

Occupational health and safety (OHS) guide for firefighting

OHS information for employers and workers

This bulletin describes the minimum standards to which a fire service must comply under occupational health and safety (OHS) legislation. While all of the OHS legislation applies to provincially regulated work sites in Alberta, this document highlights specific sections of the *OHS Act*, Regulation and Code that can pertain to firefighting. This information can be used to help inform best practice development, standard operating procedures, and information resources that pertain particularly to the hazards and tasks related to firefighting and firefighters.

The following sections are summaries of specific Parts of the OHS Code. Additional requirements are found in the specific Part referenced in the OHS Code.

Training

Training is addressed in section 3(2) of the *OHS Act*, section 15 of the OHS Regulation, and throughout the OHS Code. The term “train” or any other similar term or word means to give information and explanation to a worker with respect to a particular subject matter and to require a practical demonstration that the worker has acquired knowledge or skill related to the subject matter. Employers must ensure that training provided to a firefighter:

- a. Is provided before the firefighter is allowed to engage in emergency operations, performing a new work activity, using new equipment or work processes or when they are moved to another area or work site;
- b. Is provided by competent persons (a competent person is a person who is adequately qualified, suitably trained and with sufficient experience to safely perform work without supervision or with only a minimal degree of supervision);

- c. addresses occupational health and safety hazards associated with the tasks of the worker;
- d. addresses the safe operation of equipment that is required to perform the operational assignments; and
- e. addresses procedures in place intended to protect workers from exposure to harmful substances.

Employers have an obligation to ensure that workers are adequately trained in all matters necessary to protect their health and safety which may mean that employers will need to provide training beyond what is described here.

Hazard assessment, elimination and control

Part 2 of the OHS Code requires an employer to assess a work site for hazards, determine how hazards will be eliminated or - when not reasonably practicable - controlled, record all of this, and communicate the results to workers. An employer must ensure that a hazard assessment is performed or repeated before work begins at the work site or prior to the construction of a new work site; at reasonably practicable intervals to prevent the development of unsafe and unhealthy working conditions; when a new work process is introduced; when a work process or operation changes; or before construction of significant additions or alterations to a work site. Workers may be exposed to an uncontrolled hazard while undertaking the control of that hazard, only if the worker is competent in correcting the condition.

The guidelines and policies developed should include, as per National Fire Protection Agency (NFPA) standards:

- a. identification of the standard firefighting functions based on the emergency services to be offered, including functions that must be performed simultaneously;
- b. the minimum number of firefighters required to safely perform each identified firefighting function or evolution;
- c. the specific worker safety rules, procedures, first aid and medical attention services for firefighters to be followed at each type of incident;
- d. the number and types of firefighting vehicles, equipment and firefighters required for the initial response to each type of emergency to which firefighters might reasonably be expected to respond - this includes policies or procedures to be followed when minimum staffing or equipment levels cannot be met;
- e. guideline or policy on the minimum amount of training and experience a firefighter must be given before being considered competent to perform certain emergency operation functions;
- f. detailed description of the incident management system to be followed at an emergency incident; and
- g. detailed description of the personnel accountability system to be used at each emergency incident.

Specifications and certifications

Section 12 of the OHS Code applies to all equipment/supplies. A summary of the requirements is as follows:

- a. equipment is of sufficient size, strength and design and of suitable materials to withstand stresses to perform its function as intended/designed;
- b. rated capacity or other limitations are not exceeded;
- c. modifications that may affect structural integrity or stability are performed in accordance with manufacturer's specifications; 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.

Chemical Hazards, Biological Hazards, and Harmful Substances

Part 4 of the OHS Code addresses exposure to chemical hazards, biological hazards, and harmful substances. Requirements include exposures that may occur during any operation and not just during designated hazardous materials or dangerous goods response. The following outlines some of the requirements related to chemical hazards, biological hazards, and harmful substances.

Schedule 1, Table 2 of the OHS Code lists chemical substances that legislation sets occupational exposure limits (OELs). Some substances, however, may not have an OEL identified in legislation. The employer must ensure a firefighter's exposure to any harmful substance is kept as low as reasonably achievable, and does not exceed the OEL if one exists. In a fire event, it can be challenging to assess airborne concentrations, as circumstances and environment are continually changing. This is why employers must ensure workers use a self-contained breathing apparatus (SCBA) when entering an environment with unknown airborne hazards.

Facilities for workers who may be contaminated by a harmful substance must be provided or arranged by the employer as per section 23. This includes a requirement for employers to ensure workers decontaminate their person, and clothing, equipment and personal protective equipment (PPE) that may be taken from the work site.

No firefighter should be permitted to leave a work site or the fire hall where there is a reasonable possibility they or their clothing may

be contaminated. Although firefighters wear protective equipment when battling a blaze, they are still at risk of being exposed to such things as asbestos fibers after the fire has been extinguished. The Alberta Asbestos Abatement Manual is a best practices guide that describes procedures for asbestos decontamination as well as the safe removal or abatement of asbestos-containing materials. Only workers that received the necessary training may perform this work.

The employer may also be required to report, keep records or monitor compliance with Workers' Compensation Board policies. For requirements, see sections 32 and 33 of the *Workers' Compensation Act (RSA 2000, Chapter W-15)*.

Confined Spaces

Part 5 of the OHS Code refers to confined spaces. A "confined space" means a restricted space which may become hazardous to a worker entering it because of:

- a. an atmosphere that is or may be injurious by reason of oxygen deficiency or enrichment, flammability, explosivity or toxicity;
- b. a condition or changing set of circumstances within the space that presents a potential for injury or illness; or
- c. the potential or inherent characteristics of an activity which can produce adverse or harmful consequences within the space.

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

If a fire department is providing rescue services involving a confined space entry, it must comply with the requirements of this Part, such as continuous air monitoring as the atmosphere within the confined space can change

unpredictably while the worker is inside the confined space. The following are some requirements related to restricted and confined spaces.

If entering a confined space and the site hazard assessment identifies a potential hazard, then pre-entry atmospheric testing is done using a calibrated test instrument to determine proper oxygen levels and if any toxic, flammable, or explosive substances may be present.

When entry and work is to be performed in a confined space, a written code of practice must be developed and training in its requirements and procedures must be provided to any firefighter assigned to enter and work in a "confined space". An entry permit must be filled in before entry occurs. The OHS Code requires an employer to ensure that:

- all records respecting entry and work in a confined space, including entry permits and testing, are retained for at least one year if no incident or unplanned event occurred; or
- two years if an incident or unplanned event occurs during entry.

Cranes, hoists and lifting devices

If a fire department is using cranes, hoists, winches or similar equipment with rated load capacities of 2,000 kilograms or more, Part 6 of the OHS Code applies. The following are some requirements related to cranes, hoists and lifting devices. An employer must ensure that

- the lifting device selected and used for the task is labelled with its rated load capacity;
- only competent workers operate the lifting device; and
- a log be maintained that records inspection, use and maintenance activities for the lifting device.

Emergency preparedness and response

Part 7 of the OHS Code requires employers to develop an emergency response plan for responding to an emergency that may require rescue or evacuation. This includes fire protection requirements, which may involve the use of fire fighting services.

Every fire department must develop an emergency response plan for their own operations covering the points listed in section 116 of the OHS Code.

Entrances, walkways, stairways and ladders

Part 8 OHS Code sets out requirements related to entrances, walkways, stairways, and ladders. The following are some of these requirements. For more details, consult Part 8 OHS Code.

The employer is responsible to ensure that there is a secondary escape route that is readily useable at all times if a worker could be isolated from a primary escape route [subsection 119(4)]. Further, the employer needs to ensure that all reasonably practicable steps are being taken to ensure the health and safety of firefighters.

Manufactured portable ladders must meet the requirements of the standards listed in section 135 of the OHS Code (Canadian Standards Association (CSA) or American National Standards Institute (ANSI)).

Fall protection

The “rescue personnel exemption” presented in Part 9 of the OHS Code does not exempt firefighters from using fall protection equipment and practices. It does allow firefighters to use alternative equipment and practices.

The following are some requirements related to

fall protection. The employer must ensure that workers are protected from falling in accordance with section 139 of the OHS Code. A fall protection plan, as required by section 140 of the OHS Code, must be prepared, available at the work site, and reviewed with workers.

Fire and explosion hazards

Part 10 of the OHS Code applies to fire and explosion hazards, and has some overlap with the Alberta Fire Code. This part addresses how employers control fire and explosion hazards in the workplace and does not specifically address response to fire and explosion events. Part 10 was never intended to apply to burning buildings or exploding structures; however, some provisions are applicable.

The following are some requirements related to fire and explosion hazards. Although subsection 162(1) prohibits a worker from entering an area having an atmosphere that exceeds 20 per cent of the lower explosive level of a flammable or explosive substance, subsection 162(2) allows competent, properly equipped workers to enter the area if responding to an emergency. In this case, workers would need to be sufficiently trained and equipped with proper tools, such as non sparking tools, intrinsically safe equipment, and appropriate respiratory protection. It is important to note that in an emergency situation or fire event, most likely OELs would be exceeded.

First aid

The rules identified in Part 11 apply to fire department personnel during normal day-to-day activities and while dealing with an emergency incident, including all record-keeping identified in sections 183 and 184. Key requirements include the following:

- a. employers are required to provide first aid supplies, equipment and staff and must supply them in accordance with Schedule 2 the OHS Code.

- b. emergency transportation of injured firefighters must be considered and arranged before workers are sent to a work site;
- c. if a firefighter has an acute illness or injury at the work site, the person must report the illness or injury to the employer as soon as is practicable; and
- d. employers must retain records of acute illnesses or injuries as per section 183 of the OHS Code.

Please note that if the firefighters are employed at an oil and gas or construction work site with multiple employers, the prime contractor has joint responsibilities with employers to provide facilities and equipment, but the employers are responsible for providing first aiders.

General safety requirements

The following are some requirements related to general safety requirement. Subsection 186(1) requires the employer to ensure lighting at a work site is sufficient to allow work to be done safely. This may mean placing additional light sources in work areas to allow firefighters to perform their duties.

Under section 189, if 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.

Section 191 describes the requirements applicable to employers if firefighters are acting as designated signallers.

Section 194 requires that employers ensure firefighters providing traffic control wear highly visible clothing, and if dark, wear retro-reflective clothing. If dark or visibility is poor, the employer must also ensure that firefighters use a handheld signal light when engaging in traffic control work.

Employers must also ensure that measures are taken to protect workers when traffic creates a hazard.

Lifting and handling loads

The hazard assessment required in Part 14, section 210 must consider the following:

- 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.

Managing the control of hazardous energy (lock out)

Section 212 outlines the areas where locking out is required and includes the servicing, repairing, testing, adjusting or inspecting of machinery, equipment or powered mobile equipment.

Noise exposure

Employers must take all reasonably practicable measures to reduce noise exposure levels for firefighters as outlined in section 216 of the OHS Code. Firefighters must not be exposed above 85 decibels averaged over an eight-hour work shift and the limits specified in Table 1, Schedule 3. Hearing protection must be provided where noise cannot be controlled by engineering and administrative controls, which is most likely for firefighter response. Workers must be provided training on selection, use and maintenance of the equipment. Table 2, Schedule 3 provides requirements for hearing protection types. The employers must ensure that the workers wear their required hearing protection.

If a worker may be exposed to noise above the OEL, a workplace noise exposure assessment must be undertaken. If the results of the assessment indicate that noise levels exceed

the exposure limits of Schedule 3, Table 1, a noise management program must be developed and implemented (section 221). OELs could be exceeded during emergency response activities.

If identified that firefighters are exposed to noise above the OEL, audiometric monitoring must be provided at the employer's expense. Section 223 provides requirements for testing.

The employer's obligation under s 216 and 217 does not only apply when OELs are exceeded. Noise reduction and prevention is an obligation where it is reasonably practicable to do so.

Overhead power lines

The safe limits of approach to energized overhead power lines identified in Schedule 4, Table 1 apply to all employers including fire services. An employer must contact the power line operator before work is done or equipment is operated within 7 metres of an energized line. OHS considers all power lines to be energized, or "live" until confirmed by the local utility as safe to approach.

Hazard assessment, SOPs/SOGs and worker training that includes preplanning with utility providers are essential to safe emergency operations around energized overhead lines.

Personal protective equipment

Employers must ensure that PPE is used as required to protect the firefighter from the hazards of the job and does not itself endanger the worker.

The only explicit standards identified in Part 18 for firefighters relating to footwear and head gear are:

- Section 233(5) requires the employer to ensure firefighters wear footwear that complies with the listed National Fire Protection Association (NFPA) or CSA standards, and

- Section 237 allows an employer to consider head protection complying with National Fire Protection Association (NFPA) 1971 or 1977 instead of head gear complying with CSA or ANSI standards, considering the nature of the hazard, and if the head gear was manufactured on or after July 1, 2009.

The employer must demonstrate acceptable protection levels for the hazards faced by firefighters based on a hazard assessment.

Care must be taken not to assume that equipment certified or intended to protect against one hazard can effectively protect against another. For instance, bunker gear provides effective protection against the hazards of structural firefighting conditions but can add to the hazard level a firefighter faces when dealing with a water rescue and may not be appropriate for some chemical response hazards.

Respiratory protection

Part 18 of the OHS Code also addresses respiratory protective equipment (RPE). The employer must assess the need for RPE considering the degree of danger workers may encounter and in accordance with sections 244—255 of the OHS Code.

RPE must be approved by the National Institute of Occupational Safety and Health (NIOSH) or an organization approved by a statutory Director. NIOSH approval applies to the entire respirator assembly and component parts, from the face piece to the air supply connection (if it is an airline respirator). Mixing and matching of parts or use of parts not specified in the approval will void the approval. If respiratory protective equipment is used at a work site, the OHS Code requires the development of a code of practice governing the selection, maintenance and use of respiratory protective equipment.

Employers must ensure that air used in SCBA and airline respirator equipment meets the air quality requirements of Table 1 CSA Standard

Z180.1-00, *Compressed Breathing Air and Systems*, and does not contain a substance in a concentration that exceeds 10 per cent of any OEL.

Section 250 requires employers ensure firefighters who use respiratory protective equipment (including SCBA) that depends on an effective face seal are clean shaven where the respirator seals to the skin of the face. The equipment must also be fit-tested in accordance with CSA Standard Z94.4 *Selection, Use and Care of Respirators*.

Powered mobile equipment

Part 19 of the OHS Code applies to fire department vehicles, cars, trucks and off-road vehicles such as snowmobiles and all-terrain vehicles. Workers assigned to operate powered mobile equipment must be trained, demonstrably competent, familiar with the equipment's operating instructions, and authorized by the employer to do so.

The operator must perform a visual inspection before and during (at intervals) operation of powered mobile equipment in accordance with section 257 of the OHS Code.

The employer must ensure that inspection and maintenance activities are carried out in accordance with the manufacturer's specifications, and maintaining records in accordance with section 260 of the OHS Code.

The operator must keep the cab, floor and deck 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.

Sections 280—282 set out special requirements for all-terrain vehicles (ATVs), including a prohibition on the use of three-wheeled ATVs.

Subsection 290.1 specifies licensing and

mechanical inspection requirements that apply to a worker who uses a personal vehicle for work purposes. In terms of licensing, the employer must ensure that the worker has a valid driver's license appropriate for the vehicle being operated. The worker must also ensure that their personal vehicle is maintained in sound mechanical condition – this applies to a personal vehicle used for work purposes. The intent of the requirement is to make sure that the personal vehicle is mechanically sound and safe for work use. This requirement applies to the worker. Evidence of compliance from employer may include maintenance records.

Examples of work use include:

- a. transporting equipment on behalf of the fire department or municipality,
- b. the Fire Chief using a personal vehicle as a "response unit", or
- c. transporting bottles of compressed breathing air, fire hose, etc. from the fire station to the fire scene.

An example of non-work use is being paged and then driving the personal vehicle from home to the fire station or fire scene.

Radiation exposure

Part 20 of the OHS Code applies to all work sites, including emergency operations. Although uncommon, if radiation exposure is suspected or identified, additional requirements are set out in Part 20 of the OHS Code.

Rigging

Part 21 applies to all work sites, including firefighting and rescue applications. Employers must ensure that ropes, cables and equipment associated with lifting loads comply with the requirements of Part 21. In addition, workers must only use rigging that complies with Part 21.

The use of makeshift rigging components that are load bearing is prohibited in accordance with

sections 295 and 304 of the OHS Code. Maximum load ratings of all rigging must be legibly and conspicuously marked on the rigging or, if not practicable to do so, otherwise made available to the workers.

Safeguards

Part 22 covers safeguards to protect workers operating equipment and machinery. Where a manufacturer has provided a guard, it must remain in place and be used as intended. If no guard was provided, the employer must provide safeguard in accordance with section 310.

Scaffolds and temporary work platforms

Part 23 of the OHS Code covers scaffolds and temporary work platforms. Fire services utilizing or encountering elevated ladders, booms or platforms, scaffolds and temporary work platforms must comply with Part 23.

Toilet and washing facilities

Part 24, section 356(5) of the OHS Code requires that an employer arrange for access to toilet facilities for workers at temporary work sites. Pre-planning must consider firefighter rest and recovery (rehabilitation) and personal needs.

Employers must provide drinking fluids at all work sites in quantities sufficient for the number of workers and the conditions in which they are working. This must include potable water.

Tools equipment and machinery

Part 25 of the OHS Code applies to all work sites, including those involving emergency operations. Each tool, piece of equipment or machine used will have training requirements and operating procedures for the safe use and maintenance.

Ventilation systems

Part 26 of the Code applies to situations when fire services use portable ventilation systems during firefighting activities. In such cases, the workers may be facing airborne contaminants, vapours, gases or particulates, a flammable atmosphere, or an atmosphere lacking in oxygen. Sections 386 through 388 specify requirements when ventilation systems are used. These systems must be designed, installed and maintained in accordance with established engineering principles and maintained and operated in accordance with manufacturer specifications. Additional requirements are found in Part 26 of the OHS Code.

Violence and harassment

Part 27 of the OHS Code applies to all fire department activities. When the hazard assessment required in Part 2 is developed, harassment and violence in the workplace must be considered. A workplace violence and harassment plan must be developed by the employer. The plans must include both policies and procedures that include the requirements found in Part 27. Additional information can be found in the harassment and violence document found in the references section of this bulletin.

Training must be provided to firefighters on how to recognize workplace harassment and violence, what policies, procedures and workplace arrangements have been developed and implemented to prevent violence/harassment, appropriate response to violence and harassment (including procedures for obtaining assistance) and procedures for reporting, investigating and documenting incidents.

Psychological hazards

The *OHS Act* defines health and safety as including physical, psychological and social well-

being. Hazards under the *OHS Act* are not limited to physical hazards. An employer must take measures to control all hazards, including psychological hazards, in accordance with Part 2 of the OHS Code. Firefighters and other first responders will likely be exposed to psychosocial hazards and may be at risk of developing psychological injury/illnesses like post-traumatic stress disorder.

As with physical hazards, the employer must use elimination, or if not reasonably practicable, controls (engineering, administrative, or a combination thereof) in relation to the psychosocial hazards. The use of personal protective equipment will generally be inapplicable in the case of psychosocial hazards. Controls may include adjusting the organization of the work to eliminate the hazard or reduce exposure, worker training, recuperation time/exposure limits, post-exposure treatment (i.e. counselling) and other measures.

A bulletin has been developed that outlines areas of OHS legislation pertaining to psychological hazards in the workplace and referenced at the end of this document.

Working alone

Part 28 of the OHS Code applies if a worker is working alone at a work site and if assistance is not readily available if there is an emergency or the worker is injured or ill. An employer must provide an effective communication system consisting of radio, landline or cellular telephone, or some other effective means of electronic communication, that includes regular contact by the employer at intervals appropriate to the nature of the hazard associated with the worker's work. The employer needs to make regular contact with workers working alone.

Workplace Hazardous Materials Information System (WHMIS)

"Hazardous products" used by an employer (including a fire department) must be used, stored, handled, and manufactured in accordance with Part 29 of the OHS Code. Hazardous products are defined any product, mixture, material or substance classified in accordance with regulations made under the federal WHMIS legislation. WHMIS is a system designed to provide information to workers on hazardous products through safety data sheets, labelling and training.

Fire department personnel must receive WHMIS training in accordance with section 397 of the OHS Code.

Demolition

Part 30 of the OHS Code applies to demolition. If a fire department must demolish a structure in the course of its suppression activities, Part 30 of the OHS Code applies as it pertains to the disconnection of utilities. Critical utility disconnections include natural gas, propane and electricity.

Excavating and tunneling

Employers must ensure worker health and safety in emergencies involving excavations and tunneling. This includes shoring, bracing, and other requirements found in Part 32 OHS Code.

Explosives

Part 33 of the OHS Code contains requirements for explosives and applies to all employers. Fire departments can use explosives for creating fire breaks and other fire fighting techniques, and some also provide fireworks and pyrotechnic services in their communities. All requirements of Part 33 of the OHS Code dealing with explosives must be met, including

storage, transportation, handling, qualifications and safe work procedures/practices.

Forestry

Part 34 relates to forestry related activities. Some provisions may be applicable to forest fire fighting.

Health care industry and biological hazards

Part 35 of the OHS Code applies to all

employers where workers may be exposed to blood borne pathogens or other bio-hazardous material, including fire services. It requires an employer to ensure a worker's exposure to blood borne pathogens or other bio-hazardous material is controlled in accordance with section 9 of the OHS Code.

Policies and procedures must be developed and implemented to deal with post-exposure management for firefighters exposed to bio-hazardous materials.

Contact Us

OHS Contact Centre

Throughout Alberta

- 1-866-415-8690

Edmonton & surrounding area

- 780-415-8690

Deaf or hearing impaired:

- 1-800-232-7215 (Alberta)
- 780-427-9999 (Edmonton)

PSI Online Reporting Service

alberta.ca/report-potentially-serious-incidents.aspx

Website

alberta.ca/occupational-health-safety.aspx

Get Copies of the OHS Act, Regulation and Code

Alberta Queen's Printer

qp.gov.ab.ca

Occupational Health and Safety

alberta.ca/ohs-act-regulation-code.aspx

FOR MORE INFORMATION:

Alberta Workers' Compensation Act

qp.alberta.ca/documents/Acts/W15.pdf

Assessment and control of Psychological Hazards in the Workplace (BP024)

ohs-pubstore.labour.alberta.ca/bp024

Guideline for Developing a Code of Practice for Confined Space Entry (CS001)

ohs-pubstore.labour.alberta.ca/cs001

Development of a Code of Practice for Respiratory Protective Equipment (PPE004)

ohs-pubstore.labour.alberta.ca/ppe004

Fire and explosion bulletins

ohs-pubstore.labour.alberta.ca/fire-explosion

Hazard assessment and control (BP018)

ohs-pubstore.labour.alberta.ca/bp018

Harassment and Violence in the Workplace (LI045)

ohs-pubstore.labour.alberta.ca/li045

Understanding and Implementation Standards – National Fire Protection Agency

nfpa.org/Assets/files/AboutTheCodes/1021/Standards%20Guide_1021_1407.pdf

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