140-11-4	10	61	-	-	-	3

Schedule 1, Table 2

Substance	CAS number	8-hour Occupational exposure limit			15-minute or ceiling (c) occupational exposure limit		Substance interaction 1, 2, 3
		ppm	mg/m ³	f/cc	ppm	mg/m ³	
Benzyl chloride	100-44-7	1	5.2	-	-	-	-
Benzyl trichloride (Benzotrichloride)	98-07-7	-	-	-	(c) 0.1	(c) 0.8	1
Beryllium and compounds as Be	7440-41-7	-	0.002	-	-	0.01	-
Biphenyl (Diphenyl)	92-52-4	0.2	1.3	-	-	-	-
Bismuth telluride, Undoped, as Bi ₂ Te ₃ Se-doped, as Bi ₂ Te ₃	1304-82-1	-	10	-	-	-	-
		-	5	-	-	-	-
Bitumen (Asphalt fumes)	8052-42-4	-	5	-	-	-	3
Borates, tetra, sodium salts, Anhydrous	1303-96-4	-	1	-	-	-	3
Decahydrate		-	5	-	-	-	
Pentahydrate		-	1	-	-	-	
Boron oxide	1303-86-2	-	10	-	-	-	3
Boron tribromide	10294-33-4	-	-	-	(c) 1	(c) 10	-
Boron trifluoride	7637-07-2	-	-	-	(c) 1	(c) 2.8	3
Bromacil	314-40-9	-	10	-	-	-	3
Bromine	7726-95-6	0.1	0.66	-	0.2	1.3	3
Bromine pentafluoride	7789-30-2	0.1	0.72	-	-	-	3

Schedule 1, Table 2

Substance	CAS number	8-hour Occupational exposure limit			15-minute or ceiling (c) occupational exposure limit		Substance interaction 1, 2, 3
		ppm	mg/m ³	f/cc	ppm	mg/m ³	
Bromochloromethane (Chlorobromomethane)	74-97-5	200	1060	-	-	-	-
Bromoethane (Ethyl bromide)	74-96-4	5	22	-	-	-	1
Bromoform (Tribromomethane)	75-25-2	0.5	5.2	-	-	-	1
Bromotrifluoromethane (Trifluorobromomethane)	75-63-8	1000	6090	-	-	-	-
1,3-Butadiene	106-99-0	2	4.4	-	-	-	-
Butane	106-97-8	800	1900	-	-	-	-
Butanethiol (Butyl mercaptan)	109-79-5	0.5	1.8	-	-	-	-
n-Butanol (n-Butyl alcohol)	71-36-3	-	-	-	(c) 50	(c) 152	1
sec-Butanol (sec-Butyl alcohol)	78-92-2	100	300	-	-	-	-
tert-Butanol (tert-Butyl alcohol)	75-65-0	100	303	-	-	-	-
2-Butanone (Methyl ethyl ketone)	78-93-3	200	590	-	300	895	-
3-Buten-2-one (Methyl vinyl ketone)	78-94-4	-	-	-	(c) 0.2	(c) 0.6	1
2-Butoxyethanol (Ethylene glycol monobutyl ether)	111-76-2	20	97	-	-	-	1
n-Butyl acetate	123-86-4	150	713	-	200	950	3

Schedule 1, Table 2

Substance	CAS number	8-hour Occupational exposure limit			15-minute or ceiling (c) occupational exposure limit		Substance interaction 1, 2, 3
		ppm	mg/m ³	f/cc	ppm	mg/m ³	
sec-Butyl acetate	105-46-4	200	950	-	-	-	3
tert-Butyl acetate	540-88-5	200	950	-	-	-	3
n-Butyl acrylate	141-32-2	2	11	-	-	-	-
n-Butylamine	109-73-9	-	-	-	(c) 5	(c) 15	1, 3
tert-Butyl chromate as CrO ₃	1189-85-1	-	-	-	-	(c) 0.1	1
n-Butyl glycidyl ether	2426-08-06	25	133	-	-	-	-
n-Butyl lactate	138-22-7	5	30	-	-	-	-
Butyl mercaptan (Butanethiol)	109-79-5	0.5	1.8	-	-	-	-
Butylated hydroxytoluene (BHT) (2,6-Di-tert-butyl-p-cresol)	128-37-0	-	10	-	-	-	3
o-sec-Butylphenol	89-72-5	5	31	-	-	-	1, 3
p-tert-Butyltoluene	98-51-1	1	6.1	-	-	-	-
Cadmium, elemental and Compounds as Cd	7440-43-9		0.01 0.002	-	-	-	-
Calcium carbonate (Aragonite, Calcite, Marble, Vaterite)	1317-65-3 471-34-1	-	10	-	-	-	3
Calcium chromate, as Cr	13756-19-0	-	0.001	-	-	-	-

Schedule 1, Table 2

Substance	CAS number	8-hour Occupational exposure limit			15-minute or ceiling (c) occupational exposure limit		Substance interaction 1, 2, 3
		ppm	mg/m ³	f/cc	ppm	mg/m ³	
Calcium cyanamide	156-62-7	-	0.5	-	-	-	-
Calcium hydroxide	1305-62-0	-	5	-	-	-	3
Calcium oxide	1305-78-8	-	2	-	-	-	3
Calcium silicate, (synthetic)	1344-95-2	-	10	-	-	-	3
Calcium sulphate (Plaster of Paris, Gypsum)	7778-18-9 26499-65-0 13397-24-5	-	10	-	-	-	3
Camphor, synthetic	76-22-2	2	12	-	3	19	-
Caprolactam Particulate Vapour	105-60-2	- 5	1 23	-	- 10	3 46	-
Captafol	2425-06-1	-	0.1	-	-	-	1
Captan	133-06-2	-	5	-	-	-	3
Carbaryl (Sevin®)	63-25-2	-	5	-	-	-	-
Carbofuran	1563-66-2	-	0.1	-	-	-	-
Carbon black	1333-86-4	-	3.5	-	-	-	-
Carbon dioxide	124-38-9	5000	9000	-	30,000	54,000	-
Carbon disulfide	75-15-0	10	31	-	-	-	1

Schedule 1, Table 2

Substance	CAS number	8-hour Occupational exposure limit			15-minute or ceiling (c) occupational exposure limit		Substance interaction 1, 2, 3
		ppm	mg/m ³	f/cc	ppm	mg/m ³	
Carbon monoxide	630-08-0	25	29	-	-	-	-
Carbon tetrabromide	558-13-4	0.1	1.4	-	0.3	4.1	-
Carbon tetrachloride (Tetrachloromethane)	56-23-5	5	31	-	10	63	1
Carbonyl chloride (Phosgene)	75-44-3	0.1	0.4	-	-	-	-
Carbonyl fluoride	353-50-4	2	5.4	-	5	13	-
Catechol	120-80-9	5	23	-	-	-	1
Cellulose	9004-34-6	-	10	-	-	-	3
Cesium hydroxide	21351-79-1	-	2	-	-	-	3
Chlordane	57-74-9	-	0.5	-	-	-	1
Chlorinated camphene (Toxaphene)	8001-35-2	-	0.5	-	-	1	1
Chlorinated diphenyl oxide	31242-93-0	-	0.5	-	-	-	-
Chlorine	7782-50-5	0.5	1.5	-	1	2.9	3
Chlorine dioxide	10049-04-4	0.1	0.28	-	0.3	0.83	-
Chlorine trifluoride	7790-91-2	-	-	-	(c) 0.1	(c) 0.38	-
Chloroacetaldehyde	107-20-0	-	-	-	(c) 1	(c) 3.2	3
Chloroacetone	78-95-5	-	-	-	(c) 1	(c) 3.8	1, 3

Schedule 1, Table 2

Substance	CAS number	8-hour Occupational exposure limit			15-minute or ceiling (c) occupational exposure limit		Substance interaction 1, 2, 3
		ppm	mg/m ³	f/cc	ppm	mg/m ³	
Chloroacetophenone (Phenacyl chloride)	532-27-4	0.05	0.32	-	-	-	-
Chloroacetyl chloride	79-04-9	0.05	0.23	-	0.15	0.69	1
Chlorobenzene	108-90-7	10	46	-	-	-	-
o-Chlorobenzylidene malononitrile	2698-41-1	-	-	-	(c) 0.05	(c) 0.39	1, 3
Chlorobromomethane	74-97-5	200	1060	-	-	-	-
2-Chloro-1,3-butadiene (β-Chloroprene)	126-99-8	10	36	-	-	-	1
Chlorodifluoromethane	75-45-6	1000	3540	-	-	-	-
Chlorodiphenyl (42 percent chlorine) (PCBs, Polychlorinated biphenyls – 42 percent chlorine)	53469-21-9	-	1	-	-	-	1
Chlorodiphenyl (54 percent chlorine) (PCBs, Polychlorinated biphenyls – 54 percent chlorine)	11097-69-1	-	0.5	-	-	-	1
1-Chloro,2,3-epoxy-propane (Epichlorohydrin)	106-89-8	0.5	1.9	-	-	-	1
Chloroethane (Ethyl chloride)	75-00-3	100	264	-	-	-	1
2-Chloroethanol (Ethylene chlorohydrin)	107-07-3	-	-	-	(c) 1	(c) 3.3	1
Chloroethylene (Vinyl chloride)	75-01-4	1	2.6	-	-	-	-

Schedule 1, Table 2

Substance	CAS number	8-hour Occupational exposure limit			15-minute or ceiling (c) occupational exposure limit		Substance interaction 1, 2, 3
		ppm	mg/m ³	f/cc	ppm	mg/m ³	
Chloroform (Trichloromethane)	67-66-3	10	49	-	-	-	-
Bis(Chloromethyl) ether	542-88-1	0.001	0.0047	-	-	-	-
p-Chloronitrobenzene (p-Nitrochlorobenzene)	100-00-5	0.1	0.64	-	-	-	1
1-Chloro-1-nitropropane	600-25-9	2	10	-	-	-	-
Chloropentafluoroethane	76-15-3	1000	6320	-	-	-	-
Chloropicrin (Trichloronitromethane)	76-06-2	0.1	0.67	-	-	-	-
β-Chloroprene	126-99-8	10	36	-	-	-	1
2-Chloropropionic acid	598-78-7	0.1	0.44	-	-	-	1
o-Chlorostyrene	2039-87-4	50	283	-	75	425	-
o-Chlorotoluene	95-49-8	50	259	-	-	-	3
2-Chloro-6-(trichloromethyl) pyridine (Nitrapyrin)	1929-82-4	-	10	-	-	20	-
Chlorpyrifos	2921-88-2	-	0.2	-	-	-	1
Chromite ore processing (Chromate), as Cr		-	0.05	-	-	-	-

Schedule 1, Table 2

Substance	CAS number	8-hour Occupational exposure limit			15-minute or ceiling (c) occupational exposure limit		Substance interaction 1, 2, 3
		ppm	mg/m ³	f/cc	ppm	mg/m ³	
Chromium, metal and inorganic compounds , as Cr Metal Cr III compounds Water-soluble Cr VI compounds Insoluble Cr VI compounds	7440-47-3	-	0.5	-	-	-	-
		-	0.5	-	-	-	-
		-	0.05	-	-	-	-
		-	0.01	-	-	-	-
Chromyl chloride	14977-61-8	0.025	0.16	-	-	-	-
Chrysotile (Asbestos)	12001-29-5	-	-	0.1	-	-	-
Clopidol	2971-90-6	-	10	-	-	-	3
Coal dust (Respirable particulate)		-	2	-	-	-	-
Coal tar pitch volatiles, as benzene solubles	65996-93-2	-	0.2	-	-	-	-
Cobalt, elemental inorganic compounds, as Co	7440-48-4	-	0.05	-	-	-	-
Cobalt carbonyl, as Co	10210-68-1	-	0.1		-	-	-
Cobalt hydrocarbonyl, as Co	16842-03-8	-	0.1	-	-	-	-
Copper Fume Dusts/mists, as Cu	7440-50-8	-	0.2	-	-	-	-
		-	1		-	-	-
Cotton, dust, raw		-	0.2	-	-	-	-

Schedule 1, Table 2

Substance	CAS number	8-hour Occupational exposure limit			15-minute or ceiling (c) occupational exposure limit		Substance interaction 1, 2, 3
		ppm	mg/m ³	f/cc	ppm	mg/m ³	
Cresol, all isomers	1319-77-3 95-48-7 108-39-4 106-44-5	5	22	-	-	-	1
Cristobalite respirable particulate (Silica, crystalline)	14464-46-1	-	0.05	-	-	-	-
Crocidolite (Asbestos)	12001-28-4	-	-	0.1	-	-	-
Crotonaldehyde	4170-30-3	-	-	-	(c) 0.3	(c) 0.86	1, 3
Cruformate	299-86-5	-	5	-	-	-	-
Cumene	98-82-8	50	246	-	-	-	-
Cyanamide	420-04-2	-	2	-	-	-	3
Cyanide and Cyanide salts and hydrogen cyanide as CN							
Hydrogen cyanide	74-90-8	-	-	-	(c) 4.7	c (5.2)	1
Calcium cyanide	592-01-8	-	-	-	-	c (5)	1
Potassium cyanide	151-50-8	-	-	-	-	c (5)	1
Sodium cyanide	143-33-9	-	-	-	-	c (5)	1
Cyanogen	460-19-5	10	21	-	-	-	3
Cyanogen chloride	506-77-4	-	-	-	(c) 0.3	(c) 0.75	-
Cyclohexane	110-82-7	300	1030	-	-	-	3

Schedule 1, Table 2

Substance	CAS number	8-hour Occupational exposure limit			15-minute or ceiling (c) occupational exposure limit		Substance interaction 1, 2, 3
		ppm	mg/m ³	f/cc	ppm	mg/m ³	
Cyclohexanol	108-93-0	50	206	-	-	-	1
Cyclohexanone	108-94-1	25	100	-	-	-	1
Cyclohexene	110-83-8	300	1010	-	-	-	3
Cyclohexylamine	108-91-8	10	41	-	-	-	3
Cyclonite (RDX)	121-82-4	-	0.5	-	-	-	1
Cyclopentadiene	542-92-7	75	203	-	-	-	3
Cyclopentane	287-92-3	600	1720	-	-	-	-
Cyhexatin (Tricyclohexyltin hydroxide)	13121-70-5	-	5	-	-	-	3
2,4-D (2,4-Dichlorophenoxyacetic acid)	94-75-7	-	10	-	-	-	3
DDT (Dichlorodiphenyl trichloroethane)	50-29-3	-	1	-	-	-	-
Decaborane	17702-41-9	0.05	0.25	-	0.15	0.75	1
Demeton (Systox®)	8065-48-3	0.01	0.11	-	-	-	1
Demeton-methyl (Methyl demeton)	8022-00-2	-	0.5	-	-	-	1
Diacetone alcohol (4-Hydroxy-4-methyl-2-pentanone)	123-42-2	50	238	-	-	-	3

Schedule 1, Table 2

Substance	CAS number	8-hour Occupational exposure limit			15-minute or ceiling (c) occupational exposure limit		Substance interaction 1, 2, 3
		ppm	mg/m ³	f/cc	ppm	mg/m ³	
4,4-Diaminodiphenyl-methane (4,4'-Methylene dianiline)	101-77-9	0.1	0.81	-	-	-	1
1,2-Diaminoethane (Ethylenediamine)	107-15-3	10	25	-	-	-	1
Diatomaceous earth, uncalcined (Silica, amorphous) Total particulate Respirable particulate	61790-53-2	- -	10 3	- -	- -	- -	- -
Diazinon	333-41-5	-	0.1	-	-	-	1
Diazomethane	334-88-3	0.2	0.34	-	-	-	-
Dibenzoyl peroxide (Benzoyl peroxide)	94-36-0	-	5	-	-	-	3
Diborane	19287-45-7	0.1	0.11	-	-	-	-
Dibrom (Naled)	300-76-5	-	3	-	-	-	1
2-N-Dibutylaminoethanol	102-81-8	0.5	3.5	-	-	-	1
2,6-Di-tert-butyl-p-cresol (Butylated hydroxytoluene, BHT)	128-37-0	-	10	-	-	-	3
Dibutyl phenyl phosphate	2528-36-1	0.3	3.5	-	-	-	1
Dibutyl phosphate	107-66-4	1	8.6	-	2	17	3
Dibutyl phthalate	84-74-2	-	5	-	-	-	-

Schedule 1, Table 2

Substance	CAS number	8-hour Occupational exposure limit			15-minute or ceiling (c) occupational exposure limit		Substance interaction 1, 2, 3
		ppm	mg/m ³	f/cc	ppm	mg/m ³	
Dichloroacetylene	7572-29-4	-	-	-	(c) 0.1	(c) 0.39	-
o -Dichlorobenzene (1,2-Dichlorobenzene)	95-50-1	25	150	-	50	301	-
p -Dichlorobenzene (1,4-Dichlorobenzene)	106-46-7	10	60	-	-	-	-
1,4-Dichloro-2-butene	764-41-0	0.005	0.025	-	-	-	1
Dichlorodifluoromethane	75-71-8	1000	4950	-	-	-	-
1,3-Dichloro-5,5-dimethyl hydantoin	118-52-5	-	0.2	-	-	0.4	3
Dichlorodiphenyl-trichloroethane (DDT)	50-29-3	-	1	-	-	-	-
1,1-Dichloroethane (Ethylidene chloride)	75-34-3	100	405	-	-	-	-
1,2-Dichloroethane (Ethylene dichloride)	107-06-2	10	40	-	-	-	-
1,1-Dichloroethylene (Vinylidene chloride)	75-35-4	5	20	-	-	-	-
1,2-Dichloroethylene, sym, cis, & trans (Acetylene dichloride)	540-59-0 156-59-2 156-60-5	200	793	-	-	-	-
Dichloroethyl ether (2,2'-Dichlorodiethyl ether)	111-44-4	5	29	-	10	58	1
Dichlorofluoromethane (Dichloromonofluoromethane)	75-43-4	10	42	-	-	-	-
Dichloromethane (Methylene chloride)	75-09-4	50	174	-	-	-	-

Schedule 1, Table 2

Substance	CAS number	8-hour Occupational exposure limit			15-minute or ceiling (c) occupational exposure limit		Substance interaction 1, 2, 3
		ppm	mg/m ³	f/cc	ppm	mg/m ³	
1,1-Dichloro-1-nitroethane	594-72-9	2	12	-	-	-	3
2,4-Dichlorophenoxyacetic acid (2,4-D)	94-75-7	-	10	-	-	-	-
1,2-Dichloropropane (Propylene dichloride)	78-87-5	75	347	-	110	508	-
1,3-Dichloropropene	542-75-6	1	4.5	-	-	-	1, 3
2,2-Dichloropropionic acid	75-99-0	1	5.8	-	-	-	3
Dichlorotetrafluoroethane (1,2-Dichloro-1,1,2,2-tetrafluoroethane)	76-14-2	1000	6990	-	-	-	-
Dichlorvos	62-73-7	0.1	0.9	-	-	-	1
Dicrotophos	141-66-2	-	0.25	-	-	-	1
Dicyclopentadiene	77-73-6	5	27	-	-	-	3
Dicyclopentadienyl iron (Ferrocene)	102-54-5	-	10	-	-	-	-
Dieldrin	60-57-1	-	0.25	-	-	-	1

Schedule 1, Table 2

Substance	CAS number	8-hour Occupational exposure limit			15-minute or ceiling (c) occupational exposure limit		Substance interaction 1, 2, 3
		ppm	mg/m ³	f/cc	ppm	mg/m ³	
Diesel exhaust		-	-	-	-	-	Refer to OEL for individual components (carbon monoxide, oxides of nitrogen, polyaromatic hydrocarbons measured as coal tar pitch volatiles)
Diethanolamine	111-42-2	0.46	2	-	-	-	1
Diethylamine	109-89-7	5	15	-	15	45	1, 3
2-Diethylaminoethanol	100-37-8	2	9.6	-	-	-	1
Diethylene dioxide (1,4-Dioxane)	123-91-1	20	72	-	-	-	1
Diethylene triamine	111-40-0	1	4.2	-	-	-	1
Diethyl ether (Ethyl ether)	60-29-7	400	1210	-	500	1520	-
Di(2-ethylhexyl)phthalate (DEHP, Di-sec-octyl phthalate)	117-81-7	-	5	-	-	-	3
Diethyl ketone	96-22-0	200	705	-	300	1057	-
Diethyl phthalate	84-66-2	-	5	-	-	-	3
Difluorodibromomethane	75-61-6	100	858	-	-	-	-
1, 1-Difluoroethylene (Vinylidene fluoride)	75-38-7	500	1310	-	-	-	-

Schedule 1, Table 2

Substance	CAS number	8-hour Occupational exposure limit			15-minute or ceiling (c) occupational exposure limit		Substance interaction 1, 2, 3
		ppm	mg/m ³	f/cc	ppm	mg/m ³	
Diglycidyl ether	2238-07-5	0.1	0.53	-	-	-	-
Dihydroxybenzene (Hydroquinone)	123-31-9	-	2	-	-	-	-
Diisobutyl ketone (2,6-Dimethyl-4-heptanone)	108-83-8	25	145	-	-	-	3
Diisopropylamine	108-18-9	5	21	-	-	-	1
Dimethoxymethane (Methylal)	109-87-5	1000	3110	-	-	-	-
N,N-Dimethylacetamide	127-19-5	10	36	-	-	-	1
Dimethylamine	124-40-3	5	9.2	-	15	27.6	3
Dimethylaminobenzene (Xylidine, mixed isomers)	1300-73-8	0.5	2.5	-	-	-	1
bis(2-Dimethylamino-ethyl) ether (DMAEE)	3033-62-3	0.05	0.33	-	0.15	0.98	1
Dimethylaniline (N,N-Dimethylaniline)	121-69-7	5	25	-	10	50	1
Dimethylbenzene (Xylene, o,m & p isomers)	1330-20-7 95-47-6 108-38-3 106-42-3	100	434	-	150	651	-
Dimethylbutane (Hexane, all isomers, except n-Hexane)	75-83-2 79-29-8	500	1760	-	1000	3500	-
Dimethyl-1,2-dibromo-2,2-dichloroethyl phosphate (Dibrom, Naled)	300-76-5	-	3	-	-	-	1

Schedule 1, Table 2

Substance	CAS number	8-hour Occupational exposure limit			15-minute or ceiling (c) occupational exposure limit		Substance interaction 1, 2, 3
		ppm	mg/m ³	f/cc	ppm	mg/m ³	
Dimethylethoxysilane	14857-34-2	0.5	2.1	-	1.5	6.4	-
Dimethylformamide	68-12-2	10	30	-	-	-	1
2,6-Dimethyl-4-heptanone (Diisobutyl ketone)	108-83-8	25	145	-	-	-	3
1,1-Dimethylhydrazine	57-14-7	0.01	0.025	-	-	-	1
Dimethylphthalate	131-11-3	-	5	-	-	-	3
1,1-Dimethylpropyl acetate (tert-Amyl acetate)	625-16-1	50	266	-	100	532	3
Dimethyl sulfate	77-78-1	0.1	0.52	-	-	-	1, 3
Dinitolmide (3,5-Dinitro-o-toluamide)	148-01-6	-	5	-	-	-	-
Dinitrobenzene, all isomers	528-29-0 99-65-0 100-25-4	0.15	1	-	-	-	1
Dinitro-o-cresol	534-52-1	-	0.2	-	-	-	1
3,5-Dinitro-o-toluamide (Dinitolmide)	148-01-6	-	5	-	-	-	-
Dinitrotoluene	25321-14-6	-	0.2	-	-	-	1
1,4-Dioxane (Diethylene dioxide)	123-91-1	20	72	-	-	-	1
Dioxathion	78-34-2	-	0.2	-	-	-	1

Schedule 1, Table 2

Substance	CAS number	8-hour Occupational exposure limit			15-minute or ceiling (c) occupational exposure limit		Substance interaction 1, 2, 3
		ppm	mg/m ³	f/cc	ppm	mg/m ³	
Diphenyl (Biphenyl)	92-52-4	0.2	1.3	-	-	-	-
Diphenylamine	122-39-4	-	10	-	-	-	-
Diphenyl ether, vapour (Phenyl ether)	101-84-8	1	7	-	2	14	-
Diphenylmethane-4,4'-diisocyanate (Methylene bisphenyl isocyanate, MDI)	101-68-8	0.005	0.051	-	-	-	-
Dipropylene glycol methyl ether	34590-94-8	100	606	-	150	909	1
Dipropyl ketone	123-19-3	50	233	-	-	-	-
Diquat	2764-72-9	-	0.5	-	-	-	1
Total particulate		-	0.1	-	-	-	1
Respirable particulate							
Di-sec-octyl-phthalate (Di(2-ethylhexyl) phthalate), (DEHP)	117-81-7	-	5	-	-	-	-
Disulfiram	97-77-8	-	2	-	-	-	-
Disulfoton	298-04-4	-	0.1	-	-	-	1
Diuron	330-54-1	-	10	-	-	-	-
Divinyl benzene	1321-74-0	10	53	-	-	-	3
Emery	1302-74-5	-	10	-	-	-	3

Schedule 1, Table 2

Substance	CAS number	8-hour Occupational exposure limit			15-minute or ceiling (c) occupational exposure limit		Substance interaction 1, 2, 3
		ppm	mg/m ³	f/cc	ppm	mg/m ³	
Endosulfan	115-29-7	-	0.1	-	-	-	1
Endrin	72-20-8	-	0.1	-	-	-	1
Enflurane	13838-16-9	75	566	-	-	-	-
Enzymes, proteolytic (Subtilisins)	1395-21-7	-	-	-	-	(c) 0.00006	-
Epichlorohydrin (1-Chloro-2,3-epoxypropane)	106-89-8	0.5	1.9	-	-	-	1
EPN	2104-64-5	-	0.1	-	-	-	1
1,2-Epoxypropane (Propylene oxide)	75-56-9	20	48	-	-	-	-
2,3-Epoxy-1-propanol (Glycidol)	556-52-5	2	6.1	-	-	-	-
Ethane	74-84-0	-	-	-	-	-	2
Ethanethiol (Ethyl mercaptan)	75-08-1	0.5	1.3	-	-	-	3
Ethanol (Ethyl alcohol)	64-17-5	1000	1880	-	-	-	3
Ethanolamine (2-Aminoethanol)	141-43-5	3	7.5	-	6	15	3
Ethion	563-12-2	-	0.4	-	-	-	1
2-Ethoxyethanol (Ethylene glycol monoethyl ether)	110-80-5	5	18	-	-	-	1

Schedule 1, Table 2

Substance	CAS number	8-hour Occupational exposure limit			15-minute or ceiling (c) occupational exposure limit		Substance interaction 1, 2, 3
		ppm	mg/m ³	f/cc	ppm	mg/m ³	
2-Ethoxyethyl acetate (Ethylene glycol monoethyl ether acetate)	111-15-9	5	27	-	-	-	1
Ethyl acetate	141-78-6	400	1440	-	-	-	3
Ethyl acrylate (Acrylic acid, ethyl ester)	140-88-5	5	20	-	15	61	-
Ethyl alcohol (Ethanol)	64-17-5	1000	1880	-	-	-	3
Ethylamine	75-04-7	5	9.2	-	15	27.6	1, 3
Ethyl amyl ketone (5-Methyl-3-heptanone)	541-85-5	25	131	-	-	-	3
Ethyl benzene	100-41-4	100	434	-	125	543	-
Ethyl bromide (Bromoethane)	74-96-4	5	22	-	-	-	1
Ethyl tert-butyl ether (ETBE)	637-92-3	5	21	-	-	-	-
Ethyl butyl ketone (3-Heptanone)	106-35-4	50	234	-	75	350	-
Ethyl chloride (Chloroethane)	795-00-3	100	264	-	-	-	1
Ethyl cyanoacrylate (Ethyl-2-cyanoacrylate)	7085-85-0	0.2	1	-	-	-	-
Ethylene chlorohydrin (2-chloroethanol)	107-07-3	-	-	-	(c) 1	(c) 3.3	1
Ethylenediamine (1,2-Diaminoethane)	107-15-3	10	25	-	-	-	1

Schedule 1, Table 2

Substance	CAS number	8-hour Occupational exposure limit			15-minute or ceiling (c) occupational exposure limit		Substance interaction 1, 2, 3
		ppm	mg/m ³	f/cc	ppm	mg/m ³	
Ethylene dichloride (1,2-Dichloroethane)	107-06-2	10	40	-	-	-	-
Ethylene glycol, aerosol	107-21-1	-	-	-	-	(c) 100	3
Ethylene glycol dinitrate (EGDN)	628-96-6	0.05	0.31	-	-	-	1
Ethylene glycol isopropyl ether (2-Isopropoxyethanol)	109-59-1	25	106	-	-	-	1
Ethylene glycol methyl ether acetate (2-Methoxyethyl acetate)	110-49-6	5	24	-	-	-	1
Ethylene glycol monobutyl ether (2-Butoxyethanol)	111-76-2	20	97	-	-	-	1
Ethylene glycol monoethyl ether (2-Ethoxyethanol)	110-80-5	5	18	-	-	-	1
Ethylene glycol monoethyl ether acetate (2-Ethoxyethyl acetate)	111-15-9	5	27	-	-	-	1
Ethylene glycol monomethyl ether (2-Methoxyethanol)	109-86-4	5	16	-	-	-	1
Ethylene oxide	75-21-8	1	1.8	-	-	-	-
Ethylenimine	151-56-4	0.5	0.88	-	-	-	1
Ethyl ether (Diethyl ether)	60-29-7	400	1210	-	500	1520	-

Schedule 1, Table 2

Substance	CAS number	8-hour Occupational exposure limit			15-minute or ceiling (c) occupational exposure limit		Substance interaction 1, 2, 3
		ppm	mg/m ³	f/cc	ppm	mg/m ³	
Ethyl formate (Formic acid, ethyl ester)	109-94-4	100	303	-	-	-	3
Ethylidene chloride (1,1-Dichloroethane)	75-34-3	100	405	-	-	-	-
Ethylidene norbornene	16219-75-3	-	-	-	(c) 5	(c) 25	3
Ethyl mercaptan	75-08-1	0.5	1.3	-	-	-	3
N-Ethylmorpholine	100-74-3	5	24	-	-	-	1
Ethyl silicate (Silicic acid, tetraethyl ester)	78-10-4	10	85	-	-	-	-
Fenamiphos	22224-92-6	-	0.1	-	-	-	1
Fensulfothion	115-90-2	-	0.1	-	-	-	-
Fenthion	55-38-9	-	0.2	-	-	-	1
Ferbam	14484-64-1	-	10	-	-	-	3
Ferrocene (Dicyclopentadienyl iron)	102-54-5	-	10	-	-	-	-
Ferrovandium dust	12604-58-9	-	1	-	-	3	3
Flour dust (Respirable particulate)		-	3	-	-	-	-
Fluorides, as F		-	2.5	-	-	-	-
Fluorine	7782-41-4	1	1.6	-	2	3.1	3

Schedule 1, Table 2

Substance	CAS number	8-hour Occupational exposure limit			15-minute or ceiling (c) occupational exposure limit		Substance interaction 1, 2, 3
		ppm	mg/m ³	f/cc	ppm	mg/m ³	
Fluorotrichloromethane (Trichlorofluoromethane)	75-69-4	-	-	-	(c) 1000	(c) 5620	-
Fonofos	944-22-9	-	0.1	-	-	-	1
Formaldehyde	50-00-0	0.75	0.92	-	(c) 2	(c) 2.5	3
Formamide	75-12-7	10	18	-	-	-	1
Formic acid	64-18-6	5	9.4	-	10	19	3
Formic acid, ethyl ester (Ethyl formate)	109-94-4	100	303	-	-	-	3
Formic acid, methyl ester (Methyl formate)	107-31-3	100	246	-	150	368	-
Furfural	98-01-1	2	7.9	-	-	-	1, 3
Furfuryl alcohol	98-00-0	10	40	-	15	60	1, 3
Gasoline	8006-61-9	300	890	-	500	1480	-
Germanium tetrahydride	7782-65-2	0.2	0.63	-	-	-	-
Glass Fibres							
Continuous filament		-	-	1	-	-	3
Continuous filament, total		-	5	-	-	-	3
Special purpose		-	-	1	-	-	3
Glutataldehyde	111-30-8	-	-	-	(c) 0.05	(c) 0.2	3
Glycerin mist	56-81-5	-	10	-	-	-	3

Schedule 1, Table 2

Substance	CAS number	8-hour Occupational exposure limit			15-minute or ceiling (c) occupational exposure limit		Substance interaction 1, 2, 3
		ppm	mg/m ³	f/cc	ppm	mg/m ³	
Glycidol (2,3-Epoxy-1-propanol)	556-52-5	2	6.1	-	-	-	-
Glycol monoethyl ether (2-Ethoxyethanol)	110-80-5	5	18	-	-	-	1
Grain dust (oat, wheat, barley)		-	4	-	-	-	-
Graphite (all forms except graphite fibres) Respirable mass	7782-42-5	-	2	-	-	-	-
Guthion® (Azinphos-methyl)	86-50-0	-	0.2	-	-	-	-
Gypsum (Calcium sulphate)	13397-24-5	-	10	-	-	-	3
Hafnium and compounds, as Hf	7440-58-6	-	0.5	-	-	-	-
Halothane	151-67-7	50	404	-	-	-	-
Helium	7440-59-7	-	-	-	-	-	2
Heptachlor and Heptachlor epoxide	76-44-8 1024-57-3	-	0.05	-	-	-	1
Heptane (n-Heptane)	142-82-5	400	1640	-	500	2050	-
2-Heptanone (Methyl n-amyl ketone)	110-43-0	50	233	-	-	-	-
3-Heptanone (Ethyl butyl ketone)	106-35-4	50	234	-	75	350	-
Hexachlorobenzene	118-74-1	-	0.002	-	-	-	1

Schedule 1, Table 2

Substance	CAS number	8-hour Occupational exposure limit			15-minute or ceiling (c) occupational exposure limit		Substance interaction 1, 2, 3
		ppm	mg/m ³	f/cc	ppm	mg/m ³	
Hexachlorobutadiene	87-68-3	0.02	0.21	-	-	-	1
γ-Hexachlorocyclohexane (Lindane)	58-89-9	-	0.5	-	-	-	1
Hexachlorocyclopentadiene	77-47-4	0.01	0.11	-	-	-	-
Hexachloroethane	67-72-1	1	9.7	-	-	-	1
Hexachloronaphthalene	1335-87-1	-	0.2	-	-	-	1
Hexafluoroacetone	684-16-2	0.1	0.68	-	-	-	1
1,6-Hexamethylene diisocyanate	822-06-0	0.005	0.034	-	-	-	-
n-Hexane	110-54-3	50	176	-	-	-	1
Hexane (all isomers except n-hexane)	107-83-5 96-14-0 75-83-2 79-29-8	500	1760	-	1000	3500	-
1,6-Hexanediamine	124-09-4	0.5	2.3	-	-	-	3
2-Hexanone (Methyl n-butyl ketone)	591-78-6	5	20	-	10	40	1
1-Hexene	592-41-6	30	103	-	-	-	-
Hexone (Methyl isobutyl ketone)	108-10-1	50	205	-	75	307	-
Sec-Hexyl acetate	108-84-9	50	295	-	-	-	3

Schedule 1, Table 2

Substance	CAS number	8-hour Occupational exposure limit			15-minute or ceiling (c) occupational exposure limit		Substance interaction 1, 2, 3
		ppm	mg/m ³	f/cc	ppm	mg/m ³	
Hexylene glycol	107-41-5	-	-	-	(c) 25	(c) 121	3
Hydrazine	302-01-2	0.01	0.013	-	-	-	1
HCFC-123 1,1,1-trifluoro-2,2-dichloroethane	306-83-2	50	310	-	-	-	-
Hydrogen	1333-74-0	-	-	-	-	-	2
Hydrogenated terphenyls	61788-32-7	0.5	4.9	-	-	-	-
Hydrogen bromide	10035-10-6	-	-	-	(c) 3	(c) 9.9	3
Hydrogen chloride	7647-01-0	-	-	-	(c) 5	(c) 7.5	-
Hydrogen cyanide and cyanide salts as CN							
Hydrogen cyanide	74-90-8	-	-	-	(c) 4.7	(c) 5.5	1
Calcium cyanide	592-01-8	-	-	-	-	(c) 5	1
Potassium cyanide	151-50-8	-	-	-	-	(c) 5	1
Sodium cyanide	143-33-9	-	-	-	-	(c) 5	1
Hydrogen fluoride, as F	7664-39-3	-	-	-	(c) 3	(c) 2.3	-
Hydrogen peroxide	7722-84-1	1	1.4	-	-	-	-
Hydrogen selenide, as Se	7783-07-5	0.05	0.16	-	-	-	-
Hydrogen sulphide	7783-06-4	10	14	-	(c) 15	(c) 21	-

Schedule 1, Table 2

Substance	CAS number	8-hour Occupational exposure limit			15-minute or ceiling (c) occupational exposure limit		Substance interaction 1, 2, 3
		ppm	mg/m ³	f/cc	ppm	mg/m ³	
Hydroquinone (Dihydroxybenzene)	123-31-9	-	2	-	-	-	-
4-Hydroxy-4-methyl-2-pentanone (Diacetone alcohol)	123-42-2	50	238	-	-	-	3
2-Hydroxypropyl acrylate	999-61-1	0.5	2.8	-	-	-	1, 3
Indene	95-13-6	10	48	-	-	-	-
Indium & compounds, as In	7440-74-6	-	0.1	-	-	-	-
Iodine	7553-56-2	-	-	-	(c) 0.1	(c) 1	3
Iodoform	75-47-8	0.6	10	-	-	-	-
Iron oxide dust & fume (Fe ₂ O ₃), as Fe	1309-37-1	-	5	-	-	-	-
Iron pentacarbonyl, as Fe	13463-40-6	0.1	0.8	-	0.2	1.6	-
Iron salts, soluble, as Fe		-	1	-	-	-	3
Isoamyl acetate (Isopentyl acetate)	123-92-2	100	532	-	-	-	3
Isoamyl alcohol	123-51-3	100	361	-	125	452	3
Isobutyl acetate	110-19-0	150	713	-	-	-	3
Isobutyl alcohol	78-83-1	50	152	-	-	-	-
Isooctyl alcohol	26952-21-6	50	266	-	-	-	1, 3

Schedule 1, Table 2

Substance	CAS number	8-hour Occupational exposure limit			15-minute or ceiling (c) occupational exposure limit		Substance interaction 1, 2, 3
		ppm	mg/m ³	f/cc	ppm	mg/m ³	
Isopentane (Pentane, all isomers)	78-78-4	600	1770	-	-	-	-
Isopentyl acetate (Isoamyl acetate)	123-92-2	100	532	-	-	-	3
Isophorone	78-59-1	-	-	-	(c) 5	(c) 28	-
Isophorone diisocyanate	4098-71-9	0.005	0.045	-	-	-	-
Isopropoxyethanol	109-59-1	25	106	-	-	-	1
Isopropyl acetate	108-21-4	250	1040	-	310	1290	3
Isopropyl alcohol (2-Propanol)	67-63-0	400	983	-	500	1230	3
Isopropylamine	75-31-0	5	12	-	10	24	3
N-Isopropylaniline	768-52-5	2	11	-	-	-	1
Isopropyl ether	108-20-3	250	1040	-	310	1300	3
Isopropyl glycidyl ether (IGE)	4016-14-2	50	238	-	75	356	-
Kaolin Respirable particulate	1332-58-7	-	2	-	-	-	-
Ketene	463-51-4	0.5	0.86	-	1.5	2.6	-
Lead elemental & inorganic compounds, as Pb	7439-92-1	-	0.05	-	-	-	-
Lead arsenate, as Pb(AsO ₄) ₂	7784-40-9	-	0.15	-	-	-	-

Schedule 1, Table 2

Substance	CAS number	8-hour Occupational exposure limit			15-minute or ceiling (c) occupational exposure limit		Substance interaction 1, 2, 3
		ppm	mg/m ³	f/cc	ppm	mg/m ³	
Lead chromate, as Pb as Cr	7758-97-6	-	0.05 0.012	-	-	-	-
Limestone (Calcium carbonate)	1317-65-3	-	10	-	-	-	3
Lindane (γ -Hexachlorocyclohexane)	58-89-9	-	0.5	-	-	-	1
Lithium hydride	7580-67-8	-	0.025	-	-	-	3
L.P.G. (Liquified petroleum gas)	68476-85-7	1000	1800	-	1500	2700	-
Magnesite	546-93-0	-	10	-	-	-	-
Magnesium oxide fume	1309-48-4	-	10	-	-	-	-
Malathion	121-75-5	-	10	-	-	-	1
Maleic anhydride	108-31-6	0.25	1.0	-	-	-	-
Manganese, elemental & inorganic compounds, as Mn	7439-96-5	-	1.0	-	-	-	-
Manganese fume, as Mn	7439-96-5	-	1.0	-	-	-	-
Manganese cyclopentadienyl tricarbonyl, as Mn	12079-65-1	-	0.1	-	-	-	1
Marble (Calcium carbonate)	1317-65-3	-	10	-	-	-	3

Schedule 1, Table 2

Substance	CAS number	8-hour Occupational exposure limit			15-minute or ceiling (c) occupational exposure limit		Substance interaction 1, 2, 3
		ppm	mg/m ³	f/cc	ppm	mg/m ³	
Mercury, as Hg in Alkyl compounds, Aryl compounds Inorganic compounds, including metallic mercury	7439-97-6	-	0.01	-	-	0.03	1
			0.1	-	-	-	1
			0.025	-	-	-	1
Mesityl oxide	141-79-7	15	60	-	25	100	-
Methacrylic acid	79-41-4	20	70	-	-	-	3
Methacrylic acid, methyl ester (Methyl methacrylate)	80-62-6	100	410	-	-	-	-
Methane	74-82-8	-	-	-	-	-	2
Methanethiol (Methyl mercaptan)	74-93-1	0.5	0.98	-	-	-	-
Methanol (Methyl alcohol)	67-56-1	200	262	-	250	328	1
Methomyl	16752-77-5	-	2.5	-	-	-	-
Methoxychlor	72-43-5	-	10	-	-	-	-
2-Methoxyethanol (Ethylene glycol monomethyl ether)	109-86-4	5	16	-	-	-	1
2-Methoxyethyl acetate (Ethylene glycol monomethyl ether acetate)	110-49-6	5	24	-	-	-	1
4-Methoxyphenol	150-76-5	-	5	-	-	-	-

Schedule 1, Table 2

Substance	CAS number	8-hour Occupational exposure limit			15-minute or ceiling (c) occupational exposure limit		Substance interaction 1, 2, 3
		ppm	mg/m ³	f/cc	ppm	mg/m ³	
1-Methoxy-2-propanol (Propylene glycol monomethyl ether)	107-98-2	100	369	-	150	553	
Methyl acetate	79-20-9	200	606	-	250	757	-
Methyl acetylene (Propyne)	74-99-7	1000	1640	-	-	-	-
Methyl acetylene-propadiene mixture (MAPP)		1000	1640	-	1250	2050	-
Methyl acrylate (Acrylic acid, methyl ester)	96-33-3	2	7	-	-	-	1, 3
Methylacrylonitrile	126-98-7	1	2.7	-	-	-	1
Methylal (Dimethoxymethane)	109-87-5	1000	3110	-	-	-	3
Methyl alcohol (Methanol)	67-56-1	200	262	-	250	328	1
Methylamine	74-89-5	5	6.4	-	15	19	3
Methyl amyl alcohol (Methyl isobutyl carbinol; 4-Methyl-2-pentanol)	108-11-2	25	104	-	40	167	1
Methyl n-amyl ketone (2-Hepalone)	110-43-0	50	233	-	-	-	3
N-Methyl aniline (Monomethyl aniline)	100-61-8	0.5	2.2	-	-	-	1
2-Methylaziridine (Propylene imine)	75-55-8	2	4.7	-	-	-	1

Schedule 1, Table 2

Substance	CAS number	8-hour Occupational exposure limit			15-minute or ceiling (c) occupational exposure limit		Substance interaction 1, 2, 3
		ppm	mg/m ³	f/cc	ppm	mg/m ³	
Methyl bromide	74-83-9	1	3.9	-	-	-	1
1-Methylbutyl acetate (2-Pentyl acetate, sec-amyl acetate)	626-38-0	125	665	-	-	-	-
3-Methylbutyl acetate (Isopentyl acetate, isoamyl acetate)	123-92-2	100	532	-	-	-	-
Methyl-tert-butyl ether (MTBE)	1634-04-4	40	144	-	-	-	-
Methyl n-butyl ketone (2-Hexanone)	591-78-6	5	20	-	10	40	1
Methyl Cellosolve (2-Methoxyethanol)	109-86-4	5	16	-	-	-	1
Methyl Cellosolve acetate (2-Methoxyethyl acetate)	110-49-6	5	24	-	-	-	1
Methyl chloride	74-87-3	50	103	-	100	207	1
Methyl chloroform (1,1,1-Trichloroethane)	71-55-6	350	1910	-	450	2460	-
Methyl-2-cyanoacrylate	137-05-3	0.2	1	-	-	-	-
Methylcyclohexane	108-87-2	400	1610	-	-	-	-
Methylcyclohexanol	25639-42-3	50	234	-	-	-	-

Schedule 1, Table 2

Substance	CAS number	8-hour Occupational exposure limit			15-minute or ceiling (c) occupational exposure limit		Substance interaction 1, 2, 3
		ppm	mg/m ³	f/cc	ppm	mg/m ³	
o-Methylcyclohexanone	583-60-8	50	229	-	75	344	1
2-Methylcyclopentadienyl manganese tricarbonyl, as Mn	12108-13-3	-	0.2	-	-	-	1
Methyl demeton (Demeton-methyl)	8022-00-2	-	0.5	-	-	-	1
Methylene bisphenyl isocyanate (Diphenylmethane-4,4'-diisocyanate; MDI)	101-68-8	0.005	0.051	-	-	-	-
Methylene chloride (Dichloromethane)	75-09-2	50	174	-	-	-	-
4,4'-Methylene bis (2-chloroaniline) (MBOCA)	101-14-4	0.01	0.11	-	-	-	1
Methylene bis (4-cyclohexylisocyanate)	5124-30-1	0.005	0.054	-	-	-	-
4,4'-Methylene dianiline (4,4'-Diaminodiphenylmethane)	101-77-9	0.1	0.81	-	-	-	1
Methyl ethyl ketone (MEK; 2-Butanone)	78-93-3	200	590	-	300	885	-

Schedule 1, Table 2

Substance	CAS number	8-hour Occupational exposure limit			15-minute or ceiling (c) occupational exposure limit		Substance interaction 1, 2, 3
		ppm	mg/m ³	f/cc	ppm	mg/m ³	
Methyl ethyl ketone peroxide	1338-23-4	-	-	-	(c) 0.2	(c) 1.5	-
Methyl formate (Formic acid, methyl ester)	107-31-3	100	246	-	150	368	-
5-Methyl-3-heptanone (Ethyl amyl ketone)	541-85-5	25	131	-	-	-	3
Methyl hydrazine	60-34-4	0.01	0.019	-	-	-	1
Methyl iodide	74-88-4	2	12	-	-	-	1
Methyl isoamyl ketone	110-12-3	50	234	-	-	-	-
Methyl isobutyl carbinol (Methyl amyl alcohol)	108-11-2	25	104	-	40	167	1
Methyl isobutyl ketone (Hexone)	108-10-1	50	205	-	75	307	-
Methyl isocyanate	624-83-9	0.02	0.047	-	-	-	1
Methyl isopropyl ketone	563-80-4	200	705	-	-	-	-
Methyl mercaptan (Methanethiol)	74-93-1	0.5	0.98	-	-	-	-

Schedule 1, Table 2

Substance	CAS number	8-hour Occupational exposure limit			15-minute or ceiling (c) occupational exposure limit		Substance interaction 1, 2, 3
		ppm	mg/m ³	f/cc	ppm	mg/m ³	
Methyl mercury, as Hg (mercury, alkyl compounds)	22967-92-6	-	0.01	-	-	0.03	1
Methyl methacrylate	80-62-6	100	410	-	-	-	-
Methyl parathion	298-00-0	-	0.2	-	-	-	1
2-Methylpentane (hexane, all isomers except n-hexane, isohexane)	107-83-5	500	1760	-	1000	3500	-
3-Methylpentane (hexane, all isomers except n-hexane)	96-14-0	500	1760	-	1000	3500	-
4-Methyl-2-pentanol (Methyl amyl alcohol)	108-11-2	25	104	-	40	167	1
Methyl propyl ketone (2-Pentanone)	107-87-9	200	705	-	250	881	-
Methyl silicate	681-84-5	1	6	-	-	-	-
α-Methyl styrene	98-83-9	50	242	-	100	483	-
Methyl styrene (all isomers) (Vinyl toluene, α-methyl styrene)	25013-15-4 98-83-9 1319-73-9	50	242	-	100	483	-

Schedule 1, Table 2

Substance	CAS number	8-hour Occupational exposure limit			15-minute or ceiling (c) occupational exposure limit		Substance interaction 1, 2, 3
		ppm	mg/m ³	f/cc	ppm	mg/m ³	
N-Methyl-N,2,4,6-tetranitroaniline (Tetryl)	479-45-8	-	1.5	-	-	-	-
Methyl vinyl ketone (3-Buten-2-one)	78-94-4	-	-	-	(c) 0.2	(c) 0.6	1, 3
Metribuzin	21087-64-9	-	5	-	-	-	-
Mica Respirable particulate	12001-26-2	-	3	-	-	-	-
Molybdenum, as Mo Soluble compounds	7439-98-7	-	5	-	-	-	-
Metal and insoluble compounds		-	10	-	-	-	3
Monochlorobenzene (Chlorobenzene)	108-90-7	10	46	-	-	-	-
Monocrotophos	6923-22-4	-	0.25	-	-	-	1
Morpholine	110-91-8	20	71	-	-	-	1
Naled (Dibrom)	300-76-5	-	3	-	-	-	1
Naphtha (Rubber solvent)	8030-30-6	400	1590	-	-	-	-
Naphthalene	91-20-3	10	52	-	15	79	1

Schedule 1, Table 2

Substance	CAS number	8-hour Occupational exposure limit			15-minute or ceiling (c) occupational exposure limit		Substance interaction 1, 2, 3
		ppm	mg/m ³	f/cc	ppm	mg/m ³	
α-Naphthylthiourea (ANTU)	86-88-4	-	0.3	-	-	-	-
Neon	7440-01-9	-	-	-	-	-	2
Nickel	7440-02-0	-	1.5	-	-	-	-
Elemental/metal		-	0.2	-	-	-	-
Insoluble compounds, as Ni		-	0.1	-	-	-	-
Soluble compounds, as Ni							
Nickel carbonyl, as Ni	13463-39-3	0.05	0.35	-	-	-	-
Nickel subsulfide, as Ni	12035-72-2	-	0.1	-	-	-	-
Nicotine	54-11-5	-	0.5	-	-	-	1
Nitrapyrin (2-Chloro-6-trichloromethyl pyridine)	1929-82-4	-	10	-	-	20	-
Nitric acid	7697-37-2	2	5.2	-	4	10	-
Nitric oxide	10102-43-9	25	31	-	-	-	-
p-Nitroaniline	100-01-6	-	3	-	-	-	1
Nitrobenzene	98-95-3	1	5	-	-	-	1
p-Nitrochlorobenzene	100-00-5	0.1	0.64	-	-	-	1

Schedule 1, Table 2

Substance	CAS number	8-hour Occupational exposure limit			15-minute or ceiling (c) occupational exposure limit		Substance interaction 1, 2, 3
		ppm	mg/m ³	f/cc	ppm	mg/m ³	
Nitroethane	79-24-3	100	307	-	-	-	-
Nitrogen	7727-37-9	-	-	-	-	-	2
Nitrogen dioxide	10102-44-0	3	5.6	-	5	9.4	-
Nitrogen trifluoride	7783-54-2	10	29	-	-	-	-
Nitroglycerin (NG)	55-63-0	0.05	0.46	-	-	-	1
Nitromethane	75-52-5	20	50	-	-	-	3
1-Nitropropane	108-03-2	25	91	-	-	-	-
2-Nitropropane	79-46-9	10	36	-	-	-	-
Nitrotoluene, all isomers	88-72-2 99-08-1 99-99-0	2	11	-	-	-	1
Nitrotrichloromethane (Chloropicrin, trichloronitromethane)	76-06-2	0.1	0.67	-	-	-	-
Nitrous oxide	10024-97-2	50	90	-	-	-	-
Nonane, all isomers	111-84-2	200	1050	-	-	-	-

Schedule 1, Table 2

Substance	CAS number	8-hour Occupational exposure limit			15-minute or ceiling (c) occupational exposure limit		Substance interaction 1, 2, 3
		ppm	mg/m ³	f/cc	ppm	mg/m ³	
Octachloronaphthalene	2234-13-1	-	0.1	-	-	0.3	1
Octane, all isomers	111-65-9	300	1401	-	-	-	-
Oil mist, mineral		-	5	-	-	10	-
Osmium tetroxide, as Os	20816-12-0	0.0002	0.0021	-	0.0006	0.0062	-
Oxalic acid	144-62-7	-	1	-	-	2	-
Oxygen difluoride	7783-41-7	-	-	-	(c) 0.05	(c) 0.11	-
Ozone	10028-15-6	0.1	0.2	-	0.3	0.59	-
Paraffin wax fume	8002-74-2	-	2	-	-	-	3
Paraquat	4685-14-7						
Total particulate		-	0.5	-	-	-	-
Respirable particulate		-	0.1	-	-	-	-
Parathion	56-38-2	-	0.1	-	-	-	1
Particulate polycyclic aromatic hydrocarbons (PPAH; Coal tar pitch volatiles)	65996-93-2	-	0.2	-	-	-	-

Schedule 1, Table 2

Substance	CAS number	8-hour Occupational exposure limit			15-minute or ceiling (c) occupational exposure limit		Substance interaction 1, 2, 3
		ppm	mg/m ³	f/cc	ppm	mg/m ³	
Particulate Not Otherwise Regulated				-			3
Total particulate		-	10		-	-	
Respirable particulate		-	3		-	-	
PCBs, Polychlorinated biphenyls – 42 percent chlorine (Chlorodiphenyl – 42 percent chlorine)	53469-21-9	-	1	-	-	-	1
PCBs, Polychlorinated biphenyls – 54 percent chlorine (Chlorodiphenyl – 54 percent chlorine)	11097-69-1	-	0.5	-	-	-	1
Pentaborane	19624-22-7	0.005	0.013	-	0.015	0.039	-
Pentachloronaphthalene	1321-64-8	-	0.5	-	-	-	1
Pentachloronitrobenzene	82-68-8	-	0.5	-	-	-	-
Pentachlorophenol	87-86-5	-	0.5	-	-	-	1
Pentaerythritol	115-77-5	-	10	-	-	-	3
Pentane, all isomers	78-78-4 109-66-0 463-82-1	600	1770	-	-	-	-

Schedule 1, Table 2

Substance	CAS number	8-hour Occupational exposure limit			15-minute or ceiling (c) occupational exposure limit		Substance interaction 1, 2, 3
		ppm	mg/m ³	f/cc	ppm	mg/m ³	
2-Pentanone (Methyl propyl ketone)	107-87-9	200	705	-	250	881	-
1-Pentyl acetate (n-Amyl acetate)	628-63-7	100	532	-	-	-	-
2-Pentyl acetate (sec-Amyl acetate)	626-38-0	125	665	-	-	-	-
Perchloroethylene (Tetrachloroethylene)	127-18-4	25	170	-	100	678	-
Perchloromethyl mercaptan	594-42-3	0.1	0.76	-	-	-	-
Perchloryl fluoride	7616-94-6	3	13	-	6	25	-
Perfluoroisobutylene	382-21-8	-	-	-	(c) 0.01	(c) 0.082	-
Perlite	93763-70-3	-	10	-	-	-	3
Persulphates Ammonium persulphate Potassium persulphate Sodium persulphate	7727-54-0 7727-21-1 7775-27-1	- - -	0.1 0.1 0.1	- - -	- - -	- - -	- - -
Phenacyl chloride (Chloroacetophenone)	532-27-4	0.05	0.32	-	-	-	-
Phenol	108-95-2	5	19	-	-	-	1

Schedule 1, Table 2

Substance	CAS number	8-hour Occupational exposure limit			15-minute or ceiling (c) occupational exposure limit		Substance interaction 1, 2, 3
		ppm	mg/m ³	f/cc	ppm	mg/m ³	
Phenothiazine	92-84-2	-	5	-	-	-	1
o-Phenylenediamine	95-54-5	-	0.1	-	-	-	-
m-Phenylenediamine	108-45-2	-	0.1	-	-	-	-
p-Phenylenediamine	106-50-3	-	0.1	-	-	-	-
Phenyl ether, vapour	101-84-8	1	7	-	2	14	-
Phenylethylene (Styrene, monomer)	100-42-5	50	213	-	100	426	-
Phenyl glycidyl ether (PGE)	122-60-1	0.1	0.6	-	-	-	1
Phenylhydrazine	100-63-0	0.1	0.44	-	-	-	1
Phenyl mercaptan	108-98-5	0.5	2.3	-	-	-	-
Phenylphosphine	638-21-1	-	-	-	(c) 0.05	(c) 0.23	-
Phorate	298-02-2	-	0.05	-	-	0.2	1
Phosgene (Carbonyl chloride)	75-44-5	0.1	0.4	-	-	-	-
Phosphine	7803-51-2	0.3	0.42	-	1	1.4	-

Schedule 1, Table 2

Substance	CAS number	8-hour Occupational exposure limit			15-minute or ceiling (c) occupational exposure limit		Substance interaction 1, 2, 3
		ppm	mg/m ³	f/cc	ppm	mg/m ³	
Phosphoric acid	7664-38-2	-	1	-	-	3	3
Phosphorous (yellow)	7723-14-0	0.02	0.1	-	-	-	-
Phosphorus oxychloride	10025-87-3	0.1	0.63	-	-	-	-
Phosphorus pentachloride	10026-13-8	0.1	0.85	-	-	-	3
Phosphorus pentasulphide	1314-80-3	-	1	-	-	3	3
Phosphorus trichloride	7719-12-2	0.2	1.1	-	0.5	2.8	3
Phthalic anhydride	85-44-9	1	6.1	-	-	-	-
m-Phthalodinitrile	626-17-5	-	5	-	-	-	3
Picloram	1918-02-1	-	10	-	-	-	-
Picric acid (2,4,6-Trinitrophenol)	88-89-1	-	0.1	-	-	-	-
Pindone (2-Pivalyl-1,3-indandione)	83-26-1	-	0.1	-	-	-	-
Piperazine dihydrochloride	142-64-3	-	5	-	-	-	-
2-Pivalyl-1,3-indandione (Pindone)	83-26-1	-	0.1	-	-	-	-

Schedule 1, Table 2

Substance	CAS number	8-hour Occupational exposure limit			15-minute or ceiling (c) occupational exposure limit		Substance interaction 1, 2, 3
		ppm	mg/m ³	f/cc	ppm	mg/m ³	
Plaster of Paris (Calcium sulfate; Gypsum)	26499-65-0	-	10	-	-	-	3
Platinum Metal Soluble salts, as Pt	7440-06-4	-	1 0.002	-	-	-	3 -
Polymethylene polyphenyl isocyanate (PAPI)	9016-87-9	0.005	0.07	-	-	-	-
Polytetrafluoroethylene decomposition products		-	-	-	-	-	Control air concentration as low as possible
Portland cement	65997-15-1	-	10	-	-	-	-
Potassium hydroxide	1310-58-3	-	-	-	-	(c) 2	-
Potassium persulfate	7727-21-1	-	0.1	-	-	-	-
Propane	74-98-6	1000	1800	-	1500	2700	-
n-Propanol (n-Propyl alcohol)	71-23-8	200	492	-	250	614	1
2-Propanol (Isopropyl alcohol)	67-63-0	400	983	-	500	1230	3

Schedule 1, Table 2

Substance	CAS number	8-hour Occupational exposure limit			15-minute or ceiling (c) occupational exposure limit		Substance interaction 1, 2, 3
		ppm	mg/m ³	f/cc	ppm	mg/m ³	
Propargyl alcohol	107-19-7	1	2.3	-	-	-	1
β-Propiolactone	57-57-8	0.5	1.5	-	-	-	3
Propionic acid	79-09-4	10	30	-	-	-	3
Propoxur	114-26-1	-	0.5	-	-	-	-
n-Propyl acetate	109-60-4	200	835	-	250	1040	3
n-Propyl alcohol (n-Propanol)	71-23-8	200	492	-	250	614	1
Propylene	115-07-1	-	-	-	-	-	2
Propylene dichloride (1,2-Dichloropropane)	78-87-5	75	347	-	110	508	-
Propylene glycol dinitrate	6423-43-4	0.05	0.34	-	-	-	1
Propylene glycol monomethyl ether	107-98-2	100	369	-	150	553	-
Propylene imine (2-Methylaziridine)	75-55-8	2	4.7	-	-	-	1
Propylene oxide (1,2-Epoxypropane)	75-56-9	2	48	-	-	-	-

Schedule 1, Table 2

Substance	CAS number	8-hour Occupational exposure limit			15-minute or ceiling (c) occupational exposure limit		Substance interaction 1, 2, 3
		ppm	mg/m ³	f/cc	ppm	mg/m ³	
n-Propyl nitrate	627-13-4	25	107	-	40	172	-
Propyne (Methyl acetylene)	74-99-7	1000	1640	-	-	-	-
Pyrethrum	8003-34-7	-	5	-	-	-	-
Pyridine	110-86-1	5	14	-	-	-	-
Pyrocatechol (Catechol)	120-80-9	5	23	-	-	-	1
Quartz Respirable particulate (Silica-Crystalline, Respirable)	14808-60-7	-	0.1	-	-	-	-
Quinone	106-51-4	0.1	0.44	-	-	-	-
RCF (Refractory Ceramic Fibres)		-	-	0.5	-	-	-
RDX (Cyclonite)	121-82-4	-	0.5		-	-	1
Refractory Ceramic Fibres (RCF)		-	-	0.5	-	-	-
Resorcinol	108-46-3	10	45	-	20	90	-
Rhodium Metal	7440-16-6	-	1	-	-	-	3
Insoluble compounds, as Rh		-	1	-	-	-	3
Soluble compounds, as Rh		-	0.01	-	-	-	3

Schedule 1, Table 2

Substance	CAS number	8-hour Occupational exposure limit			15-minute or ceiling (c) occupational exposure limit		Substance interaction 1, 2, 3
		ppm	mg/m ³	f/cc	ppm	mg/m ³	
Rock Wool Fibres		-	-	1	-	-	3
Ronnel	299-84-3	-	10	-	-	-	-
Rotenone (commercial)	83-79-4	-	5	-	-	-	-
Rouge	1309-37-1	-	10	-	-	-	-
Rubber solvent (Naphtha)	8030-30-6	400	1590	-	-	-	-
Selenium and compounds, as Se	7782-49-2	-	0.2	-	-	-	3
Selenium hexafluoride, as Se	7783-79-1	0.05	0.39	-	-	-	-
Sesone (Sodium-2-4-dichlorophenoxyethyl sulphate)	136-78-7	-	10	-	-	-	3
Silane (Silicon tetrahydride)	7803-62-5	5	6.6	-	-	-	3

Schedule 1, Table 2

Substance	CAS number	8-hour Occupational exposure limit			15-minute or ceiling (c) occupational exposure limit		Substance interaction 1, 2, 3
		ppm	mg/m ³	f/cc	ppm	mg/m ³	
Silica-Amorphous							
Diatomaceous earth, uncalcined	61790-53-2						
Total particulate							
Respirable particulate		-	10	-	-	-	-
Precipitated silica	112926-00-8	-	3	-	-	-	-
Silica fume	69012-64-2	-	10	-	-	-	3
Respirable particulate							
Silica, fused	60676-86-0	-	2	-	-	-	-
Respirable particulate							
Silica gel	112926-00-8	-	0.1	-	-	-	-
		-	10	-	-	-	3
Silica-Crystalline,							
Respirable particulate							
Cristobalite	14464-46-1	-	0.05	-	-	-	-
Quartz	14808-60-7	-	0.1	-	-	-	-
Tridymite	15468-32-3	-	0.05	-	-	-	-
Tripoli	1317-95-9	-	0.1	-	-	-	-
Silicic acid, tetraethyl ester (Ethyl silicate)	78-10-4	10	85	-	-	-	-
Silicon	7440-21-3	-	10	-	-	-	-
Silicon carbide	409-21-2	-	10	-	-	-	-

Schedule 1, Table 2

Substance	CAS number	8-hour Occupational exposure limit			15-minute or ceiling (c) occupational exposure limit		Substance interaction 1, 2, 3
		ppm	mg/m ³	f/cc	ppm	mg/m ³	
Silicon tetrahydride (Silane)	7803-62-5	5	6.6	-	-	-	-
Silver Metal Soluble compounds, as Ag	7440-22-4	-	0.1 0.01	-	-	-	-
Slag Wool Fibres		-	-	1	-	-	3
Soapstone Total particulate Respirable particulate		-	6 3	-	-	-	-
Sodium azide As Sodium azide As Hydrazoic acid vapours	26628-22-8	-	-	-	- (c) 0.11	(c) 0.29 -	-
Sodium bisulfite	7631-90-5	-	5	-	-	-	3
Sodium-2,4-dichlorophenoxyethyl sulfate (Sesone)	136-78-7	-	10	-	-	-	3
Sodium fluoroacetate	62-74-8	-	0.05	-	-	-	1
Sodium hydroxide	1310-73-2	-	-	-	-	(c) 2	3
Sodium metabisulfite	7681-57-4	-	5	-	-	-	3
Sodium persulfate	7775-27-1	-	0.1	-	-	-	-

Schedule 1, Table 2

Substance	CAS number	8-hour Occupational exposure limit			15-minute or ceiling (c) occupational exposure limit		Substance interaction 1, 2, 3
		ppm	mg/m ³	f/cc	ppm	mg/m ³	
Starch	9005-25-8	-	10	-	-	-	-
Stearates, excludes stearates of toxic metal		-	10	-	-	-	3
Stibine	7803-52-3	0.1	0.51		-	-	-
Stoddard solvent	8052-41-3	100	572	-	-	-	-
Strontium chromate, as Cr	7789-06-2	-	0.0005	-	-	-	-
Strychnine	57-24-9	-	0.15	-	-	-	-
Styrene, monomer (Phenylethylene; Vinyl benzene)	100-42-5	50	213	-	100	426	-
Subtilisins (Proteolytic enzymes as 100 percent pure crystalline enzyme)	1395-21-7 9014-01-1	-	-	-	-	(c) 0.00006	-
Sucrose	57-50-1	-	10	-	-	-	-
Sulfometuron methyl	74222-97-2	-	5	-	-	-	-
Sulfotep (TEDP)	3689-24-5	-	0.2	-	-	-	1
Sulphur	7704-34-9 63705-05-5	-	10	-	-	-	-
Sulphur dioxide	7446-09-5	2	5.2	-	5	13	3
Sulphur hexafluoride	2551-62-4	1000	5970	-	-	-	-

Schedule 1, Table 2

Substance	CAS number	8-hour Occupational exposure limit			15-minute or ceiling (c) occupational exposure limit		Substance interaction 1, 2, 3
		ppm	mg/m ³	f/cc	ppm	mg/m ³	
Sulphuric acid	7664-93-9	-	1	-	-	3	-
Sulphur monochloride	10025-67-9	-	-	-	(c) 1	(c) 5.5	3
Sulphur pentafluoride	5714-22-7	-	-	-	(c) 0.01	(c) 0.10	3
Sulphur tetrafluoride	7783-60-0	-	-	-	(c) 0.1	(c) 0.44	3
Sulphuryl fluoride	2699-79-8	5	21	-	10	42	-
Sulprofos	35400-43-2	-	1	-	-	-	-
Synthetic Vitreous Fibres: Glass fibres, continuous filament		-	-	1	-	-	3
Glass fibres, continuous filament, total particulate		-	5	-	-	-	3
Glass fibres, special purpose		-	-	1	-	-	3
Glass wool fibres		-	-	1	-	-	3
Refractory ceramic fibres (RCF)		-	-	0.5	-	-	-
Rock wool fibres		-	-	1	-	-	3
Slag wool fibres		-	-	1	-	--	3
Systox ® (Demeton)	8065-48-3	0.01	0.11	-	-	-	1

Schedule 1, Table 2

Substance	CAS number	8-hour Occupational exposure limit			15-minute or ceiling (c) occupational exposure limit		Substance interaction 1, 2, 3
		ppm	mg/m ³	f/cc	ppm	mg/m ³	
2,4,5-T (2,4,5-Trichlorophenoxyacetic acid)	93-76-5	-	10	-	-	-	3
Talc (containing no asbestos fibres) Respirable particulate	14807-96-6	-	2	-	-	-	-
Tantalum metal and oxide dusts, as Ta	7440-25-7 1314-61-0	-	5	-	-	-	-
TEDP (Sulfotep)	3689-24-5	-	0.2	-	-	-	1
Tellurium & compounds, except hydrogen telluride, as Te	13494-80-9	-	0.1	-	-	-	-
Tellurium hexafluoride, as Te	7783-80-4	0.02	0.2	-	-	-	3
Temephos	3383-96-8	-	10	-	-	-	-
TEPP (Tetraethyl pyrophosphate)	107-49-3	0.004	0.047	-	-	-	1
Terephthalic acid	100-21-0	-	10	-	-	-	-
Terphenyls	26140-60-3	-	-	-	(c) 0.53	(c) 5	3
1,1,2,2-Tetrabromoethane (Acetylene tetrabromide)	79-27-6	1	14	-	-	-	-
1,1,1,2-Tetrachloro-2,2-difluoroethane	76-11-9	500	4170	-	-	-	-

Schedule 1, Table 2

Substance	CAS number	8-hour Occupational exposure limit			15-minute or ceiling (c) occupational exposure limit		Substance interaction 1, 2, 3
		ppm	mg/m ³	f/cc	ppm	mg/m ³	
1,1,2,2-Tetrachloro-1,2-difluoroethane-	76-12-0	500	4170	-	-	-	-
1,1,2,2-Tetrachloroethane	79-34-5	1	6.9	-	-	-	1
Tetrachloroethylene (Perchloroethylene)	127-18-4	25	170	-	100	678	-
Tetrachloromethane (Carbon tetrachloride)	56-23-5	5	31	-	10	63	1
Tetrachloronaphthalene	1335-88-2	-	2	-	-	-	-
Tetraethyl lead, as Pb	78-00-2	-	0.1	-	-	-	1
Tetraethyl pyrophosphate (TEPP)	107-49-3	0.004	0.047	-	-	-	1
Tetrahydrofuran	109-99-9	200	590	-	250	737	-
Tetramethyl lead, as Pb	75-74-1	-	0.15	-	-	-	1
Tetramethyl succinonitrile	3333-52-6	0.5	2.8	-	-	-	1
Tetranitromethane	509-14-8	0.005	0.04	-	-	-	3
Tetrasodium pyrophosphate	7722-88-5	-	5	-	-	-	3

Schedule 1, Table 2

Substance	CAS number	8-hour Occupational exposure limit			15-minute or ceiling (c) occupational exposure limit		Substance interaction 1, 2, 3
		ppm	mg/m ³	f/cc	ppm	mg/m ³	
Tetryl (2,4,6-Trinitrophenylmethylnitramine)	479-45-8	-	1.5	-	-	-	-
Thallium, elemental, and soluble compounds, as TI	7440-28-0	-	0.1	-	-	-	1
4,4'-Thiobis(6-tert-butyl-m-cresol)	96-69-5	-	10	-	-	-	-
Thioglycolic acid	68-11-1	1	3.8	-	-	-	1
Thionyl chloride	7719-09-7	-	-	-	(c) 1	(c) 4.9	3
Thiram	137-26-8	-	1	-	-	-	-
Tin, Metal	7440-31-5	-	2	-	-	-	-
Oxide and inorganic compounds except tin hydride, as Sn		-	2	-	-	-	-
Organic compounds, as Sn		-	0.1	-	-	0.2	1
Titanium dioxide	13463-67-7	-	10	-	-	-	-
Toluene (Toluol)	108-88-3	50	188	-	-	-	1

Schedule 1, Table 2

Substance	CAS number	8-hour Occupational exposure limit			15-minute or ceiling (c) occupational exposure limit		Substance interaction 1, 2, 3
		ppm	mg/m ³	f/cc	ppm	mg/m ³	
Toluene-2,4-diisocyanate (TDI)	584-84-9	0.005	0.036	-	(c) 0.02	(c) 0.14	-
o-Toluidine	95-53-4	2	8.8	-	-	-	1
m-Toluidine	108-44-1	2	8.8	-	-	-	1
p-Toluidine	106-49-0	2	8.8	-	-	-	1
Toluol (Toluene)	108-88-3	50	188	-	-	-	1
Toxaphene (Chlorinated camphene)	8001-35-2	-	0.5	-	-	1	1
Tremolite (Asbestos)	1332-21-4	-	-	0.1	-	-	-
Tribromomethane (Bromoform)	75-25-2	0.5	5.2	-	-	-	1
Tributyl phosphate	126-73-8	0.2	2.2	-	-	-	-
Trichloroacetic acid	76-03-9	1	6.7	-	-	-	3
1,2,4-Trichlorobenzene	120-82-1	-	-	-	(c) 5	(c) 37	3
1,1,1-Trichloroethane (Methyl chloroform)	71-55-6	350	1910	-	450	2460	-

Schedule 1, Table 2

Substance	CAS number	8-hour Occupational exposure limit			15-minute or ceiling (c) occupational exposure limit		Substance interaction 1, 2, 3
		ppm	mg/m ³	f/cc	ppm	mg/m ³	
1,1,2-Trichloroethane	79-00-5	10	55	-	-	-	1
Trichloroethylene	79-01-6	50	269	-	100	537	-
Trichlorofluoromethane (Fluorotrichloromethane)	75-69-4	-	-	-	(c) 1000	(c) 5620	-
Trichloromethane (Chloroform)	67-66-3	10	49	-	-	-	-
Trichloronaphthalene	1321-65-9	-	5	-	-	-	1
Trichloronitromethane (Chloropicrin)	76-06-2	0.1	0.67	-	-	-	-
2,4,5-Trichlorophenoxy acetic acid (2,4,5-T)	93-76-5	-	10	-	-	-	3
1,2,3-Trichloropropane	96-18-4	10	60	-	-	-	1
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	1000	7660	-	1250	9580	-
Tricyclohexyltin hydroxide (Cyhexatin)	13121-70-5	-	5	-	-	-	3
Tridymite (Silica-Crystalline)	15468-32-3	-	0.05	-	-	-	-

Schedule 1, Table 2

Substance	CAS number	8-hour Occupational exposure limit			15-minute or ceiling (c) occupational exposure limit		Substance interaction 1, 2, 3
		ppm	mg/m ³	f/cc	ppm	mg/m ³	
Triethanolamine	102-71-6	-	5	-	-	-	3
Triethylamine	121-44-8	1	4.1	-	3	12.4	1
Trifluorobromomethane (Bromotrifluoromethane)	75-63-8	1000	6090	-	-	-	-
1,1,1-Trifluoro-2,2-dichloroethane (HCFC-123)	306-83-2	50	310	-	-	-	-
1,3,5-Triglycidyl-s-triazinetrione	2451-62-9	-	0.05	-	-	-	-
Trimellitic anhydride	552-30-7	-	-	-	-	(c) 0.04	-
Trimethylamine	75-50-3	5	12	-	15	36	3
Trimethyl benzene (mixed isomers)	25551-13-7	25	123	-	-	-	-
Trimethyl phosphite	121-45-9	2	10	-	-	-	3
2,4,6-Trinitrophenol (Picric acid)	88-89-1	-	0.1	-	-	-	-
2,4,6-Trinitrophenyl-methylnitramine (Tetryl)	479-45-8	-	1.5	-	-	-	-

Schedule 1, Table 2

Substance	CAS number	8-hour Occupational exposure limit			15-minute or ceiling (c) occupational exposure limit		Substance interaction 1, 2, 3
		ppm	mg/m ³	f/cc	ppm	mg/m ³	
2,4,6-Trinitrotoluene (TNT)	118-96-7	-	0.1	-	-	-	1
Triorthocresyl phosphate	78-30-8	-	0.1	-	-	-	1
Triphenyl amine	603-34-9	-	5	-	-	-	3
Triphenyl phosphate	115-86-6	-	3	-	-	-	-
Tripoli (Silica-Crystalline)	1317-95-9	-	0.1	-	-	-	-
Tungsten, as W Metal and insoluble compounds, Soluble compounds	7440-33-7	-	5	-	-	10	3
		-	1	-	-	3	-
Turpentine	8006-64-2	100	556	-	-	-	3
Uranium (natural), soluble & insoluble compounds, as U	7440-61-1	-	0.2	-	-	0.6	-
n-Valeraldehyde	110-62-3	50	176	-	-	-	3
Vanadium pentoxide, as V ₂ O ₅ Respirable particulate or fume	1314-62-1	-	0.05	-	-	-	-
Vegetable oil mists		-	10	-	-	-	-
Vinyl acetate	108-05-4	10	35	-	15	53	3

Schedule 1, Table 2

Substance	CAS number	8-hour Occupational exposure limit			15-minute or ceiling (c) occupational exposure limit		Substance interaction 1, 2, 3
		ppm	mg/m ³	f/cc	ppm	mg/m ³	
Vinyl benzene (Styrene, monomer)	100-42-5	50	213	-	100	426	-
Vinyl bromide	593-60-2	0.5	2.2	-	-	-	-
Vinyl chloride (Chloroethylene)	75-01-4	1	2.6	-	-	-	-
Vinyl cyanide (Acrylonitrile)	107-13-1	2	4.3	-	-	-	1
4-Vinyl cyclohexene	100-40-3	0.1	0.44	-	-	-	-
Vinyl cyclohexene dioxide	106-87-6	0.1	0.57	-	-	-	1
Vinyl fluoride	75-02-5	1	1.9	-	-	-	-
Vinylidene chloride (1,1-Dichloroethylene)	75-35-4	5	20	-	-	-	-
Vinylidene fluoride (1,1-Difluoroethylene)	75-38-7	500	1310	-	-	-	-
Vinyl toluene (Methyl styrene, all isomers)	25013-15-4	50	242	-	100	483	-
VM & P Naphtha	8032-32-4	300	1398	-	-	-	-

Schedule 1, Table 2

Substance	CAS number	8-hour Occupational exposure limit			15-minute or ceiling (c) occupational exposure limit		Substance interaction 1, 2, 3
		ppm	mg/m ³	f/cc	ppm	mg/m ³	
Warfarin	81-81-2	-	0.1	-	-	-	-
Welding fumes Not otherwise classified		-	5	-	-	-	-
Wood Dust (Total)							
Softwoods and hardwoods except western red cedar		-	5	-	-	-	-
Western red cedar		-	0.5	-	-	-	-
Xylene (o-,m-,p-isomers)	1330-20-7 95-47-6 108-38-3 106-42-3	100	434	-	150	651	-
m-Xylene α,α' -diamine	1477-50-0	-	-	-	-	(c) 0.1	1
Xylidine (mixed isomers)	1300-73-8	0.5	2.5	-	-	-	1
Yttrium metal & compounds, as Y	7440-65-5	-	1	-	-	-	-
Zinc beryllium silicate, as Be	39413-47-3	-	0.002	-	-	-	-
Zinc chloride fume	7646-85-7	-	1	-	-	2	-
Zinc chromates, as Cr	13530-65-9 11103-86-9 37300-23-5	-	0.01	-	-	-	-
Zinc oxide	1314-13-2						
Dust		-	10	-	-	-	-
Fume		-	5	-	-	10	-

Schedule 1, Table 2

Substance	CAS number	8-hour Occupational exposure limit			15-minute or ceiling (c) occupational exposure limit		Substance interaction 1, 2, 3
		ppm	mg/m³	f/cc	ppm	mg/m³	
Zinc stearate	557-05-1	-	10	-	-	-	-
Zirconium and compounds, as Zr	7440-67-7	-	5	-	-	10	-

Schedule 2

First Aid

Table 1 Low hazard work

“Low hazard work” means work at:

- (a) administrative sites where the work performed is clerical or administrative in nature;
- (b) dispersal sites
 - (i) where a worker is based,
 - (ii) where a worker is required to report for instruction, and
 - (iii) from which a worker is transported to a work site where the work is performed,
- (c) retail stores and other sales activities,
- (d) property management,
- (e) personal services, such as hair, nails, massage.

Table 2 Medium hazard work

“Medium hazard work” means work involving service work such as

- (i) restaurants,
- (ii) hotels,
- (iii) sale of building material,
- (iv) fuel distribution,
- (v) automobile service or repair facilities,
- (vi) food packing or processing plants,
- (vii) beverage processing plants,
- (viii) laundries, cleaners, and
- (ix) facilities for amusement or recreation.

Table 3 High hazard work

“High hazard work” means work involving:

- (a) construction or demolition, including
 - (i) industrial and commercial process facilities,
 - (ii) commercial, residential and industrial buildings,
 - (iii) roads, highways, bridges and related installations,
 - (iv) sewage gathering systems,
 - (v) utility installations, and
 - (vi) water distribution systems;
- (b) operation and maintenance of
 - (i) electrical generation and distribution systems,
 - (ii) foundries,
 - (iii) industrial heavy equipment repair and service facilities,
 - (iv) sawmills and lumber processing facilities,
 - (v) machine shops,
 - (vi) metal fabrication shops, and
 - (vii) industrial process facilities not elsewhere specified, and
- (c) woodlands operations.

Note: work that does not fall into any of the above strict categories will have a hazard rating assigned by the Chief Safety Officer as the need arises.

Table 4 First aid equipment and supplies

[See section 10.2)

(1) A Number 1 First Aid Kit consists of the following:

- (a) 10 antiseptic cleansing towelettes, individually packaged;
- (b) 25 sterile adhesive dressings, individually packaged;
- (c) 10 10 centimetres x 10 centimetres sterile gauze pads, individually packaged;
- (d) 2 10 centimetres x 10 centimetres sterile compress dressings, with ties, individually packaged;
- (e) 2 15 centimetres x 15 centimetres sterile compress dressings, with ties, individually packaged;
- (f) 2 conform gauze bandages — 75 millimetres wide;
- (g) 3 cotton triangular bandages;
- (h) 5 safety pins — assorted sizes;
- (i) 1 pair of scissors;
- (j) 1 pair of tweezers;
- (k) 1 25 millimetres x 4.5 metres of adhesive tape;
- (l) 1 crepe tension bandage — 75 millimetres wide;
- (m) 1 resuscitation barrier device with a one-way valve;
- (n) 4 pairs of disposable surgical gloves;
- (o) 1 first aid instruction manual (condensed);
- (p) 1 inventory of kit contents;
- (q) 1 waterproof waste bag.

(2) A Number 2 First Aid Kit consists of the following:

- (a) 10 antiseptic cleansing towelettes, individually packaged;
 - (b) 50 sterile adhesive dressings, individually packaged;
 - (c) 20 10 centimetres x 10 centimetres sterile gauze pads individually packaged;
 - (d) 3 10 centimetres x 10 centimetres sterile compress dressings, with ties, individually packaged;
 - (e) 3 15 centimetres x 15 centimetres sterile compress dressings, with ties, individually packaged;
 - (f) 1 20 centimetres x 25 centimetres sterile abdominal dressing;
 - (g) 2 conform gauze bandages — 75 millimetres wide;
 - (h) 4 cotton triangular bandages;
 - (i) 8 safety pins — assorted sizes;
 - (j) 1 pair of scissors;
 - (k) 1 pair of tweezers;
 - (l) 1 25 millimetres x 4.5 metres roll of adhesive tape;
 - (m) 2 crepe tension bandages — 75 millimetres wide;
 - (n) 1 resuscitation barrier device with a one-way valve;
 - (o) 6 pairs of disposable surgical gloves;
 - (p) 1 sterile, dry eye dressing;
 - (q) 1 first aid instruction manual (condensed);
 - (r) 1 inventory of kit contents;
 - (s) 1 waterproof waste bag.
-

(3) A Number 3 First Aid Kit consists of the following:

- (a) 24 antiseptic cleansing towelettes, individually packaged;
- (b) 100 sterile adhesive dressings, individually packaged;
- (c) 50 10 centimetres x 10 centimetres sterile gauze pads individually packaged;
- (d) 6 10 centimetres x 10 centimetres sterile compress dressings, with ties, individually packaged;
- (e) 6 15 centimetres x 15 centimetres sterile compress dressings, with ties, individually packaged;
- (f) 4 20 centimetres x 25 centimetres sterile abdominal dressings, individually packaged;
- (g) 6 conform gauze bandages — 75 millimetres wide;
- (h) 12 cotton triangular bandages;
- (i) 12 safety pins — assorted sizes;
- (j) 1 pair of scissors;
- (k) 1 pair of tweezers;
- (l) 2 25 millimetres x 4.5 metres rolls of adhesive tape;
- (m) 4 crepe tension bandages — 75 millimetres wide;
- (n) 1 resuscitation barrier device with a one-way valve;
- (o) 12 pairs of disposable surgical gloves;
- (p) 2 sterile, dry eye dressings, individually packaged;
- (q) 1 tubular finger bandage with applicator;
- (r) 1 first aid instruction manual (condensed);
- (s) 1 inventory of kit contents;
- (t) 2 waterproof waste bags.

(4) A Type P First Aid Kit consists of the following:

- (a) 10 sterile adhesive dressings, assorted sizes, individually packaged;
 - (b) 5 10 centimetres x 10 centimetres sterile gauze pads, individually packaged;
 - (c) 1 10 centimetres x 10 centimetres sterile compress dressing, with ties, individually packaged;
 - (d) 5 antiseptic cleansing towelettes, individually packaged;
 - (e) 1 cotton triangular bandage;
 - (f) 1 waterproof waste bag;
 - (g) 1 pair disposable surgical gloves.
-

Table 5 First aid room requirements

[See section 10.2]

- (1) If an employer is required to provide a first aid room by Part 11 – First Aid, the employer must ensure that it is:**
- (a) located near the work area or areas it is to serve,
 - (b) easily accessible to workers at all times,
 - (c) able to accommodate a stretcher,
 - (d) close to bathroom facilities,
 - (e) of adequate size,
 - (f) kept clean and sanitary,
 - (g) provided with adequate lighting, ventilation and heating,
 - (h) designated as non-smoking,
 - (i) under the supervision of an advanced first aider, a nurse or an Emergency Medical Technician-Paramedic,
 - (j) clearly identified as a first aid facility and appropriately marked with how and where to access the first aider,
 - (k) used only to administer first aid or health related services, and
 - (l) equipped with:
 - (i) a communication system;
 - (ii) a permanently installed sink with hot and cold running water;
 - (iii) a cot or bed with a moisture-protected mattress and 2 pillows;
 - (iv) 6 towels and 3 blankets;
 - (v) eye wash equipment;
 - (vi) a shower, or is close to a shower facility if it is a work site described in section 7.8;
 - (vii) a Number 3 First Aid Kit.
- (2) A first aid room must contain the following:**
- (a) the supplies of a Number 2 First Aid Kit;
 - (b) space blanket;
 - (c) hot and cold packs;
 - (d) spine board and straps;
 - (e) adjustable cervical collar or set of different sized cervical collars;
 - (f) stretcher;
 - (g) splint set;
 - (h) waterproof waste bag;
 - (i) sphygmomanometer (blood pressure cuff);
 - (j) stethoscope;
 - (k) disposable drinking cups;
 - (l) portable oxygen therapy unit consisting of a cylinder(s) containing compressed oxygen, a pressure regulator, pressure gauge, a flow meter and oxygen delivery equipment;
 - (m) flashlight;
 - (n) bandage scissors.
-

Table 6 First aid requirements for low hazard work
 [See sections 10.8, 10.5(1)]

Number of workers at work site per shift	Close work site (up to 20 minutes)	Distant work site (20 – 40 minutes)	Isolated work site (more than 40 minutes)
1	Type P First Aid Kit	Type P First Aid Kit	Type P First Aid Kit
2 – 9	1 Emergency First Aider No. 1 First Aid Kit	1 Emergency First Aider No. 2 First Aid Kit	1 Standard First Aider No. 2 First Aid Kit
10 – 49	1 Standard First Aider No. 1 First Aid Kit	1 Standard First Aider No. 2 First Aid Kit	1 Standard First Aider No. 2 First Aid Kit
50 – 99	1 Emergency First Aider 1 Standard First Aider No. 2 First Aid Kit	1 Emergency First Aider 1 Standard First Aider No. 2 First Aid Kit	2 Standard First Aiders No. 2 First Aid Kit
100 – 199	1 Emergency First Aider 2 Standard First Aiders No. 3 First Aid Kit 3 blankets, stretcher, splints Designated area for first aid services	1 Emergency First Aider 2 Standard First Aiders No. 3 First Aid Kit 3 blankets, stretcher, splints Designated area for first aid services	3 Standard First Aiders No. 3 First Aid Kit 3 blankets, stretcher, splints Designated area for first aid services
200 or more	3 Standard First Aiders Plus 1 Standard First Aider for each additional increment of 1 to 100 workers No. 3 First Aid Kit 3 blankets, stretcher, splints Designated area for first aid services	3 Standard First Aiders Plus 1 Standard First Aider for each additional increment of 1 to 100 workers No. 3 First Aid Kit 3 blankets, stretcher, splints Designated area for first aid services	3 Standard First Aiders Plus 1 Standard First Aider for each additional increment of 1 to 100 workers No. 3 First Aid Kit 3 blankets, stretcher, splints Designated area for first aid services

Note: Number of first aiders indicated is for a shift at all times.
 Distance is driving time to a health care facility.

Table 7 First aid requirements for medium hazard work

[See sections 10.2, 10.5(1)]

Number of workers at work site per shift	Close work site (up to 20 minutes)	Distant work site (20 – 40 minutes)	Isolated work site (more than 40 minutes)
1	Type P First Aid Kit	Type P First Aid Kit	Type P First Aid Kit
2 – 9	1 Emergency First Aider No. 1 First Aid Kit	1 Standard First Aider No. 2 First Aid Kit 3 blankets	1 Standard First Aider No. 2 First Aid Kit 3 blankets
10 – 19	1 Emergency First Aider 1 Standard First Aider No. 2 First Aid Kit	1 Emergency First Aider 1 Standard First Aider No. 2 First Aid Kit 3 blankets	2 Standard First Aiders No. 2 First Aid Kit 3 blankets
20 – 49	2 Standard First Aiders No. 2 First Aid Kit 3 blankets	2 Standard First Aiders No. 2 First Aid Kit 3 blankets	2 Standard First Aiders No. 2 First Aid Kit 3 blankets
50 – 99	2 Standard First Aiders No. 3 First Aid Kit 3 blankets	2 Standard First Aiders No. 3 First Aid Kit 3 blankets	3 Standard First Aiders No. 3 First Aid Kit 3 blankets
100 – 199	2 Emergency First Aiders 2 Standard First Aiders No. 3 First Aid Kit 3 blankets, stretcher, splints Designated area for first aid services	2 Emergency First Aiders 2 Standard First Aiders No. 3 First Aid Kit 3 blankets, stretcher, splints Designated area for first aid services	3 Standard First Aiders 1 Advanced First Aider No. 3 First Aid Kit 3 blankets, stretcher, splints Designated area for first aid services
200 or more	2 Emergency First Aiders 2 Standard First Aiders 1 Nurse or 1 E.M.T.-P. Plus 1 Standard First Aider for each additional increment of 1 to 100 workers First Aid Room	2 Emergency First Aiders 2 Standard First Aiders 1 Nurse or 1 E.M.T.-P. Plus 1 Standard First Aider for each additional increment of 1 to 100 workers First Aid Room	4 Standard First Aiders 1 Nurse or 1 E.M.T.-P. Plus 1 Standard First Aider for each additional increment of 1 to 100 workers First Aid Room

Note: Number of first aiders indicated is for a shift at all times.
Distance is driving time to a health care facility.

Table 8 First aid requirements for high hazard work

[See sec10.2, 10.5(1)]

Number of workers at work site per shift	Close work site (up to 20 minutes)	Distant work site (20 – 40 minutes)	Isolated work site (more than 40 minutes)
1	Type P First Aid Kit	Type P First Aid Kit	Type P First Aid Kit
2 – 4	1 Emergency First Aider No. 1 First Aid Kit	1 Standard First Aider No. 2 First Aid Kit	1 Standard First Aider No. 2 First Aid Kit
5 – 9	1 Emergency First Aider 1 Standard First Aider No. 2 First Aid Kit 3 blankets	2 Standard First Aiders No. 2 First Aid Kit 3 blankets	2 Standard First Aiders No. 2 First Aid Kit 3 blankets
10 – 19	2 Standard First Aider No. 2 First Aid Kit 3 blankets, stretcher, splints	2 Standard First Aiders No. 3 First Aid Kit 3 blankets, stretcher, splints	2 Standard First Aiders No. 3 First Aid Kit 3 blankets, stretcher, splints
20 – 49	2 Standard First Aider No. 2 First Aid Kit 3 blankets, stretcher, splints	3 Standard First Aiders No. 3 First Aid Kit 3 blankets, stretcher, splints	3 Standard First Aiders No. 3 First Aid Kit 3 blankets, stretcher, splints
50 – 99	2 Emergency First Aiders 2 Standard First Aiders No. 3 First Aid Kit 3 blankets, stretcher, splints	2 Emergency First Aiders 3 Standard First Aiders No. 3 First Aid Kit 3 blankets, stretcher, splints	4 Standard First Aiders 1 Advanced First Aider No. 3 First Aid Kit 3 blankets, stretcher, splints
100 - 199	2 Emergency First Aiders 2 Standard First Aiders 1 Advanced First Aider First Aid Room	4 Standard First Aiders 1 Advanced First Aider First Aid Room	4 Standard First Aiders 1 Advanced First Aider First Aid Room
200 or more	2 Emergency First Aiders 2 Standard First Aiders 1 Nurse or 1 E.M.T.-P. Plus 1 Standard First Aider for each additional increment of 1 to 100 workers First Aid Room	4 Standard First Aiders 1 Nurse or 1 E.M.T.-P. Plus 1 Standard First Aider for each additional increment of 1 to 100 workers First Aid Room	4 Standard First Aiders 1 Advanced First Aider 1 Nurse or 1 E.M.T.-P. Plus 1 Standard First Aider for each additional increment of 1 to 100 workers First Aid Room

Note: No. of first aiders is for a shift at all times. Distance is driving time to a health care facility.

Schedule 3 Noise

Table 1 Occupational exposure limits for noise

[See sections 6.3, 6.4(1)]

Exposure level (dBA)	Exposure duration
82	16 hours
83	12 hours and 41 minutes
84	10 hours and 4 minutes
85	8 hours
88	4 hours
91	2 hours
94	1 hour
97	30 minutes
100	15 minutes
101 and greater	0 exposure

Note: Exposure levels and exposure durations are to be prorated if not specified.

Table 2 Selection of hearing protection devices

[See subsection 6.7(1)]

Maximum equivalent noise level (dBA L_{ex})	CSA Class of hearing protection	CSA Grade of hearing protection
≤ 90	C, B or A	1, 2, 3, or 4
≤ 95	B or A	2, 3, or 4
≤ 100	A	3 or 4
≤ 105	A	4
≤ 110	A earplug + A or B earmuff	3 or 4 earplug + 2, 3, or 4 earmuff
> 110	A plug + A or B earmuff and limited exposure time to keep sound reaching the worker's ear drum below 85 dBA L_{ex}	3 or 4 earplug + 2, 3, or 4 earmuff and limited exposure time to keep sound reaching the worker's ear drum below 85 dBA L_{ex}

Table 3 Permissible background noise conditions during audiometric testing

[See subsection 6.8(2)]

Octave band centre frequency (Hz)	Maximum level (dB)
500	22
1000	30
2000	35
4000	42
8000	45

Schedule 4 – Limits of Approach Distances

Table 1 General Limits of Approach	
Voltage Phase to Phase	Limit of Approach Distance
up to 750V	1.0 m
750V – 40 kV	3.0 m
69 kV, 72 kV	3.5 m
138 kV, 144 kV	4.0 m
230 kV, 260 kV	5.0 m
500 kV	7.0 m

Table 2 Utility Worker Limits of Approach	
Voltage Phase to Phase	<i>Limit of Approach Distance</i>
600V (DC)	0.8 m
600V – 4.60kV	0.8 m
13.8 kV	0.85 m
25 kV	0.95 m
34.5 kV	1.05 m
69, 72 kV	1.35 m

Table 3	
Limits of Approach for Qualified Electrical Workers	
<i>Voltage Phase to Phase</i>	<i>Limit of Approach Distance</i>
600V (DC)	0.5 m
4.16 kV	0.5 m
13.8 kV	0.55 m
25 kV	0.65 m
34.5 kV	0.75 m
69, 72 kV	1.05 m
138, 144 kV	1.35 m
230, 260 kV	1.85 m
500 kV	3.15 m

Table 4				
Limits of Approach for Utility Arborists				
Voltage Phase to Phase	A. Insulated Tool Limit for Certified Utility Arborists	B. Work Limit for Certified Utility Arborists	C. Work Limit for Apprentice Utility Arborists	D. Limit of Approach for Insulated Devices
4.16 kV	0.04 m	1.05 m	3.0 m	0.5 m
13.8 kV	0.12 m	1.1 m	3.0 m	0.55 m
25 kV	0.21 m	1.2 m	3.0 m	0.65 m
34.5 kV	0.29 m	1.3 m	3.0 m	0.75 m
69, 72 kV	0.61 m	1.6 m	3.5 m	1.05 m
138, 144 kV	0.92 m	1.9 m	4.0 m	1.35 m
230, 260 kV	1.41 m	2.4 m	5.0 m	1.85 m
500 kV	2.71 m	3.7 m	7.0 m	3.15 m

Schedule 5

Cable Clips on Wire Rope

[See section 20.11]

Cable clip requirements for wire rope

Diameter of rope (millimetres)	Number of clips	Spacing between clips centre-to-centre (millimetres)	Torque Newton.metres
6	2	38	20
8	2	51	40
10	2	57	65
11	2	64	90
12	3	76	90
16	3	102	135
19	4	114	176
22	4	133	305
25	4	152	305
29	5	178	305
32	5	203	488
38	6	229	488
44	7	267	628
50	8	305	881

Schedule 6

Dimensions of Scaffold Members

Table 1

Light duty double-pole scaffolds less than 6 metres in height

[See subsection 22.11(2)]

Member	Dimensions
Uprights	38 millimetres by 89 millimetres
Ledgers	2 - 21 millimetres by 140 millimetres or 1 - 21 millimetres by 184 millimetres
Ribbons	21 millimetres by 140 millimetres
Braces	21 millimetres by 140 millimetres

Table 2

Light duty double-pole scaffolds 6 metres or more in height

[See subsection 22.11(2)]

Member	Dimensions
Uprights	89 millimetres by 89 millimetres
Ledgers	2 - 21 millimetres by 140 millimetres or 1 - 21 millimetres by 184 millimetres
Ribbons	21 millimetres by 140 millimetres
Braces	21 millimetres by 140 millimetres

Table 3

Heavy duty double-pole scaffolds less than 6 metres in height

[See subsection 22.11(2)]

Member	Dimensions
Uprights	38 millimetres by 140 millimetres
Ledgers	2 - 21 millimetres by 140 millimetres or 1 - 38 millimetres by 184 millimetres
Ribbons	21 millimetres by 140 millimetres
Braces	21 millimetres by 140 millimetres

Table 4

Heavy duty double-pole scaffolds 6 metres or more in height

[See subsection 22.11(2)]

Member	Dimension
Uprights	89 millimetres by 140 millimetres
Ledgers	2 - 21 millimetres by 140 millimetres or 1 - 38 millimetres by 184 millimetres
Ribbons	21 millimetres by 140 millimetres
Braces	21 millimetres by 140 millimetres

Table 5
Single-pole scaffolds less than 6 metres in height

[See section 22.18]

Member	Dimensions
Uprights	38 millimetres by 89 millimetres
Ledgers	2 - 21 millimetres by 140 millimetres or 1 - 21 millimetres by 184 millimetres
Ribbons	21 millimetres by 140 millimetres
Braces	21 millimetres by 140 millimetres
Wall scabs	38 millimetres by 140 millimetres

Table 6
Single-pole scaffolds 6 metres to 9 metres in height

[See section 22.18]

Member	Dimensions
Uprights	89 millimetres by 89 millimetres
Ledgers	2 - 21 millimetres by 140 millimetres or 1 - 21 millimetres by 184 millimetres
Ribbons	21 millimetres by 140 millimetres
Braces	21 millimetres by 140 millimetres
Wall scabs	38 millimetres by 140 millimetres

Schedule 7 - Toilets and Showers at an Industrial Work Site

[See subsection 13.4(1), 13.9]

Number of toilets required at an Industrial work site

Number of workers of each sex	Minimum number of toilets for each sex
1 - 10	1
11 - 25	2
26 - 50	3
51 - 75	4
76 - 100	5
over 100	6 plus 1 for each additional 30 workers of the sex in excess of 100

Number of showers required at an Industrial work site

Number of workers of each sex	Minimum number of showers for each sex
1 - 10	1
11 - 15	2
16 and more	2 plus 1 for each additional 10 workers of the sex

Schedule 8 Saw Blade Crack Limits

Table 1 Circular saw blade crack limits

[See sections 26.19 (1) and (2)]

Saw blade diameter (millimetres)	Maximum length of crack (millimetres)
up to 300	13
301 to 610	25
611 to 915	38
916 to 1220	50
1221 to 1525	64
> 1525	76

Table 2 Band saw blade crack limits

[See sections 26.20(1) and (2)]

Width of band saw blade (millimetres)	Maximum length of crack (millimetres)
up to 125	1/10 of saw width
126 to 300	13
> 300	19

Schedule 9

Shoring Component Dimensions

[See subsections 31.18(1), 31.18(2)]

Shoring components used in excavations, trenches, tunnels and underground shafts

Soil type	Depth of excavation (metres)	Uprights		Stringers		Cross-braces			
		Minimum dimensions (millimetres)	Maximum horizontal spacing (millimetres)	Minimum dimensions (millimetres)	Maximum vertical spacing millimetres	Minimum dimensions (millimetres)		Maximum spacing (millimetres)	
						Width of trench		Vertical	Horizontal
Less than 1.8 metres	1.8 to 3.7 metres								
Hard and compact	1.2 to 3.0	38 x 235	1800	89 x 140	1200	89 x 89	140 x 140	1200	1800
	More than 3.0 to 4.5	38 x 235	1200	89 x 140	1200	89 x 140	140 x 140	1200	1800
	More than 4.5 to 6.0	38 x 235	10	140 x 140	1200	140 x 184	140 x 184	1200	1800
Likely to crack or crumble	1.2 to 3.0	38 x 235	1200	89 x 140	1200	89 x 140	140 x 140	1200	1800
	More than 3.0 to 4.5	38 x 235	900	140 x 140	1200	140 x 140	140 x 184	1200	1800
	More than 4.5 to 6.0	38 x 235	10	140 x 184	1200	140 x 184	140 x 184	1200	1800
Soft, sandy or loose	1.2 to 3.0	38 x 235	10	140 x 140	1200	140 x 140	140 x 184	1200	1800
	More than 3.0 to 4.5	38 x 235	10	140 x 184	1200	140 x 184	184 x 184	1200	1800
	More than 4.5 to 6.0	38 x 235	10	184 x 184	1200	140 x 184	184 x 235	1200	1800

Schedule 10 – Cold Weather Work

GUIDELINES FOR WORK & WARM UP PERIODS FOR A FOUR HOUR SHIFT

	No wind		5 mph or 8 kph wind		10 mph or 16 kph wind		15 mph or 24 kph wind		20 mph or 32 kph wind	
Air Temp	Max work periods	no. of breaks	Max work periods	no. of breaks	Max work periods	no. of breaks	Max work periods	no. of breaks	Max work periods	no. of breaks
-25 C to -28 C	115 min	1	115 min	1	75 min	2	55 min	3	40 min	4
-29 C to -31 C	115 min	1	75 min	2	55 min	3	40 min	4	30min*	5
-32 C to -34 C	75 min	2	55 min	3	40 min	4	30 min*	5	Non-emergency work ceases	
-35 C to -37 C	55 min	3	40 min	4	30 min*	5	Non-emergency work ceases			
-38 C to -39 C	40 min	4	30 min*	5	Non-emergency work ceases					
-40 C to -42 C	30 min*	5	Non-emergency work ceases							
-43 C and lower	Non-emergency work ceases									

*** at these conditions there is danger of exposed flesh freezing**

This schedule applies to moderate to heavy work activity, with warm up periods of ten minutes in a warm location.

For lighter work activity, go one step lower on the tables.

As a guide, wind speed is: at 8 kph a light flag moves; at 16 kph a light flag is fully extended; at 24 kph a newspaper is blown; at 32 kph there is blowing and drifting snow.