

**Legislative Review  
Underground Coal Mining  
Comparison of Selected Topics (Dec 2006)  
British Columbia, Alberta, Nova Scotia and Federal Regulations/Codes**

**by**

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Questions	British Columbia Health, Safety and Reclamation Code for Mines in British Columbia – Updated to 2003	Alberta Occupational Health and Safety Code Explanation Guide- Part 36 Mining – Updated April 2004	Nova Scotia Underground Mining Regulations (2003)	Federal Coal Mines (CBDC) Occupational Safety and Health Regulations (1990) – Canada Labour Code
Extra O <sub>2</sub> or self-contained self-rescue devices	<p><b>Section 1.8.8 Self Rescuers</b> All persons going underground in a mine shall carry a self rescuer approved in accordance with NIOSH 42 CFR Part 84 on their person, or in the case of equipment operators maintained within arms reach while they are operating the equipment.</p> <p>Extra self-rescuers not mentioned</p>	<p><b>Part 36 Section 692</b> requires everyone to carry a self-rescuer Extra self-rescuers not mentioned</p> <p><b>692</b> An employer must (a) provide a self rescuer approved by the Director to each worker who goes underground, (b) require that each worker be in possession of a self rescuer at all times when underground, (c) ensure that each worker is trained in the use of the self rescuer, and (d) ensure that each worker receives refresher training every 2 years in the use of the self rescuer.</p>	<p><b>Section 87 &amp; 88</b> require everyone to carry a self-rescuer. 87(3)(c) specifically mentions caches of self-rescuers but doesn't specifically say you have to have them</p> <p>Self-rescuers <b>87</b> (1) An employer must provide every person who is permitted to enter the underground with (a) an adequately maintained self-rescuer that meets the requirements of subsection (2); and (b) training in the use of a self-rescuer. (2) An employer must ensure that a self-rescuer (a) provides protection against dust; and (b) has a capacity of at least 60 minutes at 1% by volume of carbon monoxide in the air being tested. (3) If a person might travel to a point that is further distant than 30 minutes travelling by foot from the surface or a refuge station, an employer must ensure that (a) the self-rescuer provided in subsection (1) is capable of protecting the user for twice the time it would take the average person to travel by foot from the furthest point travelled to, to the closest of the surface or a refuge station, at 1% by volume of carbon monoxide in the air being tested; or (b) if the person has access to a self-contained breathing apparatus at the person's workplace, the combined capacity of the self-contained breathing apparatus is capable of protecting a user for twice the time it would take the average person to travel by foot from the furthest point travelled to, to the closest of the surface or a refuge station; (c) caches of self-rescuers are placed at adequate numbers of locations and that (i) each cache is located in an area in which the air will not become contaminated during an emergency, and (ii) each self-rescuer in a cache is capable of providing protection for twice the time it would take the average person to travel by foot to the closest of (A) the next cache, (B) the surface, or (C) a refuge station. (4) A person must carry an adequate self-rescuer at all times while underground.</p> <p>Procedure for assessing and maintaining self-rescuers <b>88</b> An employer must develop a procedure for (a) assessing self-rescuers and self-contained breathing apparatuses, in accordance with the manufacturers' specifications, to determine whether they are capable of meeting the requirements of subsections 87(2) and (3); and (b) operating, inspecting and maintaining self-rescuers and self-contained breathing apparatuses in accordance with the manufacturers' specifications.</p>	<p><b>Section 152</b> requires everyone to carry a self-rescuer Extra self-rescuers not mentioned</p> <p><b>152</b> (1) The employer shall provide a self-rescuer to every person granted access underground and shall train the person in the use of it. (2) The employer shall retrain every employee who goes underground in the use of the self-rescuer at least once every three years. (3) Every employee shall carry a self-rescuer at all times when the employee is underground.</p>
Refuge rooms for miners	<p><b>Section 6.13</b> Refuge Stations are required. <b>6.13.1</b> Where a workplace in an underground mine is more than 300 m from a mine portal or from a shaft station which is used to access that workplace, the manager shall provide and maintain, in a suitable location for that workplace, a refuge station in accordance with section</p>	<p><b>Part 36 Section 559</b> Refuge Stations are required</p> <p><b>559</b>(1) An employer at an underground coal mine must ensure that there are refuge stations located at strategic places in the mine. (2) A refuge station must</p>	<p><b>Sections 146 – 153</b> Refuge Stations are required</p> <p>Refuge stations required <b>146</b> (1) An employer must construct, inspect, and maintain a refuge station every 300 m underground in an active working if a person has to travel more than 500 m to reach</p>	Not Mentioned

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	<p>6.13.3.</p> <p><b>6.13.2</b> Section 6.13.1 does not apply to a mine under initial adit development or during shaft sinking operations.</p> <p><b>6.13.3</b> Every underground refuge station shall be</p> <p>(1) clearly identified, constructed of non-combustible material, and of sufficient size to accommodate all persons working in the vicinity,</p> <p>(2) equipped with a supply of air, a supply of water, a means of communicating with the surface, a means of sealing to prevent entry of gas, and first aid equipment,</p> <p>(3) equipped with a plan of the mine clearly showing all emergency exits, and</p> <p>(4) located</p> <p>(a) 100 metres from explosives magazines,</p> <p>(b) 100 metres from flammable materials storage, and</p> <p>(c) constructed or located in such a manner to prevent inadvertent entrance or damage by vehicles, or</p> <p>(5) In the case of an underground coal mine the manager will establish at appropriate locations storage facilities with suitable equipment to allow for emergency exit from the mine.</p> <p>Note: Quinsam Coal has a portable refuge station</p>	<p>(a) be big enough to accommodate all workers working in the vicinity during 1 shift,</p> <p>(b) have water, air and a system that communicates effectively with the surface, and</p> <p>(c) be separated from adjoining workings by closeable fireproof doors arranged and equipped to prevent gases entering the refuge station.</p> <p>(3) An employer at an underground coal mine must ensure that the number of workers that can be accommodated in a refuge station is posted outside of the entrance to the station.</p> <p>(4) The Director may exempt an underground coal mine or part of a mine from subsection (1).</p> <p>Note: Also appears under Mine Rescue</p>	<p>(a) the mine exit; or</p> <p>(b) if a shaft conveyance is used to reach the surface, a shaft station.</p> <p>(2) Subsection (1) does not apply to those parts of a mine being developed by an adit or slope or during shaft development operations.</p> <p>Construction and location of refuge stations</p> <p><b>147</b> (1) An employer must ensure that a refuge station can be sealed to prevent the entry of gases and is constructed</p> <p>(a) in competent, non-combustible rock;</p> <p>(b) if it is a non-portable refuge station in a coal mine, of competent rock that may be coal, if there is an adequate non-combustible sealed barrier between the coal and the occupied space; or</p> <p>(c) if it is a portable refuge station, of non-combustible material.</p> <p>(2) An employer must ensure that a refuge station has adequate drainage for liquid and gaseous waste.</p> <p>(3) An employer must ensure that all parts of any compressed air lines, or water lines supplying the refuge station are made of non-combustible materials.</p> <p>(4) An employer must ensure that a refuge station is located</p> <p>(a) at least 100 m from a magazine, diesel fuel storage area, fuelling station or battery charging station; and</p> <p>(b) where reasonably practicable, in intake air.</p> <p>(5) An employer must ensure that a refuge station has on the outside of the refuge station, an audible signaling device and a sign identifying it as a refuge station.</p> <p>Air supply in refuge station</p> <p><b>148</b> An employer must ensure that a refuge station has an air supply that is adequate to sustain, for a minimum of 8 hours, the life of the maximum number of mine workers intended to be sheltered there, by ensuring that the refuge station is</p> <p>(a) large enough to contain the required air supply; or</p> <p>(b) equipped with a means of supplying the required air supply by way of compressed air or oxygen.</p> <p>Equipment in refuge station</p> <p><b>149</b> An employer must ensure that a refuge station is equipped with</p> <p>(a) an oxygen and flammable gas detector;</p> <p>(b) a manometer with a scale, mounted on the wall of the refuge station, capable of measuring the pressure difference between the inside and outside of the refuge station;</p> <p>(c) an adequate supply of potable water that, if supplied in containers, is exchanged for fresh water at least once a month, or is kept until its expiry date if the supply is sealed and date-stamped by a water supplier.</p> <p>(d) adequate toilet facilities, tables and benches;</p> <p>(e) an adequate means of voice communication with the surface;</p> <p>(f) adequate emergency lighting</p> <p>(g) a Number 2 First Aid Kit as defined by the Occupational Health and Safety First Aid Regulations</p>	

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			<p>made under the Act; (h) a basket-shaped stretcher with restraining straps; (i) 2 blankets; and (j) razors for shaving facial hair.</p> <p>Requirement for refuge station procedures <b>150</b> An employer must ensure that procedures are prepared for the use of a refuge station during an emergency that include (a) instructions for the conduct of persons in the refuge station; (b) instructions for entering the refuge station in a manner that protects the health and safety of persons sheltered inside the refuge station; and (c) a prohibition on smoking.</p> <p>Procedures posted at refuge stations <b>151</b> An employer must ensure that the procedures required by Section 150 are posted in a conspicuous place on the inside and on the outside of each refuge station.</p> <p>Permitted uses of refuge stations <b>152</b> An employer must ensure that a refuge station is not used for any purpose other than as a lunchroom, office, or storage area for first aid supplies and equipment, for the delivery of first aid, or as a place of refuge during an emergency.</p> <p>Monthly inspection of refuge stations <b>153</b> At least once a month, an employer must ensure that a designated person at the mine inspects, maintains and re-supplies the refuge stations and prepares a report of the inspection and any maintenance performed.</p>	
Two-way wireless communication devices	<p><b>Sections 7.7.5 &amp; 7.7.10</b> refer to radio and voice communication in shafts (OK to use radios as long as there are no hazards)</p> <p><b>7.7.5</b> A shaft signaling system using radio frequencies shall (1) be tested to determine if there is any hazard to the use of blasting caps in the mine, and (2) only be operated if precautions are taken to prevent the risk of an inadvertent or accidental detonation of any explosive material as a result of radiated energy.</p> <p><b>7.7.10</b> A system for communicating by voice shall be installed and maintained to permit communication between persons at the collar of the shaft, the landing stations, and the hoistroom for the shaft.</p> <p>Section <b>3.6.3</b> refers to “Means of Communication” – The manager shall provide a means of communication acceptable to an inspector by which the services of a physician can be obtained expeditiously.</p>	<p><b>Part 36 Sections 697 &amp; 698</b> Voice Communication – Interconnected voice communication stations are required – notes that Use of “leaky feeder” systems for hand-held two-way radios an effective supplement (Note- Section 698 lists specific locations)</p> <p><b>697(1)</b> An employer must ensure that a mine has a voice communication system between the surface and underground that consists of interconnected voice communication stations. (2) Subsection (1) does not apply to exploration drivages from the surface that are not more than 60 metres long. (3) An employer must ensure that a voice communication system has a separate back-up power supply that operates if there is a power failure.</p> <p>Location <b>698(1)</b> An employer must ensure that interconnected voice communication stations in a mine are located at the following: (a) the top and bottom of mine shafts and mine tunnel outlets and main hoisting and haulage engines; (b) main electrical distribution centres, both at the surface</p>	<p><b>Section 82 (1) &amp; (2)</b> Use of Radio Frequencies – OK to use as long as there are no hazards and Section 92(1) to (4) Communication System (doesn’t specify type)</p> <p>Use of radio frequencies <b>82 (1)</b> An employer must ensure that radio frequencies are used underground only if adequate precautions are taken to prevent (a) the inadvertent operation of a blasting device that might respond to the radio frequencies or the radiated energy; and (b) the inadvertent over-riding of a remote control. (2) If radio frequencies are used in an underground communications system, an employer must ensure that (a) the design is certified by an engineer, indicating that the system enables reliable communication underground at the mine and that precautions have been taken in accordance with subsection (1); and (b) a competent person installs the system.</p>	Not Mentioned

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		<p>and underground;</p> <p>(c) main pumping stations;</p> <p>(d) refuge stations;</p> <p>(e) at the drive of a conveyor belt and, if the conveyor belt is more than 60 metres long, at the tail end of the conveyor belt;</p> <p>(f) booster fans;</p> <p>(g) underground garages and repair shops;</p> <p>(h) a mining section as close as practical to the working face and, in the case of a longwall face, to each end of the working face;</p> <p>(i) permanently attended surface stations.</p> <p>(2) The Director may require an employer to locate interconnected voice communication stations in a mine at a place not referred to in subsection (1).</p>		
Tracking systems to locate miners	Not Mentioned	Not Mentioned	Not Mentioned	Not Mentioned
<p>Mine rescue teams</p> <p>-availability within certain travel time</p> <p>-is every mine required to have one, or may they rely on other nearby mine rescue teams ?</p>	<p><b>Section 3.7</b> Required to establish &amp; maintain mine rescue teams e.g. for 10-50 underground workers 1 team required, &gt;50 workers underground 2 teams required, &lt;10 workers underground – establish mutual aid agreements, &lt;20 working underground at any one time then minimum 3 persons trained in mine rescue</p> <p><b>3.7.1</b> The manager shall develop and file with the chief inspector, a mine rescue emergency response plan which shall be kept up to date and followed in the event of an emergency. The mine Emergency Response Plan shall contain all of the elements required in the “Mine Emergency Response Plan Guidelines for the Mining Industry,” that may be amended from time to time.</p> <p><b>3.7.2</b> The manager shall establish and maintain trained and equipped mine rescue teams at underground mines as specified in this section</p> <p>(1) where the number of employees underground at one time is less than 50, but greater than 10, 1 team,</p> <p>(2) the number of employees underground at one time is greater than 50, 2 teams, and</p> <p>(3) on every shift where there are less than 20 working underground at any one time there are 3 persons trained in mine rescue.</p> <p><b>3.7.3</b> At underground operations employing less than 10 persons underground at one time the manager shall</p> <p>(1) maintain on site such trained personnel, and equipment to provide a first response and assessment capability, and</p> <p>(2) establish mutual aid agreements with outside groups, capable of providing additional trained personnel and equipment.</p> <p><b>3.7.4</b> At all underground mines where a surface fire can compromise people, plant, or equipment the manager shall ensure sufficient trained personnel and equipment are available to provide fire suppression capability for the site.</p>	<p><b>Part 36 Section 546</b> Emergency Response Team required, See Sections 545 to 559 Note: doesn’t specifically say how many teams – Also see Part 7 Emergency Preparedness &amp; Response</p> <p>Emergency response station</p> <p><b>545(1)</b> An employer must establish, maintain and operate an emergency response station and provide facilities for conducting rescue operations and other emergency work at a mine, unless the Director exempts the mine from this section.</p> <p>(2) An employer must ensure that adequate rescue equipment and apparatus are available for immediate use at an emergency response station.</p> <p>(3) An employer must ensure that there are sufficient workers at a mine site who are trained in the use and maintenance of rescue equipment.</p> <p>Emergency response team</p> <p><b>546(1)</b> An employer must appoint a competent worker as responsible for the training of members of an emergency response team designated under Part 7.</p> <p>(2) An employer must ensure that the designated rescue and evacuation workers</p> <p>(a) are competent to perform the tasks assigned to them,</p> <p>(b) are medically fit to perform rescue operations and other emergency work at a mine,</p> <p>(c) qualify as standard first aiders in accordance with Part 11, and</p> <p>(d) have completed training approved by the Director.</p> <p>(3) An employer must ensure that the designated members of the emergency response team</p> <p>(a) practice at least every 2 months, and (b) make periodic tours of all of the workings so that they are familiar with the complete mine layout and the location of entrances and exits to work areas.</p> <p>Fire fighting training</p> <p><b>547(1)</b> An employer at an underground coal mine must</p>	<p><b>Section 68(1) &amp; (2)</b> Designation of Mine Rescue Workers and Team Captain Part 4 124-153 Emergency Preparedness Program required. Minimum requirements for mine rescue workers</p> <p>&lt;10 mine workers – minimum 2 designated mine rescue workers &amp; 2 self-contained breathing apparatuses</p> <p>10-50 mine workers 1 team &amp; 1 set of rescue equipment</p> <p>50-100 mine workers 2 teams &amp; 2 sets of rescue equipment</p> <p>100-150 mine workers 3 teams &amp; 3 sets of rescue equipment</p> <p>&gt;150 mine workers Minimum 4 teams &amp; 4 sets of rescue equipment</p> <p>Designation of mine rescue workers and team captain</p> <p><b>68(1)</b> An employer must designate competent persons who meet the qualifications of Section 455 as mine rescue workers in numbers that meet the requirements of Section 141.</p> <p>(2) An employer must designate a competent person who meets the qualifications of Section 457 as a mine rescue team captain for each mine rescue team required by Section 141.</p> <p>Emergency Preparedness Program</p> <p><b>124</b> In this Part, “emergency preparedness program” means the emergency preparedness program required by subsection 125(1).</p> <p><b>125(1)</b> An employer must develop an emergency preparedness program in consultation with</p> <p>(a) the committee, or representative; if any</p> <p>(b) the local municipality; and</p> <p>(c) the Emergency Management Office, as defined in the Emergency Management Act.</p> <p>(2) An employer must ensure that an emergency preparedness program includes</p> <p>(a) a list of the persons, on and off the mine site, whose services are needed to respond in an emergency, their</p>	<p><b>Sections 151 to 154</b> – “Mine Rescue Teams &amp; First Aid Equipment” required</p> <p>Mine Rescue Teams and First Aid Equipment</p> <p><b>151(1)</b> The mine manager shall, for each coal mine, appoint employees as mine rescue workers and organize them into one or more mine rescue teams, each consisting of not less than five mine rescue workers.</p> <p>(2) The mine manager shall appoint</p> <p>(a) a mine rescue team captain for every mine rescue team referred to in subsection (1); and</p> <p>(b) for each coal mine, a mine rescue station superintendent to supervise the mine rescue teams at the coal mine.</p> <p>(3) Every mine rescue worker shall be equipped with the equipment listed in Schedule III.</p> <p>(4) During mine rescue work, for each mine rescue worker who is engaged in actual rescue work, one mine rescue worker shall remain in readiness at the fresh air base.</p> <p>(5) Every mine rescue team shall be equipped with the equipment listed in Column I of each item of Schedule IV in the quantities set out in Column II of that item.</p> <p>(6) Every mine rescue team shall take at least one training session every month.</p> <p>(7) At least two of the training sessions referred to in subsection (6) shall be conducted annually under simulated emergency conditions underground.</p> <p>(8) Emergency procedures shall be tested at least once every two years.</p> <p>(9) The employer shall notify a safety officer at the district office of the day and time of each training session referred to in subsection (6) or (7) at least 24 hours before the training session.</p> <p><b>152(1)</b> The employer shall provide a self-rescuer to every person granted access underground and shall train the person in the use of it.</p> <p>(2) The employer shall retrain every employee who goes underground in the use of the self-rescuer at least once every three years.</p>

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	<p><b>3.7.5</b> The manager of an open pit mine employing more than 25 persons per shift shall ensure that (1) there is one fully trained and equipped mine rescue team, and (2) on every shift where more than 10 persons are working, there are four persons trained in mine rescue procedures.</p> <p><b>3.7.6</b> The normal compliment of a mine rescue team shall be 6 qualified members, one of whom shall be the team captain, one the vice captain, and one the coordinator who shall remain at the fresh air base at all times.</p> <p><b>3.7.7</b> A person shall not be considered as a qualified member of a mine rescue team unless (1) possessing a valid mine rescue certificate and a valid St. John "Standard" first aid certificate, or equivalent, (2) free from a beard, moustache, or sideburns that could interfere with the facepiece seal of any breathing apparatus, (3) considered competent to act as a mine rescue team member by the person appointed as a trainer under section 3.7.9, and (4) medically fit for the nature of the work required.</p> <p><b>3.7.8</b> The manager shall ensure a record of all mine rescue training is maintained at the mine site, and shall (1) ensure the logbook is maintained by the qualified person appointed by the manager, to conduct the training, (2) contain the particulars of the training, including the names of those participating and the trainer, and (3) shall note the condition of all equipment used during the training.</p> <p><b>3.7.9</b> The manager shall (1) appoint a qualified person as a trainer for mine rescue team members, (2) ensure that all mine rescue team members practice as a team for not less than 8 hours during each 3 month the mine operates, and (3) ensure that all mine rescue personnel are not underground at any one time except for rescue work or training.</p> <p><b>3.7.10</b> Where self-contained breathing apparatus is required it shall be of a type approved by a recognized certification agency, and suitable for the intended work.</p> <p><b>3.7.11</b> The manager shall ensure that the plans required under part 6 of the code are readily available for the use of mine rescue teams.</p> <p><b>3.7.12</b> The manager shall appoint a qualified person (1) to be responsible for the care and maintenance of all rescue apparatus, (2) the entries into a logbook to be kept at the mine recording the condition of all equipment used for mine rescue or fire fighting, and (3) the care of the rescue equipment storage room, and</p>	<p>ensure that (a) all workers newly employed at the mine receive training in the use of fire fighting equipment during the first 3 months of their employment, and (b) all workers continually employed underground receive a practical course in the use of fire fighting equipment every 2 years. (2) An employer must keep a record of the workers attending fire fighting training.</p> <p>Fire precautions <b>548(1)</b> An employer at an underground coal mine must ensure that (a) not more than 700 litres of flammable liquid is stored in the mine unless the flammable liquid is stored in a fireproof receptacle or chamber, (b) mine material likely to cause a fire does not accumulate in any working part of the mine, (c) mine material likely to cause a fire is kept in fireproof containers that are removed and disposed of at regular intervals, (d) flammable construction material is not used in an area of the mine in which stationary compressors or other stationary equipment capable of producing more than 400 kilowatts is installed, (e) tarred or other building paper is not used in the mine, and (f) propane is not used in the mine except in mine heaters in portal structures. (2) An employer at an underground coal mine must ensure that the following are constructed of non-flammable material or treated to make them fire resistant: (a) underground portals; (b) main fan installations; (c) booster fan installations; (d) ventilation air crossings; (e) stoppings, regulators and doors. (3) An employer at an underground coal mine must ensure that workers use dust-suppression devices if concentrations of dust may be hazardous. (4) An employer at an underground coal mine must ensure that unattended conveyor belt transfer points have automatic fire warning devices that sound an alarm in the manned surface control room. (5) An employer at an underground coal mine must ensure that equipment brought into the mine by workers uses fire resistant hydraulic fluids that meet the requirements of CSA Standard CAN/CSA-M423-M87 (R1995), Fire-Resistant Hydraulic Fluids. (6) Subsection (5) does not apply to the axles, fluid couplings and brake systems on vehicles.</p> <p>Fireproofing of roadways <b>549(1)</b> An employer at an underground coal mine must ensure that, from not less than 5 metres on the air intake side to not less than 10 metres on the return air side, the</p>	<p>telephone numbers and contact information, and their assigned responsibilities; (b)an organizational chart that includes (i) the names of the persons listed in [under clause] (a) and their assigned responsibilities, and (ii) the contact information for emergency services agencies of the local municipality or the Province that provide services as part of the Emergency Preparedness Program; (c) procedures for notifying agencies or authorities as required by these regulations or the emergency preparedness program; (d) a list of all emergency supplies and equipment, including (i) the quantity of each item, (ii) a description of the location of each item, and (iii) details on the use of each item; (e) an adequate procedure for fighting fires at the mine; (f) a mine rescue procedure for the underground, to be followed in the event of an emergency, including (i) the circumstances under which the mine rescue procedure must be implemented, (ii) how mine rescue teams and equipment will be prepared, (iii) how the aid agreement required by Section 142 will be implemented, (iv) instructions to be followed on the surface and underground to ensure adequate direction and supervision when the mine rescue procedure is implemented, and (v) written instructions describing how to evacuate each workplace; (g) a description of the warning system for the underground required by Section 131; (h) details on the availability of (i) emergency communication facilities, (ii) emergency transportation facilities, (iii) emergency power equipment, and (iv) ventilation equipment; (i) a plan that shows the location of all fire-extinguishing equipment, fire- suppression systems, and fire hydrants; and (j) a description of training to be offered to municipal emergency response staff. (3) An employer must ensure that the emergency preparedness program, to the extent reasonably practicable, is coordinated with (a) all emergency plans developed; and (b) support services provided by the local municipality and the Province. (4) An employer must file the emergency preparedness program with the Director and keep a copy of it for at least of 2 years after it is revised, or becomes obsolete.</p> <p>Distribution of copies of emergency preparedness program <b>126</b> An employer must ensure that (a) copies of the emergency preparedness program are available to employees;</p>	<p>(3) Every employee shall carry a self-rescuer at all times when the employee is underground.</p> <p><b>153</b> (1) The employer shall provide and maintain the first aid supplies and equipment set out in Column I of each item of Part I of Schedule V in the quantities set out in Column II of that item, within 100 m of (a) the face of each development; and (b) each working face on any roadway to that face. (2) The employer shall provide every underground manager, overman and shotfirer with a first aid kit that contains the supplies set out in Part II of Schedule V. (3) Every overman and shotfirer shall carry a first aid kit referred to in subsection (2) at all times when underground.</p> <p><b>154</b> (1) At least once every month, a qualified person shall (a) inspect the first aid supplies and equipment referred to in subsections 152(1) and 153(1) and (2); and (b) make a written report of the results of the inspection referred to in paragraph (a) to the mine rescue station superintendent. (2) The report referred to in paragraph (1)(b) shall be countersigned by the mine rescue station superintendent.</p>

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	<p>equipment caches.</p> <p><b>3.7.13</b> The chief inspector may establish mine rescue stations at places the chief inspector considers necessary, all of which shall be equipped and maintained by the government under the direction of the chief inspector.</p>	<p>roadway support and lining of a conveyor transfer or loading point installed in the mine is constructed</p> <p>(a) of fire resistant materials, or</p> <p>(b) subject to subsection (2), with the minimum amount possible of combustible materials.</p> <p>(2) If reasonably practicable, an employer must ensure that combustible materials in a mine are treated with a fire resistant coating.</p> <p>Conveyor clearance</p> <p><b>550</b> An employer at an underground coal mine must ensure that</p> <p>(a) a clearance is maintained between the bottom rollers of conveyor belt systems and the floor of the roadway that permits workers to remove combustible material, and</p> <p>(b) if the clearance is obtained by mounting the conveyor belt system on pillars, the pillars are of non-flammable material.</p> <p>Fire detection systems</p> <p><b>551(1)</b> An employer at an underground coal mine must ensure that</p> <p>(a) 1 or more fire detection systems are installed in the mine, and</p> <p>(b) the system automatically activates an alarm in the manned surface control room if the system stops working.</p> <p>(2) The Director may require an employer to install a fire detection system at a specific location in an underground coal mine.</p> <p>Emergency warning system</p> <p><b>552</b> An employer at an underground coal mine must</p> <p>(a) establish an effective emergency warning system that warns all workers at a work area of an emergency that requires workers to evacuate the area promptly, and</p> <p>(b) ensure that the emergency warning system is tested at least once in every 12 month period.</p> <p>Evacuation</p> <p><b>553</b> An employer at an underground mine must</p> <p>(a) prepare procedures for safe evacuation of the mine,</p> <p>(b) post copies of the procedures at conspicuous places on the surface and underground, and</p> <p>(c) ensure that all workers</p> <p>(i) are instructed in the procedures,</p> <p>(ii) recognize the emergency warning, and</p> <p>(iii) are familiar with the emergency escape routes.</p> <p>Fire fighting equipment</p> <p><b>554(1)</b> An employer at an underground coal mine must ensure that fire fighting equipment is provided</p> <p>(a) at or near every structure where fire may endanger life, and</p> <p>(b) at all underground locations where a fire hazard may exist.</p> <p>(2) An employer at an underground coal mine must ensure that if there is a fire, the direction of the mine ventilation</p>	<p>(b) each person who works at the mine who has assigned responsibilities under the Emergency Preparedness Program receives adequate training and up-to-date information relating to their responsibilities; and</p> <p>(c) each person or resource who has assigned responsibilities under the Emergency Preparedness Program, but does not work at the mine, receives an up-to-date copy of the Emergency Preparedness Program.</p> <p>Posting of emergency procedures, evacuation procedures and current versions of documents</p> <p><b>127</b> An employer must ensure that a copy of the written instructions required by clause 125(2)(f)(v) describing how to evacuate each workplace, is posted at conspicuous places in each area of the mine to which the instructions apply, including at every shaft station, and in every underground garage or shops, refuge station, first-aid station, and lunchroom.</p> <p>Notifying Director of emergency</p> <p><b>128</b> An employer must notify the Director immediately when the employer implements the emergency preparedness program, except in the case of a test of its operation.</p> <p>Monitoring of emergency preparedness program</p> <p><b>129 (1)</b> An employer must permit an officer to monitor all emergency preparedness program operations.</p> <p>(2) Despite the content of an emergency preparedness program, an officer monitoring its implementation may make any order or take any action authorized by the Act to ensure the safety of a person at the mine.</p> <p>Training of municipal emergency response staff</p> <p><b>130</b> An employer must, at least once a year, offer municipal emergency response staff the training referred to in clause 125(2)(j).</p> <p>Warning system</p> <p><b>131 (1)</b> An employer must establish, construct, operate, inspect, and maintain a warning system for the underground that is made up of</p> <p>(a) an alarm that is adequate to simultaneously warn persons underground of an emergency requiring prompt evacuation of their workplaces, and persons on the surface of the emergency; and</p> <p>(b) procedures for</p> <p>(i) activation of the alarm, and</p> <p>(ii) adequate response by persons to the alarm.</p> <p>(2) An employer must ensure that the alarm required as part of the warning system</p> <p>(a) is protected against weather at all times, maintained and available for immediate use; and</p> <p>(b) if powered, has a back-up power source, or a system that uses various power sources, for its activation system.</p> <p>(3) For greater certainty, an alarm required as part of the warning system need not be powered.</p>	

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		<p>air flow will not prevent or hamper the effective use of the fire fighting equipment.</p> <p>(3) An employer at an underground coal mine must ensure that fire fighting equipment</p> <p>(a) is inspected once a month,</p> <p>(b) except for fire extinguishers, is tested once in every 3 month period, and</p> <p>(c) the results of the inspection are recorded in a log book maintained for that purpose.</p> <p>Fire extinguishers</p> <p><b>555</b> An employer at an underground coal mine must ensure that there are at least 2 suitable fire extinguishers</p> <p>(a) at each stationary electric or diesel motor or transformer in the mine, and</p> <p>(b) at each switchgear in use in the mine.</p> <p>Location of equipment</p> <p><b>556(1)</b> An employer at an underground coal mine must ensure that there is a mine plan that shows the location of all fire fighting pipelines, water control valves, fire stations and fire cabinets in the mine.</p> <p>(2) The employer at an underground coal mine must ensure that the mine plan is</p> <p>(a) reviewed at intervals of not more than 3 months and updated as required, and</p> <p>(b) readily available to workers in a work area during an emergency.</p> <p>Water supply</p> <p><b>557</b> An employer at an underground mine must ensure that the water supply meets the following:</p> <p>(a) the supply of available water intended for fire fighting is not less than 100 cubic metres;</p> <p>(b) the system can supply water to any part of the mine at the pressure and volume necessary for fire fighting;</p> <p>(c) if electric pumps are used to maintain the water supply, there is a standby pumping system whose power supply is not dependent on the main electrical system for the mine;</p> <p>(d) the main fire fighting water supply is not located in a return air roadway.</p> <p>Water control valves</p> <p><b>558(1)</b> An employer at an underground mine must ensure that fire fighting water control valves meet the requirements of this section and are located</p> <p>(a) on the intake side of conveyor loading points, transfer points and main junctions,</p> <p>(b) along fire ranges so that the distance between valves is not more than 100 metres,</p> <p>(c) at points central to room and pillar workings, and</p> <p>(d) as close as reasonably practicable to longwall faces.</p> <p>(2) An employer at an underground coal mine must ensure that the fire fighting system and water control valves are capable of delivering a flow of not less than 4 litres per second.</p> <p>(3) An employer at an underground mine must ensure that</p>	<p>(4) An employer must post an explanation of the use of the warning system and a copy of the procedures required under clause (1)(b) that are applicable to a particular area of the mine, at a conspicuous location in that area, including at every shaft station, in underground garage or shop, refuge station, first-aid station, and lunchroom.</p> <p>Training for warning system</p> <p><b>132</b> An employer must ensure that all persons working at the mine are adequately instructed and trained regarding their duties and responsibilities if the warning system is implemented.</p> <p>Testing of warning system</p> <p><b>133 (1)</b> Each year an employer must, without prior notice, conduct at least one test of the warning system for each shift at the mine.</p> <p>(2) The tests required by subsection (1) must be taken</p> <p>(a) at different dates, spread out over the year; and</p> <p>(b) during shifts that include the maximum number of mine workers at the mine.</p> <p>(3) An employer must ensure that the results of the tests required by subsection (1) are recorded.</p> <p>Maintenance and storage of mine rescue equipment</p> <p><b>134 (1)</b> An employer must designate a competent person to construct, operate, inspect, maintain and dismantle the mine rescue equipment.</p> <p>(2) An employer must ensure that the mine rescue equipment is</p> <p>(a) constructed, operated, inspected, maintained and dismantled in accordance with the manufacturer's specifications;</p> <p>(b) stored in a room set aside for the sole purpose of storing it; and</p> <p>(c) readily available for use.</p> <p>Record mine rescue equipment and maintenance</p> <p><b>135</b> The employer must keep a record of</p> <p>(a) the mine rescue equipment intended for use at the mine, for as long as the equipment is intended for use at the mine; and</p> <p>(b) equipment maintenance records for the mine rescue equipment intended for use at the mine for as long as the equipment is intended for use at the mine plus 2 years.</p> <p>Plans readily available to mine rescue team</p> <p><b>136 (1)</b> An employer must make readily available to a mine rescue team any information required in an emergency by the mine rescue team including the</p> <p>(a) mine survey plan required by Section 50;</p> <p>(b) electrical installations plan required by Section 51;</p> <p>(c) ground control procedure required in Section 52; and</p> <p>(d) ventilation plan required in Section 53.</p> <p>(2) An employer must provide an up-to-date plan of the mine that is adequate for mine rescue purposes to a mine rescue team before the team engages in a mine rescue</p>	



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		<p>the following are as close as is reasonably practicable to each fire fighting water control valve:</p> <ul style="list-style-type: none"> <li>(a) nozzles with a minimum internal diameter of 38 millimetres;</li> <li>(b) hoses</li> <li>(i) long enough to cover the distances between the valves,</li> <li>(ii) with a minimum internal diameter of 38 millimetres, and</li> <li>(iii) with a working pressure of 1000 kilopascals.</li> </ul> <p>Refuge stations</p> <p><b>559(1)</b> An employer at an underground coal mine must ensure that there are refuge stations located at strategic places in the mine.</p> <p>(2) A refuge station must</p> <ul style="list-style-type: none"> <li>(a) be big enough to accommodate all workers working in the vicinity during 1 shift,</li> <li>(b) have water, air and a system that communicates effectively with the surface, and</li> <li>(c) be separated from adjoining workings by closeable fireproof doors arranged and equipped to prevent gases entering the refuge station.</li> </ul> <p>(3) An employer at an underground coal mine must ensure that the number of workers that can be accommodated in a refuge station is posted outside of the entrance to the station.</p> <p>(4) The Director may exempt an underground coal mine or part of a mine from subsection (1).</p> <p>Note: Also appears under Refuge Stations</p>	<p>operation.</p> <p>Fresh air base</p> <p><b>137 (1)</b> If required during a mine rescue operation, an employer may establish a fresh air base underground to be used as a base for the mine rescue operation.</p> <p>(2) During a mine rescue operation, an employer must ensure that</p> <ul style="list-style-type: none"> <li>(a) for each mine rescue team that is actively engaged in mine rescue work, there is, at the nearest to the actively engaged team’s source of fresh air, a mine rescue team fully equipped and ready to carry out a rescue; and</li> <li>(b) for each mine rescue team required by clause (a), there is a mine rescue team available at the mine.</li> </ul> <p>Communication system for mine rescue teams</p> <p><b>138 (1)</b> An employer must ensure there is system of devices available for communicating by voice during a mine rescue operation that enables</p> <ul style="list-style-type: none"> <li>(a) adequate contact between the surface and any fresh air base; and</li> <li>(b) where reasonably practicable, contact between the surface or fresh air base and all mine rescue teams operating underground.</li> </ul> <p>(2) An employer must designate a competent person to transmit instructions to a mine rescue team engaged in a mine rescue operation, and no other person is permitted to transmit instructions to a mine rescue team.</p> <p>(3) The competent person designated under subsection (2) must give the instructions to all members of the mine rescue team simultaneously, except when this is not reasonably practicable.</p> <p>Set of mine rescue equipment</p> <p><b>139</b> A set of mine rescue equipment consists of</p> <ul style="list-style-type: none"> <li>(a) a direct reading hand-held meter capable of giving a determination within 5 minutes of the start of the sampling period of the concentration of flammable gas, oxygen and noxious gases or vapours likely to be encountered during a mine rescue;</li> <li>(b) a positive-pressure oxygen therapy apparatus capable of supplying oxygen for medical use at a constant flow of at least 6 L per minute for a duration of at least 25 minutes;</li> <li>(c) a basket-shaped stretcher equipped with restraining straps;</li> <li>(d) 2 blankets;</li> <li>(e) 1.5 m of utility rope;</li> <li>(f) 2 horns;</li> <li>(g) 3 hand-held smoke-making devices;</li> <li>(h) a cane with a brass tip;</li> <li>(i) a link-line capable of linking all members of a mine rescue team;</li> <li>(j) notebooks, chalk and pens;</li> <li>(k) 2 atmosphere-supplying self rescuers, not including those already assigned to persons underground;</li> <li>(l) 6 self-contained breathing apparatuses with full face pieces and a minimum utilization time of 4 hours; and</li> </ul>	

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			<p>(m) such auxiliary equipment and supplies as recommended by the manufacturer or supplier of any of the mine rescue equipment specified in this Section.</p> <p>High pressure oxygen booster pump  <b>140 (1)</b> An employer must ensure that each mine has at least 1 high-pressure oxygen booster pump that is capable of boosting the pressure in the cylinder being charged to at least 30 MPa for use in a mine rescue operation.  (2) Subsection (1) does not apply to a mine that has fewer than 50 mine workers employed, as long as the aid agreement required by Section 142 provides for the supply of a pump described in subsection (1) to the mine.</p> <p>Minimum requirements for mine rescue workers and equipment  <b>141 (1)</b> An employer at a mine that has 10 or fewer mine workers employed must ensure that the mine has  (a) at least 2 designated mine rescue workers from among the mine workers employed at the mine; and  (b) one set of mine rescue equipment, except that despite clause 139(l), the mine is only required to have 2 self-contained breathing apparatuses.  (2) An employer at a mine that has more than 10 but fewer than 50 mine workers employed must ensure that the mine has  (a) at least 1 mine rescue team made up of mine workers employed at the mine; and  (b) 1 set of mine rescue equipment for each mine rescue team.  (3) An employer at a mine that has more than 50 but fewer than 100 mine workers employed must ensure that the mine has  (a) at least 2 mine rescue teams made up of mine workers employed at the mine; and  (b) 1 set of mine rescue equipment for each mine rescue team.  (4) An employer at a mine that has more than 100 but fewer than 150 mine workers employed must ensure the mine has  (a) at least 3 mine rescue teams made up of mine workers employed at the mine; and  (b) 1 set of mine rescue equipment for each mine rescue team.  (5) An employer at a mine that has 150 or more mine workers employed must ensure the mine has,  (a) at least 4 mine rescue teams made up of mine workers employed at the mine; and  (b) 1 set of mine rescue equipment for each mine rescue team.</p> <p>Requirement for mine rescue worker aid agreement  <b>142</b> An employer must have an aid agreement, in writing, with another source to supply the number of fully equipped mine rescue workers that is adequate to effect a mine rescue at the mine.</p>	

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			Mine rescue team <b>143</b> An employer must ensure that a mine rescue team consists of at least 6 designated mine rescue workers one of whom must be designated a spare and another one of whom must be designated mine rescue team captain.	
Ventilation – may companies use air brought through the conveyor belt to ventilate the working face ?	Not mentioned – i.e. Not specifically prohibited	Not mentioned – i.e. Not specifically prohibited	Not mentioned – i.e. Not specifically prohibited	Not mentioned – i.e. Not specifically prohibited
Inspections – frequency and how they are conducted	<p><b>Section 1.6.3</b> Inspections The committee shall (1) inspect as many of the work sites as it considers appropriate every month and as soon as possible after the inspection, meet to discuss its findings and any other matters concerning health and safety, and (2) prepare minutes of the meeting including a description of conditions found during the inspection.</p> <p><b>Section 5.3</b> Inspection &amp; Maintenance of Power Systems</p> <p><b>5.3.1</b> The manager of a coal mine shall (1) develop an inspection and maintenance schedule for all electrical equipment in use underground or in any hazardous location, as defined by the Canadian Electrical Code, and (2) designate qualified persons to make the inspections and carry out the maintenance as described in the approved schedule.</p> <p><b>5.3.2</b> At any place in an underground coal mine, or in any hazardous location where flammable gas could accumulate, the repair, adjustment, or replacement of electrical equipment shall only be carried out (1) after the equipment has been disconnected from the power supply and is electrically dead, and (2) in a location where the electrician doing the work is satisfied that no dangerous concentration of flammable gas is present.</p> <p><b>5.3.3</b> In any location where flammable gas could accumulate in dangerous amounts, the manager shall ensure that an approved automatic gas detector is available to continually monitor the air at that location. The monitor shall be of a type that will give an audible or visual warning whenever a predetermined percentage of flammable gas is present.</p> <p><b>Section 6.4</b> All active workings to be examined by shiftboss or supervisor at least twice per shift</p> <p><b>6.4.1</b> (1) All active workings shall be examined by the certified shiftboss or supervisor with assigned responsibility to ascertain that they are in a safe working condition, as often as the nature of the work necessitates. (2) All persons working underground shall have their work areas inspected by a shiftboss or supervisor at least twice per shift.</p>	<p><b>Part 36 – Sections 689 &amp; 690</b> deal with inspection (pre-shift inspections) <b>Section 604</b> - Examination (conveyor system) <b>Section 730</b> – Gas Inspections</p> <p><b>689</b> An underground coal mine foreman must ensure that entrances to any place found unsafe during a work shift are fenced off at sufficient distances to prevent workers entering the unsafe place.</p> <p><b>690</b>(1) An employer must ensure that a shift report is completed by an underground coal mine foreman at a mine. (2) At the beginning of a work shift, an underground coal mine foreman must read and initial the reports of the underground coal mine foreman of the immediately preceding shift and note whether a hazard has been reported. (3) Before work begins, an underground coal mine foreman must inspect that section of the mine assigned to the underground coal mine foreman unless an inspection was carried out by an underground coal mine foreman within the immediately preceding 4 hours. (4) Immediately at the end of a work shift, an underground coal mine foreman must post an inspection report that includes the names of workers remaining in the foreman’s section of the mine at the end of the work shift. (5) The report posted under subsection (4) must be in the designated place and accessible to anyone who might need to determine the location and number of workers who are still underground.</p> <p><b>604</b> In an underground coal mine, the employer must ensure that a belt line is examined by a worker (a) at least once during every work shift, and (b) following the last work shift if there is an interruption in the work.</p> <p><b>730</b>(1) An underground coal mine manager must ensure that within 4 hours of each shift commencing work, a mine official with an approved gas testing device inspects the part of a mine being worked, or intended to be worked, and the roadways leading to that part. (2) A mine official must inspect for gas at the working face of every work area, at the edge of the gob, in roof cavities and anywhere else that gas may accumulate. (3) A mine official who makes the inspection must (a) report to the mine manager on the conditions of the part of the mine, the roadways and the explosion barriers inspected for gas and ventilation, and</p>	<p><b>Section 70</b> – Designation of mine examiner at a coal mine <b>Section 75(1) &amp; (2)</b> – Employer to “verify systems” before beginning mining activity <b>Sections 117 to 123</b> – General inspections at a coal mine + report(s) e.g. beginning of each shift, during each shift, every 24 hours, every week</p> <p>Designation of mine examiner at a coal mine <b>70</b> An employer at a coal mine must designate a least 1 competent person who meets the qualifications of Section 464 as a mine examiner.</p> <p>Employer to verify systems <b>75</b> (1) Before beginning mining activity, an employer must verify and document the performance of all systems, procedures, equipment, and installations at the mine that may impact health and safety, to ensure that they meet the plans and specifications and operate in conformity with the design intent. (2) An employer who proposes to undertake an activity described in Section 37 to 42 or 44 must, prior to its use or implementation, verify and document the performance of the system, procedure, equipment, or installation to ensure that it meets the plans and specifications and operates in conformity with the design intent.</p> <p>General inspections at a coal mine <b>117</b> (1) An employer must ensure that a mine examiner at a coal mine inspects (a) each working face of the mine (i) within the 4 hours immediately before the beginning of each shift in a section, and (ii) if persons are present, at intervals not exceeding 8 hours after the initial inspection referred to in subclause (i); and (b) each place underground (i) at which material is being worked to repair or enlarge a travelway, (ii) from which equipment, tools, or supports are being removed or salvaged, or (iii) at which persons might work and through which persons do not regularly travel, that is not included in a section, at the beginning of each shift and at least once during each shift. (2) In addition to the inspections required by subsection (1), an employer must ensure that a mine examiner at a coal mine also inspects (a) at least once during each shift, every part of a section that is allotted to the mine examiner for inspection</p>	<p><b>Section 39 (1) &amp; (2)</b> – vertical shafts <b>Section 40</b> – Overmen’s Sections <b>Section 41</b> – pre-shift <b>Section 42</b> – During shifts <b>Section 43</b> – Inspections outside an overman’s section <b>Section 44</b> – general duties <b>Section 45</b> – reports <b>Section 46</b> – dangerous conditions <b>Section 47</b> – Inspection on behalf of Employees</p> <p><b>39</b> (1) A qualified person shall, every day, inspect (a) the vertical shafts by which employees descend or ascend in a coal mine; and (b) all shaft equipment that is used in the transportation system for employees in the vertical shafts. (2) The qualified person referred to in subsection (1) shall make a written report of the inspection in a book kept for that purpose.</p> <p>Overmen's Sections <b>40</b> (1) A mine manager shall define on a plan, on a scale of not less than 1:10,000, the limits of each section of the mine for which an overman is responsible in such a manner that (a) every working face, other than an area where work is being carried out for the purpose of repairing or enlarging a roadway, is included within a section; and (b) the section is of a size that permits a pre-shift inspection to be completed in two hours or less. (2) A mine manager shall designate a meeting station that is located at the entrance to each overman's section referred to in subsection (1) and shall (a) mark each meeting station clearly on the plan; and (b) cause a notice to be posted at each meeting station identifying it as a meeting station. (3) No person, other than a person carrying out an inspection or a person accompanying that person, shall pass beyond a meeting station referred to in subsection (2) unless (a) the section has been inspected and reported to be safe by the person who carried out the inspection referred to in subsection 41(1); and (b) the person is instructed to pass beyond the meeting station by the overman responsible for the section. (4) No overman shall instruct any person to pass beyond the meeting station of the section for which the overman is responsible unless the overman has information indicating that it is safe to pass beyond the meeting station.</p>

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	<p><b>6.4.2</b> The person making the examination under section 6.4.1 shall before going off shift record all unusual and hazardous conditions and corrective actions taken or proposed in a daily examination and report book, and sign the report as a record of the conditions found. For underground mines the record shall include a report on each working place examined.</p> <p><b>6.4.3</b> The report made under section 6.4.2 shall be read and countersigned by the corresponding supervisor on the oncoming shift and the unusual and/or hazardous conditions discussed with the workers before they are permitted to resume operations in the areas indicated in the record.</p> <p><b>Section 6.7</b> Shift &amp; Weekly Inspections</p> <p><b>6.7.1</b> In an underground coal mine a fireboss shall, within three hours before the beginning of each shift, inspect with a locked flame safety lamp or equivalent device approved by a recognized testing agency, and suitable for the work required, that part of the mine and roadways leading to it, in, or through which persons may be present or pass, and shall make a report of the condition of them, and no worker shall enter that part of the mine or roadways until they have been pronounced safe by the fireboss.</p> <p><b>6.7.2</b> A copy of the report required by 6.7.1 shall be signed by the fireboss, and a copy of it shall be posted at the surface of the mine.</p> <p><b>6.7.3</b> At least once in every week the manager shall cause a fireboss to examine all roadways, air courses, stoppings, sealings, overcasts, and wastes, with a locked flame safety lamp or equivalent device approved by a recognized testing agency, and suitable for the work required, to make a report, and post a copy of it in accordance with section 6.7.2.</p> <p><b>7.9.9</b> Daily inspections of “ropes” At least once in each normal production day, an inspection shall be carried out of (1) the exterior of each hoisting rope and tail rope to detect the presence of kinks or other visible defects and to note the condition of the rope dressing, and (2) the cage safety catches for any visible damage or defects.</p> <p><b>7.9.10</b> Weekly shaft conveyance inspection At least once in each week, an inspection shall be carried out of (1) all shaft conveyance safety mechanisms for proper adjustment, freedom of movement, and freedom from damage, (2) all head, deflection and idler sheaves, and shafts and their bearer and sole plates, (3) all rope attachments, shaft conveyance and counterweight attachments, and suspension gear,</p>	<p>(b) enter and sign a detailed report of the inspection in a book kept at the mine for that purpose.</p> <p>(4) An underground coal mine manager must ensure that a copy of the report is immediately posted at a conspicuous location at the mine or the entrance to the inspected part of the mine, or at a place designated by the underground coal mine manager.</p>	<p>purposes;</p> <p>(b) at least once during each shift, the condition and position of the stone-dust barriers and water barriers;</p> <p>(c) at least once every 24 hours every underground travelway where persons normally travel on a daily basis; and</p> <p>(d) at least once every 24 hours, areas that are ventilated but not occupied;</p> <p>(e) at least once per week, all shafts, other than shafts that are used solely for ventilation, and all accessible stoppings; and</p> <p>(f) at least once per week, the bottom and top of each shaft that is used solely for ventilation.</p> <p>(3) An employer must ensure that a supervisor at a coal mine who is responsible for a section inspects every part of the section at least once during each shift.</p> <p>Report on general inspection at mine</p> <p><b>118</b> (1) An employer must ensure that a person who performs an inspection under Section 116 or 117 must, before going off shift, prepare a written report of the inspection including</p> <p>(a) the state of the ground conditions;</p> <p>(b) the state of the ventilation;</p> <p>(c) the presence of noxious or flammable gases;</p> <p>(d) a record of any ventilation, flammable gas and noxious gas readings taken and the locations where the readings were taken;</p> <p>(e) information regarding equipment that is unsafe;</p> <p>(f) any hazardous or potentially hazardous condition; and</p> <p>(g) in a coal mine only,</p> <p>(i) information regarding the condition and position of the stone-dust barriers and water barriers, and,</p> <p>(ii) the person’s observations regarding stone-dust and accumulations of water.</p> <p>(2) An employer must ensure that, in addition to the information included in the inspection report required by subsection (1), a supervisor who carries out an inspection under Section 116 or subsection 117(3) includes the following in their report:</p> <p>(a) any unsafe condition reported to the supervisor, whether remedied or not;</p> <p>(b) a hazardous or potentially hazardous condition that is not remedied or removed by the end of the shift and, with respect to such a condition,</p> <p>(i) the state of any corrective measures taken,</p> <p>(ii) work required to be done to remedy or remove the hazardous or potentially hazardous condition, and</p> <p>(iii) the supervisor’s observations regarding stone-dust and accumulations of water.</p> <p>Communication of inspection information</p> <p><b>119</b> (1) An employer must ensure that the information required to be reported under Section 118 is</p> <p>(a) communicated to the first-line supervisor on the incoming shift who, at a non-coal mine, is assigned responsibility for the corresponding area of the mine or, at</p>	<p>Pre-Shift Inspections</p> <p><b>41</b> (1) Every overman's section shall be inspected by a mine examiner within the four-hour period preceding the beginning of work by each shift in that section.</p> <p>(2) Where there are persons present in an overman's section, a mine examiner shall carry out the inspections of that section at intervals not exceeding eight hours.</p> <p>Inspections During Shifts</p> <p><b>42</b> (1) Every overman who is responsible for a section shall inspect every part of the section at least once during every shift at such times that no place at which an employee works remains uninspected by the overman for more than four hours after the timewhen the shift of that employee began work in that section.</p> <p>(2) The inspection referred to in subsection (1) shall be carried out to ascertain the conditions in relation to ventilation, strata control and general safety.</p> <p>(3) At least once during every shift, a mine examiner shall inspect every part of the overman's section that is allotted to the mine examiner for inspection purposes.</p> <p>Inspections Outside an Overman's Section</p> <p><b>43</b> (1) At the beginning of every shift and at least once during every shift, a mine examiner shall inspect the following places that are not included in an overman's section:</p> <p>(a) every place at which mineral is being worked for repairing or enlarging a roadway;</p> <p>(b) every place from which machinery, equipment, tools or supports are being removed or salvaged; and</p> <p>(c) every place at which employees may work and through which employees do not regularly pass.</p> <p>(2) A mine examiner shall inspect</p> <p>(a) every roadway or place through which employees regularly pass, at intervals not exceeding 24 hours; and</p> <p>(b) every airway, at least once per week.</p> <p>General Duties</p> <p><b>44</b> (1) Every overman or mine examiner who carries out an inspection under any of sections 41 to 43 shall, in the course of the inspection,</p> <p>(a) inspect the machinery and equipment;</p> <p>(b) report to the underground manager any machinery or equipment found by the employee to be unsafe; and</p> <p>(c) post at the appropriate meeting station a record of the report referred to in paragraph (b).</p> <p>(2) No person shall use any machinery or equipment that is the subject of a record referred to in paragraph (1)(c) until such time as it has been reported to be safe.</p> <p>Reports</p> <p><b>45</b> (1) Every mine examiner who carries out an inspection referred to in section 41 or subsection 42(2) shall make a report of the inspection in a book kept for that purpose, including</p> <p>(a) the state of the roof support;</p>

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	<p>(4) any shaft conveyance counterweight and work platform, (5) all parts of the hoist that could affect its normal operation including the brakes, clutches, interlocks, depth indicators, and all safety devices, (6) any hoisting equipment being used during shaft sinking operations, and (7) any auxiliary brake operating weights to ensure that they move freely and have adequate holding capacity.</p> <p><b>7.9.11 Monthly Inspection</b> At least once each month, an inspection shall be carried out of (1) the shaft ropes to determine the amount of wear, distortion and corrosion, the need for lubrication, and the need for changing any wear patterns, (2) the hoisting ropes to determine the number of broken wires, and (3) the friction treads on a friction hoist.</p> <p><b>7.9.12 &amp; 7.9.13 6 month &amp; yearly inspections</b> At least once in every 6 months of service, an inspection shall be carried out of (1) the hoisting rope on a drum hoist within the attachments at the drum and at the drum spout, and (2) the hoisting rope of a friction hoist within the attachments at the shaft conveyance and counterweight in accordance with a procedure established by the manager.</p> <p><b>7.9.13</b> At least once in every 12 months, an inspection shall be carried out of, (1) foundation bolts, bolt locking devices, and all other bolts and fastenings that are critical for hoist safety, and (2) the bails, suspension gear and structural components of every shaft conveyance and counterweight.</p>		<p>a coal mine, is responsible for the section; (b) discussed by the first-line supervisor with the mine workers under their supervision on the incoming shift, before the mine workers are permitted to work in the areas addressed in the reports; and (c) countersigned by the first-line supervisor on the incoming shift within 24 hours following the end of that shift. (2) An employer must ensure that a first-line supervisor communicates any unsafe conditions identified in a report under Section 118 in accordance with the communication procedure required by Section 81.</p> <p>Routine inspection and testing for flammable gas at coal mine <b>120</b> An employer must ensure that at least every 7 days, a mine examiner at a coal mine tests the air underground not more than 50 cm from the roof for the layering and content of flammable gas at (a) the primary return airway; (b) the return airway of each split where it enters the primary return airway; (c) accessible returns from workings that are not active workings; (d) at least one seal of each sealed area, if accessible; and (e) all working faces, and at any additional locations the manager requires.</p> <p>General inspection at coal mine on behalf of mine worker <b>121</b> (1) At the request of at least 1 mine worker who is not a supervisor, an employer at a coal mine must permit an inspection or a test for flammable gas to be done by a competent person selected by the mine worker and the mine worker must pay the costs of that inspection or test. (2) A mine worker who wishes to request an inspection or test under subsection (1) must consult with the committee, or representative, if any, before requesting the inspection or test. (3) The person who is to conduct the inspection or test requested under subsection (1) must consult with the committee, or representative, if any, prior to undertaking the inspection or test. (4) If a mine worker who requests an inspection or test under subsection (1) further requests that the inspection or test be conducted on a regular basis, the employer must permit the person selected to conduct the inspection or test to, at least once a month, (a) inspect any place underground to which safe access is possible; and (b) test for flammable gas underground. (5) The manager and the mine workers at a coal mine must provide the person selected to conduct a requested inspection or test under subsection (1) with any assistance necessary to conduct the inspection or test. (6) During an inspection or test requested under subsection (1), the manager or another representative of the employer may accompany the person conducting the inspection or</p>	<p>(b) the state of the ventilation and all matters affecting ventilation; (c) the concentration of flammable gases; and (d) any thing or circumstance that is likely to be hazardous to the safety or health of employees. (2) Every overman or mine examiner who carries out an inspection referred to in subsection 42(1) or section 43 shall make a report of the inspection in a book kept for that purpose, including all information relevant to the safety or health of employees. (3) Where an inspection discloses a dangerous condition in an underground portion of a coal mine, the employee who carried out the inspection shall forthwith report the condition to the overman who is responsible for that portion of the coal mine or to the underground manager.</p> <p>Dangerous Conditions <b>46</b> (1) Where an overman who is responsible for an underground portion of a coal mine becomes aware of a dangerous condition in that portion of the coal mine, the overman shall (a) evacuate all persons, other than an employee referred to in subsection (3), from the portion affected by the dangerous condition; (b) post a sign in a conspicuous place as close as possible to the dangerous condition but outside the danger area created by the dangerous condition, to warn persons of the dangerous condition; and (c) report the existence of the dangerous condition orally to the mine manager or the underground manager. (2) Where a sign is posted in accordance with paragraph (1)(b), no person shall enter the danger area referred to in that paragraph. (3) Subsection (2) does not apply to an employee whose presence is necessary to correct the dangerous condition referred to in subsection (1).</p> <p>Inspection on Behalf of Employees <b>47</b> (1) The employees employed in a coal mine may, for the purpose of an inspection and test for gas on behalf of the employees, be represented by any of the following persons identified by them for that purpose: (a) a person who holds a certificate as a mine examiner; and (b) two persons who belong to one of the following categories, namely, (i) two employees who are employed in the coal mine, at least one of whom holds a certificate as a mine examiner, or (ii) two persons each of whom holds a certificate as a coal miner and has at least five years' experience of work underground in a mine from which coal is extracted, and at least one of whom holds a certificate as a mine examiner. (2) At least once every month, the employer shall permit the representatives referred to in subsection (1) to inspect every part of the coal mine, including the machinery and equipment therein, and to test for gas therein.</p>

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			<p>test.</p> <p>(7) A person who conducts an inspection or test referred to in subsection (4) must report the results of the inspection or test, in writing, to the employer and to the committee, or representative, if any, and the employer must post the report in a conspicuous place near the entrance to the underground of the coal mine.</p> <p>(8) An employer must ensure that a report referred to in subsection (7) is kept while the coal mine is in operation.</p> <p>Examination of workplace and report by mine workers  <b>122</b> (1) Before commencing work and as often as the nature of the work necessitates, a mine worker must inspect their workplace for hazardous or potentially hazardous conditions and must ensure that the workplace is safe.  (2) If a mine worker is competent and capable to do [so], the mine worker must correct any hazardous or potentially hazardous condition before work is begun, resumed, or continued.  (3) If the mine worker is unable to make the workplace safe, the mine worker must barricade the workplace and communicate its condition in accordance with the communication procedure required by Section 81.</p> <p>Hazardous or potentially hazardous conditions  <b>123</b> (1) A supervisor who becomes aware of an unsafe condition, must ensure that  (a) all persons, other than a person whose presence is necessary to correct the unsafe condition, are evacuated from the area affected by the unsafe condition and remain out of the area until the unsafe condition is remedied; and  (b) a sign warning persons of the unsafe condition is posted in a conspicuous place at all entrances to the area affected by the unsafe condition.  (2) An employer must ensure [that] no person is permitted to enter an area for which there is a warning sign posted in accordance with clause (1)(b) except for a person whose presence is necessary to correct an unsafe condition.  (3) If a supervisor or a mine examiner who is carrying out an inspection under Sections 116 or 117 and finds equipment to be unsafe or is informed that equipment is unsafe, the supervisor or the mine examiner, as the case may be, must post a copy of the inspection report required by Section 118 in a conspicuous place, at the appropriate meeting station.  (4) No person is permitted to use equipment that is reported to be unsafe until it is deemed to be safe by a competent person, and this fact is communicated to the first - line supervisor responsible for the equipment.</p>	<p>(3) For the purposes of an inspection or test on behalf of employees, the mine manager and the employees in the coal mine shall give every assistance necessary to the representatives referred to in subsection (1).</p> <p>(4) The employer, the mine manager or an officer of the coal mine chosen by the employer or mine manager may accompany the representatives who carry out an inspection or test referred to in subsection (2).</p> <p>(5) The results of an inspection or test referred to in subsection (2) shall be reported in writing to the employer and to a safety officer at the district office.</p>
<p>Flammable Gas – what are the flammable gas concentrations whereby actions must be taken ?</p>	<p><b>Section 6.42 Summary</b> If air in return contains more than 1% flammable gas, then it shall be immediately reported to manager and steps taken to fix it. Electrical equipment shall be shut down if flammable gas exceeds 1.25%. Flammable gas at or over 2.5% in the general air body – all persons must be withdrawn to a place of safety.</p> <p><b>6.42.1</b> Where it may be reasonable to expect that there is a</p>	<p><b>Part 36 – Section 543</b> - Flammable gas monitors must be installed in hazardous locations. The alarm must be tripped when the gaseous content of the atmosphere exceeds 20% of the lower explosive limit (LEL) (e.g. 1 % methane).  <b>Sections 730-732</b> – Electrical equipment shall be shut down if flammable gas exceeds 25% of LEL (e.g. 1.25% methane). Workers withdrawn when flammable gas exceeds 50% of LEL (e.g. 2.5% methane). Cannot blast if</p>	<p><b>Section 242</b> – When flammable gas exceeds 1.25% electrical and diesel equipment must be shut down. Flammable gas levels must be below 1% to turn equipment back on. <b>Section 243</b> - When flammable gas exceeds 2% all persons must be withdrawn to a safe place. <b>Sections 239 to 241</b> – When flammable gas reaches or exceeds 0.5% in intake airway then all non-intrinsically safe or non-flameproof equipment must be shut down. <b>Section 252</b> - A</p>	<p><b>Section 50</b> – A barricade must be installed at discharge of methane drainage system so gas does not exceed 2%.  <b>Section 127</b> – Methane monitors must be installed where flammable gas exceeds 0.5%. <b>Section 128</b> – Tests must be conducted at least every 8 hours when flammable gas exceeds 0.8%. <b>Sections 129 to 130</b> – Electrical and diesel equipment must be shut down when flammable gas exceeds 1.25%. Section 131W when flammable gas exceeds 2% all</p>

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	<p>hazard due to the presence of flammable gas, an inspector may require that a sufficient number of appliances of an approved type be provided for the determination of the percentages of flammable gas.</p> <p><b>6.42.2</b> The manager of an underground mine shall appoint a qualified person to make regular determinations of the content of flammable gas in the mine air at such locations and at such time intervals as established by the manager. The results of the determinations shall be entered in a book kept for this purpose at the mine.</p> <p><b>6.42.3</b> If air immediately returning from a split that ventilates a group of active workings, or if air in the main return airway, is found to contain more than 1% of flammable gas as determined with an approved means of detection, the person who detects it shall immediately report his findings to the manager and the manager shall (1) take immediate steps to improve the ventilation, and (2) mail a notice of the condition to an inspector within 24 hours.</p> <p><b>6.42.4</b> If any person finds more than 1.25% of flammable gas in the air in the general vicinity of electrical machinery or equipment he shall cut off the electrical power supply from the machinery or equipment and report the circumstances to the supervisor in charge of that part of the mine.</p> <p>(1) Whenever the general body of the air in any workplace or travelway in a mine is found to contain 2.5% or more of flammable gas, the person in charge of that part of the mine shall</p> <p>(a) immediately cause all persons in that area and the return airway to be withdrawn to a place of safety,</p> <p>(b) inform without delay his immediate supervisor, and</p> <p>(c) insofar as it is possible to do so without undue risk, ascertain or have a qualified person ascertain, the condition of the affected area and the return airway and carry out the measures necessary to render it safe.</p> <p>(2) Except for the purpose of saving life or rendering the area safe, no person shall be readmitted to the affected area until the person in charge of that part of the mine, or a qualified person appointed by the manager, has examined the area and reported it to be safe.</p> <p>(3) Where persons have been ordered to leave an affected area under this section, the person who caused them to leave shall record in a book kept for that purpose at the mine, particulars of the reason for the order, and the person who carried out the examination required in subsection 6.42.5(2) shall report the result of it in that book.</p>	<p>flammable gas exceeds 20% of LEL (e.g. 1% methane). Cannot operate diesel engines if flammable gas exceeds 20% of LEL (e.g. 1% methane). If flammable gas exceeds 15% LEL then continuous methane monitoring required.</p> <p><b>543(1)</b> An employer must ensure that appropriate flammable gas monitors are installed in a hazardous location.</p> <p>(2) An employer must ensure that the flammable gas monitors required by subsection (1)</p> <p>(a) are installed in an appropriate place in the mine,</p> <p>(b) are wired to a manned control centre, and</p> <p>(c) will cause an alarm to sound in the control centre if the content of the atmosphere exceeds 20 percent of the lower explosive limit of the gas being monitored.</p> <p><b>730(1)</b> An underground coal mine manager must ensure that within 4 hours of each shift commencing work, a mine official with an approved gas testing device inspects the part of a mine being worked, or intended to be worked, and the roadways leading to that part.</p> <p>(2) A mine official must inspect for gas at the working face of every work area, at the edge of the gob, in roof cavities and anywhere else that gas may accumulate.</p> <p>(3) A mine official who makes the inspection must</p> <p>(a) report to the mine manager on the conditions of the part of the mine, the roadways and the explosion barriers inspected for gas and ventilation, and</p> <p>(b) enter and sign a detailed report of the inspection in a book kept at the mine for that purpose.</p> <p>(4) An underground coal mine manager must ensure that a copy of the report is immediately posted at a conspicuous location at the mine or the entrance to the inspected part of the mine, or at a place designated by the underground coal mine manager.</p> <p><b>731(1)</b> An underground coal mine manager must ensure that workers are withdrawn from a work area if the amount of flammable gas in the general body of the air exceeds 50 percent of the lower explosive limit.</p> <p>(2) An underground coal mine manager must ensure that the supply of electrical power is cut off if the amount of flammable gas in the general body of air exceeds 25 percent of the lower explosive limit.</p> <p>(3) An underground coal mine manager must ensure that workers do not blast if the amount of flammable gas in the general body of air exceeds 20 percent of the lower explosive limit.</p> <p>(4) An underground coal mine manager must ensure that workers do not operate diesel engines if the amount of flammable gas in the general body of air exceeds 20 percent of the lower explosive limit.</p> <p><b>732(1)</b> If workers operate a diesel vehicle on a road, a mine manager must ensure that a worker measures the air flow and the percentage of flammable gas present in the general body of air</p>	<p>fence is required when methane drainage system discharges flammable gas reaching or exceeding 2.0%.</p> <p>Flammable gas monitors on equipment in coal mine</p> <p><b>234 (1)</b> An employer at a coal mine must ensure that a flammable-gas monitor is installed</p> <p>(a) on every coal or stone-cutting machine;</p> <p>(b) on all machinery for installing rockbolts;</p> <p>(c) on any mobile equipment;</p> <p>(d) on any electrically-powered locomotive travelling anywhere underground; and</p> <p>(e) on all underground non-portable electrical installations that are not intrinsically safe or not flameproof.</p> <p>(2) An employer at a coal mine must ensure that an operator of hand-held powered equipment uses a flammable-gas monitor in close proximity to the area in which the equipment is being operated.</p> <p>(3) An employer must ensure that no person operates the equipment referred to in subsection (1) or (2) if the flammable-gas monitor is inoperative, out of calibration, or not constructed, operated, inspected, tested, calibrated, or maintained according to the manufacturer’s specifications.</p> <p>(4) An employer at a coal mine must ensure that every flammable-gas monitor that is installed for the purpose of monitoring flammable gas concentrations at or near specific pieces of equipment or electrical installations</p> <p>(a) automatically de-energizes the equipment or electrical installation when power to one of it’s sensors is interrupted; and</p> <p>(b) has its sensors positioned at locations that provide for the most effective measurement of flammable gas.</p> <p>(5) Despite subsection (4), an employer must ensure that when power to a sensor on a flammable-gas monitor interlocked with a fan is interrupted,</p> <p>(a) an audible and visual alarm sounds; and</p> <p>(b) the fan does not automatically de-energize.</p> <p>(6) An employer must ensure that a flammable-gas monitor required by subsection (1)</p> <p>(a) gives adequate visual warning when the concentration of flammable gas reaches or exceeds</p> <p>(i) in a gassy zone, 0.5% by volume in the air being tested, and using a different visual warning, again when flammable gas reaches or exceeds 1% by volume in the air being tested, or</p> <p>(ii) in a non-gassy zone, 0.25% by volume in the air being tested, and using a different visual warning, again when flammable gas reaches or exceeds 0.5% by volume in the air being tested; and</p> <p>(b) automatically de-energizes the monitored equipment when the concentration of flammable gas reaches or exceeds</p> <p>(i) in a gassy zone, 1.25% by volume in the air being tested, or</p> <p>(ii) in a non-gassy zone, 0.5% by volume in the air being tested.</p> <p>Flammable gas monitoring where electrical installation</p>	<p>persons must be evacuated. <b>Section 131</b> – Evacuation when gas exceeds 2%.</p> <p>Barricades</p> <p><b>50 (1)</b> Where flammable gases are discharged from a methane drainage system in an area, a barricade shall be installed in a location where the concentration of flammable gas does not exceed 2 per cent, to prevent access to the area by unauthorized persons.</p> <p>(2) Warning signs shall be posted on the barricade referred to in subsection (1), indicating that access by unauthorized persons is prohibited.</p> <p>Flammable Gas Exceeding 0.5 Per Cent</p> <p><b>127 (1)</b> Where six consecutive measurements, taken in accordance with the procedures for ventilation surveys referred to in subsection 119(1) at a location underground where electrical machinery or electrical equipment is used, show a concentration of flammable gas that exceeds 0.5 per cent, a methanometer shall be installed at the location.</p> <p>(2) Where an electrical machine or electrical equipment is operated at a longwall face, a methanometer shall be installed at each end of the face and one of those methanometers shall be installed as near to the return brushing face as is practicable.</p> <p>Flammable Gas Exceeding 0.8 Per Cent</p> <p><b>128</b> Where the concentration of flammable gas exceeds 0.8 per cent in a location underground where electrical equipment or a diesel engine is operated or where a source of ignition is present, a test for gas shall be made in that location, using a methanometer, at least once every eight hours for as long as the concentration of flammable gas exceeds 0.8 per cent.</p> <p>Flammable Gas Exceeding 1.25 Per Cent</p> <p><b>129</b> Where the concentration of flammable gas at the return end of a longwall face may exceed 1.25 per cent, the employer shall provide, at appropriate locations, a methanometer that automatically displays a visual indication of the concentration and sounds an audible alarm to warn employees working at or near the longwall face when the concentration exceeds 1.25 per cent.</p> <p><b>130</b> Where the concentration of flammable gas in the air in an underground portion of a coal mine exceeds 1.25 per cent, the following procedures shall be followed:</p> <p>(a) during the period in which the concentration exceeds 1.25 per cent, the operation of all diesel engines and of all electrical equipment that is not intrinsically safe, other than electric safety lamps, shall be stopped in that portion of the coal mine; and</p> <p>(b) the employer shall, within seven days, make a written report of that concentration of flammable gas to a safety officer at the district office.</p> <p>Flammable Gas Exceeding 2 Per Cent</p>

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		<p>(a) at each end of the road, and  (b) at all intermediate points that the underground coal mine manager or the Director specifies.  (2) Subsection (1) does not apply to the part of a main intake airway that  (a) initiates at a mine shaft or mine outlet to the surface, and  (b) is more than 300 metres from a working face.  (3) An underground coal mine manager must ensure that a worker takes the measurements required under subsection (1)  (a) at least once each week, and  (b) whenever an alteration is made in the quantity of air circulating.  (4) If the percentage of flammable gas measured under subsection (1) exceeds 15 percent of the lower explosive limit, the underground coal mine manager must appoint a competent worker who must  (a) take further measurements under subsection (1), and  (b) immediately submit a written report of the results to the mine manager.  (5) If the percentage of flammable gas measured under subsection (1) exceeds 15 percent of the lower explosive limit, the employer must install a system of continuous methane monitoring that remains in use for the longer of  (a) the time that the percentage of flammable gas continues to exceed 15 percent of the lower explosive limit, and  (b) the following 6 working days.</p>	<p>operating in return airway in coal mine  <b>235 (1)</b> An employer at a coal mine must ensure that a flammable gas monitor is installed to continuously monitor the air where an electrical installation, other than intrinsically safe equipment and cap lamps, is being operated in a return airway.  (2) An employer must ensure that the flammable gas monitor referred to in subsection (1) automatically de-energizes the electrical installation in that area of the mine when the concentration of flammable gas reaches or exceeds 1.25% by volume in the air being tested.</p> <p>Flammable gas monitoring at longwall airways in coal mine  <b>236 (1)</b> An employer at a coal mine must ensure that a flammable-gas monitor is installed to continuously monitor the air in  (a) an airway at the intake and return ends of a longwall working face or panel; and  (b) a return airway from a longwall panel.  (2) An employer at a coal mine must ensure that a flammable-gas monitors required by subsection (1) automatically de-energize[s] all electrical installations in a return airway, except cap lamps and flammable-gas monitors  (a) when the concentration of flammable gas reaches or exceeds 1.25% by volume in the air being tested; or  (b) when power to a sensor is interrupted.  (3) An employer at a coal mine must ensure [that] a flammable gas monitor required under subsection (1) that displays the concentration of flammable gas  (a) at a location on the surface by remote monitoring, is capable of recalling and displaying the concentrations recorded during at least the previous 24 hours; and  (b) at a location underground, is be capable of recalling and displaying the concentrations recorded during at least the previous 2 hours.</p> <p>Flammable gas monitoring for switchgear electrical installation at longwall working face in coal mine  <b>237 (1)</b> An employer at a coal mine must ensure that a flammable gas monitor is installed to continuously monitor the air on the intake air side of a switchgear electrical installation that provides power to equipment on a longwall working face.  (2) An employer must ensure that a flammable gas monitor required by subsection (1) automatically de-energizes a switchgear electrical installation when the concentration of flammable gas reaches or exceeds 0.5% by volume in the air being tested.</p> <p>Flammable gas monitoring at auxiliary fan in coal mine  <b>238 (1)</b> An employer at a coal mine must ensure that a flammable gas monitor is installed to continuously monitor the air on the intake air side of an auxiliary fan that is supplied in part by air already used to ventilate a working face.</p>	<p><b>131 (1)</b> Where the concentration of flammable gas in the air in an area underground exceeds 2 per cent, all persons shall forthwith be evacuated from the area to a place that is ventilated in accordance with subsection 110(1).  (2) Where an area has been evacuated in accordance with subsection (1),  (a) a warning sign bearing the words "DO NOT ENTER" and "ENTRÉE INTERDITE" shall be posted in a conspicuous place at the entrance to the area; and  (b) no person, other than an authorized person, shall enter the evacuated area unless the authorized person has informed the person that it is safe to enter.</p>



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			<p>(2) An employer must ensure that the flammable-gas monitor required by subsection (1) automatically de-energizes the equipment at the working face serviced by an auxiliary fan when the concentration of flammable gas reaches or exceeds 0.5% by volume in the air being tested.</p> <p>Flammable gas monitoring for non-gassy zone in coal mine  <b>239 (1)</b> An employer at a coal mine must ensure that a flammable gas monitor is installed to continuously monitor the air on the intake air side of every area designated as a non-gassy zone, except where the intake air side is the surface mine opening.  (2) An employer must ensure that a flammable-gas monitor required by subsection (1)  (a) provides a visible and audible warning when the flammable gas concentration in the air supply of the non-gassy zone reaches or exceeds 0.25% by volume in the air being tested; and  (b) automatically de-energizes all electrical installations in the non-gassy zone that are not intrinsically safe or not flameproof when  (i) a flammable gas concentration in the air supply of the non-gassy zone reaches or exceeds 0.5% by volume in the air being tested, or  (ii) power to its sensor is interrupted.</p> <p>Notification of committee or representative of high flammable gas concentration in coal mine  <b>240</b> If monitored equipment at a coal mine has been de-energized as a result of the concentration of flammable gas detected by flammable gas monitoring an employer must inform the committee or representative, if any, of it by telephone.</p> <p>When flammable gas reaches or exceeds 0.5% in coal mine where source of ignition present  <b>241</b> At a coal mine, if the concentration of flammable gas reaches or exceeds 0.5% by volume in the air being tested at the primary intake airway where an electrical installation or a diesel engine is operated or a source of ignition is present, an employer must ensure that a competent person, immediately before the installation or engine is started,  (a) tests for flammable gas with a flammable gas monitor adjacent to the installation or engine; and  (b) adjusts the ventilation until the flammable gas is below 0.5% by volume in the air being tested.</p> <p>When flammable gas reaches or exceeds 1.25% in coal mine  <b>242 (1)</b> If the concentration of flammable gas in an area of a coal mine reaches or exceeds 1.25% by volume in the air being tested, an employer must ensure that  (a) every electrical installation, except for cap lamps and flammable-gas monitors, in the area affected by the gas concentration is de-energized; and  (b) diesel-powered equipment in the area affected by the gas concentration is shut off or immediately removed from</p>	

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			<p>the area.</p> <p>(2) An employer must ensure that the diesel-powered equipment that is shut off or removed as required by subsection (1), remains off or is not brought back into the area and the electrical installation remains de-energized until a competent person</p> <p>(a) tests for flammable gas in the general body of air adjacent to the diesel-powered equipment or the electrical installation, and the test shows the flammable gas concentration is below 1% by volume in the air being tested; and</p> <p>(b) determines that it is safe to re-energize the electrical installation, and turn on or bring back into the area the diesel-powered equipment.</p> <p>(3) An employer must ensure that a written report of an occurrence of a flammable gas concentration reaching or exceeding 1.25% by volume in the air being tested at a coal mine is made to the first-line supervisor for the area where the gas concentration occurred.</p> <p>When flammable gas reaches or exceeds 2.0% in coal mine</p> <p><b>243 (1)</b> If the concentration of flammable gas in an area underground in a coal mine reaches or exceeds 2.0% by volume in the air being tested an employer must ensure that the supervisor for the area where the concentration occurs</p> <p>(a) immediately causes all persons to be withdrawn to a safe place;</p> <p>(b) informs the coal mine underground manager without delay;</p> <p>(c) insofar as it is possible to do so without undue risk, examines or has a competent person examine the condition of the affected area and determines the measures necessary to render it safe and make a record of the examination; and</p> <p>(d) records information about the flammable gas concentration including the location of measurements, time of measurements, and environmental or operating conditions that did or could have affected the measurements, at the time of measurements, and provides the information to the coal mine underground manager.</p> <p>(2) Except for the purpose of saving life or rendering the area safe, no person is permitted to enter an area evacuated under clause (1)(a) until</p> <p>(a) the concentration of flammable gas is less than 2.0% by volume in the air being tested; and</p> <p>(b) the coal mine underground manager decides it is safe for entry.</p> <p>(3) An employer must provide the committee or representatives, if any, with a copy of the records required by subclauses (1)(c) and (d).</p> <p>Highest reading in flammable gas tests used as reading</p> <p><b>244</b> Whenever a test for flammable gas is required under these regulations in the general body of air, the person making the test must test all areas of a total cross-section of the general body of air and the highest reading obtained instantaneously at any location, including the roof, must be used as the reading.</p>	

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Hazardous Zoning – what are the requirements for each jurisdiction ?	<p><b>5.1.1</b> Unless modified by this code, all electrical equipment shall be installed, maintained and operated in accordance with CSA Standard M421-00 Use of Electricity in Mines, in conjunction with the Canadian Electrical Code, as amended from time to time.</p> <p><b>5.2.2</b> Electrical energy used in an underground coal mine or in a hazardous location shall conform to the requirements of the Canadian Electrical Code.</p> <p><b>5.2.4</b> The manager shall ensure that all electrical equipment used in a hazardous location, as defined in the Canadian Electrical Code, is approved for use in such a location and for the specific gas, vapour, or dust that is or may be present.</p> <p><b>See 5.3 to 5.4</b></p>	<p><b>Part 10 – Section 165 (1) to (4)</b> Protection in hazardous locations - 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” or “non-hazardous” location in accordance with the Canadian Electrical Code.</p> <p><b>Part 10 – Section 166 (1) to (6)</b> Internal combustion engine – Equipment is restricted according to hazardous location stipulation under the Canadian Electrical Code.</p>	<p><b>Section 188 (1) to (6)</b> – Designation of zones for use of electrical installations underground at coal mine – the entire underground of a coal mine must be designated as a gassy zone. For the purposes of using an electrical installation underground the mine manager can designate an area as a non-gassy zone under prescribed conditions.</p> <p><b>Sections 191 to 192</b> – Electrical installations in a gassy zone of coal mine – electrical installation must be certified as flameproof or intrinsically safe and must meet designated conditions. Must also meet Canadian Electrical Code.</p> <p>Designation of zones for use of electrical installations underground at coal mine</p> <p><b>188 (1)</b> A manager must designate the entire underground of a coal mine as a gassy zone.</p> <p>(2) Despite subsection (1), for the purposes of using an electrical installation underground, the manager of a coal mine may, in accordance with the written opinion of the ventilation engineer, designate an area of the underground as a non-gassy zone.</p> <p>(3) An employer must ensure that no area of a coal mine is designated as a non-gassy zone if</p> <p>(a) the air supplied to the area</p> <p>(i) has ventilated a working face,</p> <p>(ii) has a level of flammable gas equal to or greater than 0.5% by volume in the air being tested,</p> <p>(iii) has the potential to reach a level of flammable gas equal to or greater than the concentration specified in subclause (ii) should the ventilation system break down for a period of 4 hours or more, or</p> <p>(iv) is subject to unintentional or unplanned ventilation reversal or re-circulation of the airflow in the ventilation system; or</p> <p>(b) the area is</p> <p>(i) within 100 m of a working face,</p> <p>(ii) supplied with air by an auxiliary fan, or</p> <p>(iii) past the last open crosscut of a working face.</p> <p>(4) An employer must ensure that a designation by the manager of a non-gassy zone pursuant to subsection (2), is in accordance with a written report of the ventilation engineer, who must, in preparing the report,</p> <p>(a) consult with the committee or representative, if any;</p> <p>(b) verify that the area to be designated meets the requirements of subsection (3);</p> <p>(c) consider the ventilation system as shown by the ventilation plan required by Section 53;</p> <p>(d) consider the potential methane concentrations should the ventilation system break down for a period of 4 hours or more; and</p> <p>(e) consider all reports of flammable gas in or near the area to be designated.</p> <p>(5) The report referred to in subsection (4) must be certified by the ventilation engineer and countersigned by the manager.</p> <p>(6) The manager must show the zones designated under this Section on a plan of the coal mine and must post a</p>	<p>Mechanical Equipment and Electrical Equipment</p> <p><b>51</b> No electricity shall be supplied or used in any part of a coal mine unless the electrical system and electrical equipment and the use thereof have been approved by the Coal Mining Safety Commission.</p>

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			<p>current copy of the plan in a conspicuous place at the coal mine.</p> <p>Electrical installations in a gassy zone of coal mine  <b>191</b> An employer at a coal mine must ensure that an electrical installation, except for a cap lamp referred to in subsection 86(2), used in a gassy zone is certified as flameproof or intrinsically safe by Natural Resources Canada or an agency acceptable to the Director.</p> <p>Electrical installations in a non-gassy zone of coal mine  <b>192</b> (1) An employer must ensure that an electrical installation used in a non-gassy zone in a coal mine  (a) is certified as intrinsically safe or flameproof by Natural Resources Canada or an agency acceptable to the Director; or  (b) if it is not certified as intrinsically safe or flameproof in accordance with clause (a)  (i) has been approved in writing by an engineer in accordance Section 193 within the last 12 months immediately preceding the date of its first use,  (ii) is designed so that  (A) the entry of coal dust is restricted, or if coal dust entry is reasonably foreseeable, the electrical installation does not produce an internal surface temperature hot enough to ignite coal dust,  (B) the electrical installation does not produce an external surface temperature hot enough to ignite coal dust, and  (C) the electrical installation is stationary while energized,  (iii) is installed so as to be stationary while energized,  (iv) is clearly identified by  (A) a bright distinguishing colour that does not appear on any other equipment underground, and that is identified on a sign at each entrance to the mine as indicating that the equipment is neither intrinsically safe nor flameproof, and  (B) a legible and conspicuous notice fixed to the installation that states: “Caution - This equipment is neither intrinsically safe nor flameproof. It is unsafe for use in gassy zone”,  (v) remains underground only for so long as specified in writing by an engineer as reasonably necessary for its intended use, and  (vi) is constructed, operated, inspected, maintained, and dismantled in accordance with  (A) the manufacturer’s specifications, and  (B) any report in relation to the electrical installation prepared by an engineer for the purposes of subsection 193.  (2) Before installing equipment that is neither intrinsically safe nor flameproof in an area designated as a non-gassy zone, an employer must ensure that the ventilation engineer reviews the report on the designation of a non-gassy zone required by subsection 188(4), and  (a) either modifies or accepts the report; and  (b) signs the report indicating their decision under clause (a) and any modification made.</p>	
Prohibited Metals – what are the requirements pertaining to the use of	<b>6.36.3 (4)</b> no auxiliary or booster fan shall be installed or operated in an underground coal mine if any of its	<b>Section 538</b> Light metal alloys (1) The term “light metals” refers to metals containing	Design of fans and associated equipment <b>218</b> (1) An employer must ensure that fans used to ventilate	Not specifically addressed in the regulations, however the Coal Mine Safety Commission (CMSC) did restrict the use

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aluminum or light metal alloys ?	<p>component parts is made of aluminum, magnesium, titanium or a light metal alloy unless adequately coated with a non-sparking material, and (5) the manager shall establish an inspection program to regularly inspect coated fans and shall have them immediately removed from service if the coating is damaged.</p> <p><b>6.43.3</b> Nothing made of, or containing, aluminum, magnesium, titanium, or light metal alloy shall be used in an underground coal mine, except (1) electrical equipment within a flameproof enclosure, or (2) in circumstances when there is no possibility of friction or impact, or (3) unless adequately coated with non-sparking material and immediately removed from service if the coating is damaged, or (4) hand held tools which are placed in a non-sparking storage container following use.</p>	<p>aluminum, magnesium and/or titanium, including aluminum paint and aluminum cans. Products containing these metals are generally not allowed in underground coal mines or other hazardous locations. Friction or sparking resulting from light metals striking or being struck by oxidized ferrous metal is enough to ignite a mixture of methane and air. (2) It is impossible in some instances to prohibit the presence of all light metals. For example, many common fire extinguishers are made with light metals, but are required as fire protection underground. In these instances, equipment with aluminum components must be equipped with a protective canopy or other measure that serves to prevent friction or impact on the light metal. (3) Fan blades made of aluminum alloy cannot be used for underground mine ventilation fans because they can cause incendiary sparking when struck by, or are themselves struck by, oxidized ferrous metal (rusty iron). If a spark was created at a time when high explosive levels of methane gas were present, a catastrophic explosion could occur.</p>	a mine and fan housings are made of non-combustible materials.	of light alloys.
<p>Combustible Dust Use of incombustible dust - sulphide dust ? - how much incombustible dust is required ? - frequency of sampling ?</p>	<p><b>Section 6.31.1</b> In any underground mine where the sulphur content of the ore is high and a sulphide dust explosion has occurred, the manager shall approve and implement a scheme for minimizing the danger from a sulphide dust explosion. See (1) to (3). <b>Section 6.44.1 to 6.44.16</b> – The floor, roof &amp; sides of every road must be treated with water or incombustible dust. No more than 50% combustible dust matter if volatile matter (VM) does not exceed 22%. The amount of permissible combustible matter shall diminish by 1.5% for each 1% increase in VM until reduced to 35 in the case of coal having VM &gt; 32% or more. The permissible % of combustible matter shall be further decreased by one for each increment of 1/10 part of 1% methane content of mine air beyond ¼ of 1%. The % of incombustible dust required may be reduced by an amount equivalent to % of water. Samples to be taken at least once a month.</p>	<p><b>Sections 742 – 744</b> – At least 65% incombustible dust is required. This can be waived if the dust contains at least 30% moisture. The 65% incombustible dust is based on % of volatile matter (VM) being 32% or more. The minimum requirement for rock dusting decreases by 1.5% for every 1% VM before 32%. Conversely, the 65% of incombustible dust will increase by 1% for every 0.1% flammable gas in the ventilation current. No specific sampling schedule noted.</p> <p><b>Airborne Dust</b> <b>742(1)</b> An employer must ensure that there is a water supply designed to suppress airborne dust (a) at a location where mineral is transferred from one conveyor to another conveyor, a chute or a vehicle, and (b) at the cutting teeth or picks of a coal cutting machine. (2) Subsection (1) does not apply to a location where mineral is conveyed from the conveyor of a mobile unit. (3) An employer must ensure that a roadway used by rubber-tired vehicles is treated or wetted to minimize the creation of airborne dust. (4) An employer must ensure that there is an ongoing program for monitoring the concentration of respirable dust to which workers are exposed. (5) The Director may require an employer to install dust collection devices on exhaust fans if the Director considers that conditions warrant doing so.</p> <p><b>Incombustible Dust</b> <b>743(1)</b> This section does not apply to the part of a roadway within 10 metres of the working face while coal cutting is in progress. (2) An employer must ensure that the floor, roof and sides of a roadway that is accessible to workers (a) are treated with incombustible dust, or (b) other methods and mine materials for dust stabilization</p>	<p><b>Sections 180 to 186</b> – Procedures are required for minimizing danger from sulphide dust explosions if material being mined exceeds 20% sulphur by mass. Dry areas underground should be systematically wetted down so as to render any coal dust incombustible. Every travelway underground must be treated with incombustible stone-dust. If concentration of flammable gas does not exceed 1% then no more than 25% coal dust allowed. If concentration of flammable gas exceeds 1% no more than 20% coal dust allowed. Note: No mention of volatile matter. Samples to be taken at least every week.</p> <p>Procedures required for minimizing danger from sulphide dust explosions <b>180</b> If the sulphur content of the material being mined exceeds 20% by mass of material being tested, an employer must develop procedures that are certified as adequate by an engineer for minimizing the danger from a sulphide dust explosion, including (a) provision for ensuring that all persons are removed to a safe place prior to blasting, taking into consideration the mine layout and the ventilation circuits; and (b) provision for ensuring that all active workings within 30 m of a blasting site are, to the degree practicable, kept free of an accumulation of sulphide dust prior to blasting and any additional reasonable precautions for reducing the risk of a sulphide dust explosion or lessening the consequences if there is an explosion.</p> <p>Mine explosion suppression procedure required in a coal mine <b>181</b> (1) An employer at a coal mine must develop a mine explosion suppression procedure certified as adequate by an engineer for the suppression of explosions of coal dust and flammable gas underground that is suitable for the</p>	<p><b>Sections 133 to 136</b> – Dry areas underground shall be systematically wetted down with water. Every roadway shall be treated with incombustible dust. When concentration of flammable gas does not exceed 1%, not less than 75% by weight must be incombustible dust. When concentration of flammable gas exceeds 1%, not less than 80% by weight must be incombustible dust. Note: No mention of volatile matter. Samples to be taken at least once a month.</p> <p><b>Dust Reduction Measures</b> <b>133</b> (1) Every area underground shall be kept free from accumulations of coal dust. (2) Dry areas underground in which coal dust is produced shall be systematically wetted down with water. (3) To reduce coal dust underground, (a) where dry coal is cut by a coal-cutting machine, a jet of water shall be directed over the picks of the machine; and (b) mined coal shall be kept wet during handling.</p> <p><b>Dusting Procedures</b> <b>134</b> (1) Every roadway underground shall be treated with incombustible dust in such a way that the dust on the floor, roof and sides of the roadway contains (a) where the concentration of flammable gas in the air in the roadway does not exceed 1 per cent, not less than 75 per cent by weight of incombustible dust; and (b) where the concentration of flammable gas in the air in the roadway exceeds 1 per cent, not less than 80 per cent by weight of incombustible dust. (2) Subject to subsection (3), the incombustible dust referred to in subsection (1) shall contain not less than 70 per cent by weight of fine material that is capable, when dry, of passing through a sieve of 200 mesh. (3) Where a larger percentage of incombustible dust than the percentage referred to in subsection (1) is used, the</p>

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		<p>or consolidation are used in a manner approved by the Director.</p> <p>(3) An employer must ensure that the dust on the floor, roof and sides consists of at least 65 percent of incombustible matter.</p> <p>(4) Subsections (2) and (3) do not apply if the dust mixture on the floor, sides, timbers and roof of the roadway consists of at least 30 percent by weight of water.</p> <p>(5) An employer must ensure that the minimum amount of incombustible matter prescribed by subsection (3) is increased by 1 percent for each 0.1 percent of flammable gas in the atmosphere if</p> <p>(a) there is flammable gas in the ventilating current, and</p> <p>(b) the volatile matter of the coal is 32 percent or more.</p> <p>(6) If the volatile matter of the coal is less than 32 percent, the minimum amount of incombustible matter prescribed by subsection (3) may be reduced by 1.5 percent for each 1 percent of volatile matter below 32 percent to not less than 50 percent of incombustible matter.</p> <p>(7) An underground coal mine manager must ensure that a part of a roadway is cleaned as thoroughly as possible of all combustible dust before it is dusted for the first time with incombustible dust.</p> <p>Dust sampling  <b>744</b> An employer must</p> <p>(a) put in place and maintain sampling procedures to ensure the requirements of section 743 are met, and</p> <p>(b) keep a record of the results at the mine site.</p>	<p>conditions and mining system of the mine.</p> <p>(2) An employer must ensure that a device required by the mine explosion suppression procedure developed under subsection (1) is</p> <p>(a) designed in accordance with generally accepted engineering principles;</p> <p>(b) certified as adequate by an engineer;</p> <p>(c) constructed, operated, and maintained as designed; and</p> <p>(d) inspected weekly.</p> <p>(3) An employer must ensure that the inspection required by clause (2)(d) is recorded and that the record is kept for 2 years after the date of the last entry.</p> <p>(4) An employer must review the mine explosion suppression procedure required by subsection (1) at least once a year and revise it as necessary.</p> <p>Coal dust minimization procedure required in coal mine  <b>182</b> (1) An employer at a coal mine must develop and file with the Director a coal dust minimization procedure that includes</p> <p>(a) instructions for minimizing the generation of coal dust;</p> <p>(b) instructions for removing coal dust and other flammable materials from the mine to the extent reasonably practicable;</p> <p>(c) a description of the equipment and method for stone-dusting and the required frequency of stone-dusting;</p> <p>(d) the location and quantity of stone-dust stored in the mine for purposes of an emergency.</p> <p>(e) instructions for the sampling and analysis of dust from underground locations including travelways, that</p> <p>(i) is [are] suitable to the conditions and mining system of the mine,</p> <p>(ii) indicates locations and frequency of sampling,</p> <p>(iii) lists equipment, methods, and testing protocols to be used, and</p> <p>(iv) is [are] certified as adequate by an engineer; and</p> <p>(f) details of how the employer will implement the requirements of Section 184.</p> <p>(2) An employer must review the instructions required by clause (1)(e) for the sampling and analysis of dust underground at least once a year, and revise it [them] as necessary.</p> <p>(3) An employer at a coal mine must ensure that</p> <p>(a) at least once every week, representative samples of dust are taken, in accordance with the instructions for sampling required by clause (1)(e), from the floor, roof and ribs along the length of each travelway underground and analysed to determine the percentage of flammable material;</p> <p>(b) the person who takes the samples referred to in clause</p> <p>(a) makes a plan that identifies the location in the travelway where each sample was taken; and</p> <p>(c) the manager receives the results of the analysis not later than 1 week after the date on which the sample was taken.</p> <p>(4) An officer may order an employer at a coal mine to take the samples described in clause(3)(a) more frequently than required in the clause.</p>	<p>percentage of fine material referred to in subsection (2) may be reduced in proportion to the increase in the amount of incombustible dust, but in no case shall it be less than 25 per cent.</p> <p><b>135</b> (1) At least once every month, samples of dust shall be taken from the floor, roof and sides along the length of each roadway underground and shall be analysed to determine the percentage of combustible material therein.</p> <p>(2) The employer shall, in respect of the analysis referred to in subsection (1),</p> <p>(a) keep a record of the analysis; and</p> <p>(b) submit a written report of the results of the analysis to a safety officer at the district office before the 15th day of the month following the analysis.</p> <p><b>136</b> Not less than 20 bags of incombustible dust, each weighing not less than 25 kg, shall be stored for emergency use within 150 m of each working face in the intake airway and within 40 m of each working face in the return airway.</p>

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			<p>(5)An employer must</p> <ul style="list-style-type: none"> <li>(a) keep a record of the results of the analysis required by clause (3)(a) along with the plan required in clause (3)(b) for a period of at least 2 years after the date that the area of the underground mine from which the sample was taken is no longer active; and</li> <li>(b) notify to the committee or representative, if any, the results of the analysis required by clause (3)(a), as required by subsection 27(4).</li> </ul> <p>Reducing coal dust accumulation in a coal mine</p> <p><b>183</b> (1) Where reasonably practicable, an employer must ensure that every area underground in a coal mine is kept free of accumulations of coal dust.</p> <ul style="list-style-type: none"> <li>(2) An employer must ensure that dry areas underground in which coal dust is produced are systematically wetted down so as to render any coal dust incombustible.</li> <li>(3) To reduce coal dust underground, an employer must ensure that <ul style="list-style-type: none"> <li>(a) all coal-cutting heads are equipped with water-spray jets of sufficient number and size to ensure that the areas of the coal face being worked are kept in a damp so as to render any coal dust incombustible;</li> <li>(b) all transfer points where coal is moved from one mode of transfer to another, including all dumping stations, are equipped with water-spray jets sufficient to render any coal dust incombustible; and</li> <li>(c) mined coal is kept wet during handling underground.</li> </ul> </li> <li>(4) An employer must ensure that a competent person designated by the employer <ul style="list-style-type: none"> <li>(a) regularly inspects and maintains the water-spray jets required [by] clauses (3)(a) and (b); and</li> <li>(b) records the results of the inspection and maintenance.</li> </ul> </li> </ul> <p>Use of stone-dust in a coal mine</p> <p><b>184</b> (1) An employer at a coal mine must ensure that every travelway underground is treated with incombustible stone-dust so that the dust on the floor, roof and ribs of the travelway contains</p> <ul style="list-style-type: none"> <li>(a) if the concentration of flammable gas in the air in the travelway does not exceed 1% by volume in the air being tested, no more than 25% coal dust by mass of dust being tested; and</li> <li>(b) if the concentration of flammable gas in the air in the roadway exceeds 1% by volume in the air being tested, no more than 20% of coal dust by mass of dust being tested.</li> </ul> <ul style="list-style-type: none"> <li>(2) An employer must ensure that, prior to an area being stone-dusted, it is free and clear of coal dust.</li> <li>(3) An employer must ensure that the incombustible stone-dust used in a coal mine contains <ul style="list-style-type: none"> <li>(a) at least 70% by mass of material that is capable, when dry, of passing through a sieve of 75 µm;</li> <li>(b) less than 1% by mass of flammable material as determined by a test of the flammable material content of the stone dust as a whole; and</li> <li>(c) less than 1% by mass of free crystalline silica.</li> </ul> </li> <li>(4) An employer must ensure that at least 20 bags of dry</li> </ul>	

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			<p>incombustible stone-dust weighing at least 25 kg each, are stored underground in a coal mine</p> <p>(a) within 150 m of each working face in the intake airway;</p> <p>(b) within 40 m of each working face in the return airway;</p> <p>(c) at every 60 m along a conveyor belt; and</p> <p>(d) at each</p> <p>(i) shop,</p> <p>(ii) flammable material storage area,</p> <p>(iii) conveyor belt drive area,</p> <p>(iv) conveyor belt loading area,</p> <p>(v) ventilation door or curtain,</p> <p>(vi) location where electrical mine switch gear and transformers are installed,</p> <p>(vii) crusher station,</p> <p>viii) pump station,</p> <p>(ix) shaft station,</p> <p>(x) tipple,</p> <p>(xi) service garage,</p> <p>(xii) fuelling station,</p> <p>and any additional location where a fire hazard could exist.</p> <p>Stone-dusting at working face</p> <p><b>185 (1)</b> In addition to the requirements of Section 184, an employer must ensure that</p> <p>(a) all underground areas of a coal mine that are more than 12 m from a working face are stone-dusted; and</p> <p>(b) all cross-cuts within 12 m from a working face are stone-dusted.</p> <p>(2) Despite subsection (1) an employer must ensure that all areas in a blasting area are stone-dusted as close as reasonably practicable to the sites of the charges and prior to initiating the blast at the working face.</p> <p>Water for dust control</p> <p><b>186 (1)</b> At any location where material is drilled, blasted, loaded or transported, an employer must ensure that</p> <p>(a) clean water under pressure is available for dust control purposes during drilling; and</p> <p>(b) broken material is thoroughly wetted</p> <p>(i) during drilling,</p> <p>(ii) after blasting, and</p> <p>(iii) when the material is being loaded or scraped.</p> <p>(2) Subsection (1) does not apply at a non-coal mine if the material being mined is hygroscopic.</p> <p>(3) Despite subsection (1), if it is not reasonably practical to control dust in the manner for a level of protection required by (1) an employer must develop and implement a procedure that provides protection that is equal to or greater than the level of protection that would be provided by compliance with subsection (1).</p>	
<p>Stoppings/Seals/Barricades - what are the requirements for each jurisdiction ?</p>	<p><b>6.41-1 to 3 (1)</b> All stoppings between intake and return airways shall be of substantial construction and built in a manner to prevent any undue leakage of air.</p> <p>(2) The space between the faces of all stoppings and the airways shall be kept free of obstructions.</p> <p>(3) Provisions shall be made for monitoring the conditions behind stoppings.</p>	<p><b>Section 715 – Stoppings</b> An employer must ensure that</p> <p>(a) ventilation stoppings between intake and return airways prevent air leaks, and</p> <p>(b) the space between the faces of ventilation stoppings and roadways is kept free of obstructions.</p> <p><b>Section 716 – Seals</b></p>	<p><b>Section 249</b> Stoppings in a coal mine - (1) An employer must seal permanently abandoned workings in a coal mine with permanent stoppings that are designed by an engineer to minimize the transfer of gas or water over the area of the stopping and are certified by an engineer as adequately constructed to achieve their design intent.</p> <p>(2) An employer must ensure that the engineering design</p>	<p>Stoppings and Barricades</p> <p><b>155 (1)</b> Before stoppings or barricades are installed for fire protection in an area of a coal mine, all persons, other than those persons required to install the stoppings or barricades, shall be evacuated from the area.</p> <p>(2) No person shall enter an area referred to in subsection (1) for a period of 24 hours after stoppings or barricades</p>



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		<p>(1) An employer must ensure that worked out or inaccessible parts of a mine are sealed off.</p> <p>(2) An employer must ensure that a worked out district is sealed off within 3 months after mining stops in the district unless the Director exempts it.</p> <p>(3) An employer must ensure that workers monitor conditions at a seal to ensure that a hazardous condition does not develop.</p> <p>(4) An employer must ensure that a seal constructed to contain fire, spontaneous heating or another similar hazard is</p> <p>(a) certified by a professional engineer,</p> <p>(b) constructed to withstand the force of an explosion in the sealed off area, and</p> <p>(c) has a method of sampling the atmosphere and draining water from behind the seal.</p> <p><b>Section 736 – Sealed off areas</b></p> <p>(1) An employer must ensure that parts of a mine that cannot be kept free of accumulations of gas are fenced off.</p> <p>(2) If an accumulation of gas cannot be safely removed, an employer must ensure that the affected parts are sealed in accordance with section 716.</p>	<p>and certification required by subsection (1) are countersigned by the manager.</p> <p>(3) An employer must ensure that the space in front of all stoppings is kept free of obstructions.</p> <p>(4) An employer must develop procedures that are certified as adequate by an engineer for monitoring</p> <p>(a) the atmosphere behind a stopping for flammable and noxious gases; and</p> <p>(b) water pressure behind the stopping.</p> <p><b>Section 212 – Prohibiting entry into unventilated working –</b></p> <p><b>212</b> (1) An employer must barricade the entry to an area of a mine that is not ventilated to prevent inadvertent entry and post an adequate number of signs in conspicuous places warning that entry is prohibited.</p> <p>(2) An employer must ensure that the air in an unventilated area of a mine is tested before a person, other than a person testing the air, enters or is permitted to enter the area.</p> <p>(3) A person who enters an unventilated area of a mine to test the air is not permitted to enter the area unless an employer ensures that the person is given and complies with procedures, including plans and instructions, necessary for the person’s protection that are countersigned by the manager.</p> <p>(4) The procedures referred to in subsection (3) must include</p> <p>(a) the method of communication among persons in the unventilated area of the mine and between those persons and an attended place outside that area of the mine;</p> <p>(b) emergency response instructions, including a list of the equipment that must be made available for use in an emergency situation; and</p> <p>(c) a list of any hazard or potential hazard to a person entering the unventilated area of the mine.</p>	<p>have been installed, except for the purpose of saving life, preventing injury or relieving human suffering.</p> <p><b>156</b> Where coal is left unmined as a barrier against fire or flooding or for any other safety purpose, no person shall remove the coal.</p> <p><b>157</b> All openings to any underground area that is not being worked or developed shall be</p> <p>(a) stopped off; and</p> <p>(b) posted with a warning sign that states "DO NOT ENTER" and "ENTRÉE INTERDITE".</p> <p>Guards, Fences and Barricades</p> <p><b>Section 50.</b> (1) Where flammable gases are discharged from a methane drainage system in an area, a barricade shall be installed in a location where the concentration of flammable gas does not exceed 2%, to prevent access to the area by unauthorized persons.</p> <p>(2) Warning signs shall be posted on the barricade referred to in subsection (1), indicating that access by unauthorized persons is prohibited.</p>
<p>Training - what are training requirements ?</p>	<p><b>Section 1.11</b> – Manager must ensure workers are adequately trained and ensure that all employees receive thorough orientation and basic instruction in safe work practices. The manager shall maintain a record of all training workers and supervisors have received, and make this record available to an inspector upon request.</p>	<p><b>Section 683</b> - The underground coal mine employer is responsible for ensuring that underground coal mine workers are supervised by competent supervisors and managers. For supervisory and management candidates that meet a minimum standard of academic knowledge and experience, Alberta’s Board of Examiners for mining issues a formal certificate.</p> <p>According to this section, only persons holding a valid certificate may be appointed by the employer. Although the Board of Examiners assesses technical knowledge, the employer must ensure that a certified candidate has all of the other management skills necessary to successfully supervise or manage an underground coal mine.</p> <p>Additional info in <b>Sections 684 to 685.</b></p>	<p><b>Section 425</b> - An employer is required to develop and maintain job training program. Section 426 - Employer to review job training program at least every 3 years. <b>Sections 427 to 451</b> go into a lot more detail regarding training. <b>Sections 452 to 468</b> go into details of “Qualifications” for the various job positions.</p>	<p>Training</p> <p><b>57</b> (1) Subject to subsection (2), no person shall be employed to work as a coal miner at a working face unless the person is a coal miner.</p> <p>(2) A person who is not a coal miner may be employed at a working face to perform the functions of a coal miner if the person is employed for training purposes for not more than eight months and a qualified person accompanies the person, exercises close personal control over the person and provides appropriate guidance to the person in respect of safe work practices.</p> <p>(3) No person shall be employed at a working face to perform functions other than the functions of a coal miner unless the person has received training in the safety and health procedures to be followed.</p> <p><b>58</b> Every employee whose employment in a coal mine requires that the employee be the holder of a certificate, other than a coal miner's certificate, shall complete a refresher course, approved by the Provincial Board, within six months after the expiration of every five-year period after</p> <p>(a) the date of the certificate; or</p>

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<p>Open Flame / Welding What are the conditions to undertake cutting and welding underground ?</p>	<p><b>Section 3.5.1</b> No person shall (1) light or build a fire in an underground mine, or (2) weld, cut by the use of heat or flame, or use a blowtorch in an underground coal mine without the written permission of the chief inspector, and (3) the manager of an underground coal mine may submit for approval by the chief inspector a procedure for cutting and welding underground, and once this procedure is approved need only notify an inspector for future cutting and welding within the parameters of the approval.</p>	<p><b>Section 746</b> Welding, cutting and soldering <b>Subsection 746(1)</b> This section prohibits any hot work that could serve as an ignition source. Exceptions to this requirement may be approved by the Director according to subsection 746(2). <b>Subsection 746(2)</b> An exemption is provided for cutting and welding only in situations where no other alternative is available. For this, however, the employer must obtain permission from the Director through an application containing the rationale for the exemption and the measures to be taken to ensure the safety of the operation. <b>Subsection 746(3)</b> If permission for cutting and welding is granted by the Director, the employer must ensure that defined safe operating procedures are followed. Section 8 of the OHS Regulation requires that the procedures be in writing and available to workers. Workers must conduct tests at regular intervals to determine if it is safe to cut, weld, or solder.</p>	<p>Procedures for hot work at a coal mine <b>161</b> (1) At a coal mine, despite subsection 157(1), if procedures for the safe use of hot work equipment are developed by an employer, certified as adequate by an engineer and countersigned by the manager and all the work using hot work equipment is conducted in accordance with the procedures, a blow torch or welding, cutting or other hot work equipment may be used anywhere underground, except at (a) an area in which flammable material is kept in a storage area; or (b) a fuelling station containing diesel fuel. See Subsections (2) to (12) for additional information. e.g. must file notice 30 days prior to the work, must give 24 hour notice before starting the work, written instructions are required, fire-extinguishing equipment must be readily available, coal dust removed and area stone-dusted within 20 m, must test for flammable gas and work halted if flammable gas reaches or exceeds 0.5%, must maintain a fire watch for at least 24 hours, etc.</p>	<p>(b) the date of the most recent refresher course taken by the employee in respect of the certificate. Sources of Ignition <b>141</b> (1) No welding, soldering, brazing or other open-flame or heating work shall be carried out underground or at a location above ground that is within 30 m of a shaft or airway unless (a) the employer has given not less than 24 hours notice of the work to a safety officer at the district office; (b) the air in the area where the work is carried out is tested before and during the work and the concentration of flammable gas in the air is found to be not more than 0.25 per cent; (c) the area that is within 8 m of the location where the work is carried out is cleared of all combustible substances and materials that are not necessary for the operation of the coal mine and is thoroughly wetted down; (d) guards are installed to prevent sparks from escaping from the area where the work is carried out; (e) two portable fire extinguishers that have a rating of 10A:60B:C and that meet the standards set out in National Standard of Canada standard CAN4-S508-M83, Rating and Fire Testing of Fire Extinguishers, dated June 1983, are readily available at the location where the work is carried out; and (f) the work is under the constant supervision of a qualified person. (2) Where welding, soldering, brazing or other open-flame or heating work is carried out underground, an employee who holds a certificate as a mine examiner shall remain in attendance at the location where the work was carried out for a period of 24 hours after the work ceases. (3) All conveyor belts underground shall be so constructed that they are fire-retardant and anti-static. (4) Where practicable, lubricants and hydraulic fluids that are used in machinery underground shall be fire-retardant.</p>
<p>Contraband What are the rules as they pertain to contraband ?</p>	<p><b>Section 3.5.2</b> No person shall possess while underground in a coal mine or in any part of a mine designated by the manager (1) a match or apparatus of any kind for creating an open flame or spark except as it exists in a flame safety lamp, or (2) cigarettes, cigars, or smoking materials in any form. <b>3.1.2</b> No person shall possess intoxicating liquor, or illegal drugs in or about a mine.</p>	<p><b>Section 621</b> – A worker must not smoke tobacco or have an open flame or smouldering substance within 8 metres of a vehicle transporting explosives. <b>Section 693</b> – Means of ignition (1)An employer must ensure that workers entering a mine do not take smoking materials, matches or other means of ignition into the mine. (2)Workers must not have smoking materials, matches or other means of ignition in their possession when they enter a mine or otherwise transport them into the mine. (3)A worker must not use smoking materials, matches or other means of ignition in a mine. (4) Subsections (1) to (3) do not prohibit a worker from taking an approved explosive initiating apparatus or cutting equipment specifically permitted by this Code into a mine or from using it. <b>Section 694</b> – No smoking warnings – The underground coal mine manager must ensure that areas at the surface in which tobacco or matches or other means of ignition are not allowed are clearly marked as no smoking areas.</p>	<p><b>Section 157</b> - No smoking or open flame at a coal mine (1) At a coal mine, no person is permitted to smoke or use open-flame lamps, matches or other objects capable of producing heat or fire, or to have in their possession any objects capable of producing heat or fire, (a) underground; (b) when preparing to enter the underground; (c) on the surface within 30 m of an opening to the underground; or (d) on the surface at the places referred to in subsection (3), and an employer must ensure that no person contravenes this subsection. (2) An employer at a coal mine must post a sign at a conspicuous place near the entrance to the underground prohibiting smoking or open flames underground or when preparing to enter the underground area of a mine. (3) An employer at a coal mine must post a sign at a conspicuous place prohibiting smoking and open flames on the surface (a) at an area in which flammable material is kept in a storage area;</p>	<p>Alcohol and Drugs <b>142</b> (1) Subject to subsection (2), no person shall go or attempt to go underground in a coal mine if the person has in the person's possession (a) alcohol or drugs; or (b) a match, a cigarette lighter, a cigarette, a pipe, a cigar, tobacco or any other article for use in smoking. (2) Subject to subsection (3), paragraph (1)(a) does not apply to an employee who is in possession of a drug that has been prescribed for the employee by a physician or any other drug the sale of which is authorized under the laws of Canada. (3) No person shall enter a coal mine if the person is under the influence of alcohol or drugs to such an extent as to constitute a danger to any employee. (4) A warning sign of durable construction shall be posted in a conspicuous place at the lamp house of every coal mine and shall bear the following, in white letters not less than 65 mm high on a red background: "No alcohol, drugs, smoking, matches, lighters or other articles for use in smoking" and "Défense de fumer ou</p>

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			<p>(b) at a battery charging station;  (c) at a fuelling station containing diesel fuel;  (d) at a transformer containing flammable material; and  (e) at a place where a fire hazard might be created  (i) by smoking or open flames, or  (ii) from flammable gas or coal dust,  and that is designated in writing by the manager as a fire hazard area.</p> <p>Random searches at a coal mine  <b>Section 158</b> - An employer must ensure that a manager at a coal mine designates at least 1 person to conduct searches of persons prepared to enter the underground for the objects capable of producing heat or fire.  <b>Section 159</b> (1) An employer must ensure that a manager at a coal mine ensures that searches for objects capable of producing heat or fire are conducted at random intervals not exceeding 1 month. See subsections (2) to (6) for additional info.</p>	<p>d'avoir en sa possession des spiritueux, une drogue, une allumette, un briquet ou un autre article pour fumer"  "Random searches of persons going underground may be carried out for alcohol, drugs and articles for use in smoking." and "Les personnes qui pénètrent dans la partie souterraine peuvent faire l'objet de fouilles au hasard pour les spiritueux, les drogues et les articles pour fumer."</p> <p>Random Searches  <b>143</b> (1) For the purposes of section 142, the mine manager shall, at random intervals not exceeding one month, cause a search to be made of  (a) every person who is not an employee and who is granted access to the underground portion of the coal mine;  (b) every employee who is not normally employed underground and who is granted access to the underground portion of the coal mine; and  (c) at least 10 per cent of employees who are normally employed underground.  (2) Searches referred to in subsection (1) shall be made  (a) in the case of a person referred to in paragraph (1)(a) or (b), immediately before the person goes underground; and  (b) in the case of an employee referred to in paragraph (1)(c), after the employee leaves the wash house and before the employee goes underground, or at any time when the employee is underground.  (3) The mine manager or the underground manager and at least one designated person shall be present to witness any search referred to in subsection (1).  (4) A person who is selected as the subject of a search under this section may, instead of being searched by another person, search himself in the presence of the witnesses referred to in subsection (3) and two witnesses of the person's own choosing.  (5) Where a person who has entered a coal mine is found to have in the person's possession any thing referred to in subsection 142(1), the person shall  (a) be instructed to leave the coal mine as soon as this may be done without jeopardizing the safety of others; and  (b) immediately follow the instruction referred to in paragraph (a).  (6) A complete record of the finding of any thing referred to in subsection 142(1) in the possession of any person shall be made by the mine manager and kept above ground at the coal mine for a period of not less than 10 years after the date of the finding.</p>
<p>Evacuation/Escapeways  What provisions are made regarding escapeways and evacuation ?</p>	<p><b>Section 3.13.1</b> The manager of a mine shall  (1) prepare procedures for the safe evacuation of personnel from the mine, or part of the mine, if necessitated by an emergency,  (2) post copies of the procedure in conspicuous places at the surface and underground, and  (3) ensure that each employee receives instruction in the procedures prepared under subsection (1) and that he can recognize the emergency warning system and is familiar with the emergency escape routes from the mine.</p>	<p><b>Section 702</b> (1) The underground coal mine manager must ensure that shafts, tunnels, levels, ladders, stairs and similar installations used as escape ways  (a) are kept free from accumulations of ice and obstructions of every kind, and  (b) have a sign posted where necessary to show the direction to the surface outlet.  (2) An underground coal mine manager must ensure that all water is conducted away from stairways.  (3) An employer must ensure that shafts, tunnels and slopes used as escape ways and inclined at more than 30 degrees</p>	<p><b>Section 125</b> – Emergency Preparedness  (1) An employer must develop an emergency preparedness program in consultation with  (a) the committee, or representative; if any  (b) the local municipality; and  (c) the Emergency Measures Organization, as defined in the Emergency Measures Act.  (2) An employer must ensure that an emergency preparedness program includes  (a) a list of the persons, on and off the mine site, whose services are needed to respond in an emergency, their</p>	<p>General  <b>35</b> (1) The mine manager shall, in respect of each underground portion of a coal mine,  (a) develop for employees procedures for the safe entry to, exit from and occupancy of that portion;  (b) develop emergency procedures that include  (i) an emergency evacuation plan,  (ii) a description of the procedures to be followed,  (iii) the location of the emergency equipment provided by the employer, and  (iv) an up-to-date plan of the coal mine; and</p>

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		<p>from horizontal have ladders, walkways or other apparatus that</p> <p>(a) are designed to allow workers to leave the mine safely,</p> <p>(b) are kept in good repair, and</p> <p>(c) lead to the mine opening.</p> <p>(4) An employer must ensure that the airway and travelling road of an escape way is not less than 2 metres high and 2 metres wide.</p> <p><b>Section 553</b> Evacuation - An employer at an underground mine must</p> <p>(a) prepare procedures for safe evacuation of the mine,</p> <p>(b) post copies of the procedures at conspicuous places on the surface and underground, and</p> <p>(c) ensure that all workers</p> <p>(i) are instructed in the procedures,</p> <p>(ii) recognize the emergency warning, and</p> <p>(iii) are familiar with the emergency escape routes.</p>	<p>telephone numbers and contact information, and their assigned responsibilities;</p> <p>(b) an organizational chart that includes</p> <p>(i) the names of the persons listed in [under clause] (a) and their assigned responsibilities, and</p> <p>(ii) the contact information for emergency services agencies of the local municipality or the Province that provide services as part of the Emergency Preparedness Program;</p> <p>(c) procedures for notifying agencies or authorities as required by these regulations or the emergency preparedness program;</p> <p>(d) a list of all emergency supplies and equipment, including</p> <p>(i) the quantity of each item,</p> <p>(ii) a description of the location of each item, and</p> <p>(iii) details on the use of each item;</p> <p>(e) an adequate procedure for fighting fires at the mine;</p> <p>(f) a mine rescue procedure for the underground, to be followed in the event of an emergency, including</p> <p>(i) the circumstances under which the mine rescue procedure must be implemented,</p> <p>(ii) how mine rescue teams and equipment will be prepared,</p> <p>(iii) how the aid agreement required by Section 142 will be implemented,</p> <p>(iv) instructions to be followed on the surface and underground to ensure adequate direction and supervision when the mine rescue procedure is implemented, and</p> <p>(v) written instructions describing how to evacuate each workplace;</p> <p>(g) a description of the warning system for the underground required by Section 131;</p> <p>(h) details on the availability of</p> <p>(i) emergency communication facilities,</p> <p>(ii) emergency transportation facilities,</p> <p>(iii) emergency power equipment, and</p> <p>(iv) ventilation equipment;</p> <p>(i) a plan that shows the location of all fire-extinguishing equipment, fire- suppression systems, and fire hydrants; and</p> <p>(j) a description of training to be offered to municipal emergency response staff.</p> <p>(3) An employer must ensure that the emergency preparedness program, to the extent reasonably practicable, is coordinated with</p> <p>(a) all emergency plans developed; and</p> <p>(b) support services provided by the local municipality and the Province.</p> <p>(4) An employer must file the emergency preparedness program with the Director and keep a copy of it for at least of 2 years after it is revised, or becomes obsolete.</p>	<p>(c) develop and implement safe operating procedures for each employee occupation.</p> <p>(2) The employer shall keep a copy of the procedures referred to in subsection (1) readily available for examination by employees at the coal mine in respect of which the procedures apply.</p> <p>(3) The employer shall instruct and train all employees in the procedures referred to in paragraphs (1)(a) and (b).</p>
Emergency Warning System What requirements are in place for warning systems ?	<b>Section 3.13.2</b> The manager shall develop and maintain a system acceptable to an inspector for warning all employees, whether underground or in buildings on surface, of an emergency requiring prompt evacuation of their work places.	<b>Section 551</b> – Fire detection systems (1) An employer at an underground coal mine must ensure that	<b>Section 131</b> – Warning system (1) An employer must establish, construct, operate, inspect, and maintain a warning system for the underground that is made up of	Not found

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	<p><b>Section 3.13.3</b> A test of the warning system required under section 3.13.2 that does not involve evacuation of key process personnel shall be carried out at least once every 12 months on a production shift, and the manager shall ensure that key process personnel unable to evacuate are knowledgeable with the warning system, and the evacuation procedure.</p> <p><b>Section 3.13.4</b> A report of all emergency warning system tests, including their effectiveness, shall be produced in a timely manner by the manager, reviewed by the OHSC and kept on file at the mine.</p>	<p>(b) the system automatically activates an alarm in the manned surface control room if the system stops working.</p> <p>(2) The Director may require an employer to install a fire detection system at a specific location in an underground coal mine.</p> <p><b>Section 552</b> – Emergency warning system - An employer at an underground coal mine must</p> <p>(a) establish an effective emergency warning system that warns all workers at a work area of an emergency that requires workers to evacuate the area promptly, and</p> <p>(b) ensure that the emergency warning system is tested at least once in every 12 month period.</p>	<p>persons underground of an emergency requiring prompt evacuation of their workplaces, and persons on the surface of the emergency; and</p> <p>(b) procedures for</p> <p>(i) activation of the alarm, and</p> <p>(ii) adequate response by persons to the alarm.</p> <p>(2) An employer must ensure that the alarm required as part of the warning system</p> <p>(a) is protected against weather at all times, maintained and available for immediate use; and</p> <p>(b) if powered, has a back-up power source, or a system that uses various power sources, for its activation system.</p> <p>(3) For greater certainty, an alarm required as part of the warning system need not be powered.</p> <p>(4) An employer must post an explanation of the use of the warning system and a copy of the procedures required under clause (1)(b) that are applicable to a particular area of the mine, at a conspicuous location in that area, including at every shaft station, in underground garage or shop, refuge station, first-aid station, and lunchroom.</p> <p><b>Section 132</b> – Training for warning system - An employer must ensure that all persons working at the mine are adequately instructed and trained regarding their duties and responsibilities if the warning system is implemented.</p> <p><b>Section 133</b> – Testing of warning system</p> <p>(1) Each year an employer must, without prior notice, conduct at least one test of the warning system for each shift at the mine.</p> <p>(2) The tests required by subsection (1) must be taken</p> <p>(a) at different dates, spread out over the year; and</p> <p>(b) during shifts that include the maximum number of mine workers at the mine.</p> <p>(3) An employer must ensure that the results of the tests required by subsection (1) are recorded.</p>	
<p>Undersea/underwater</p> <p>What provisions are there for mining beneath bodies of water ?</p>	<p><b>Section 6.25.4</b> – Old Abandoned Workings - No work shall be carried out within 30 m of abandoned or old workings, or any accumulation of water or unconsolidated material, or any other substance that may flow, unless the proposed work procedure has been approved by the manager.</p> <p><b>Section 1.7.3</b> - Dangerous occurrences to be reported shall include</p> <p>(4) unexpected inrush of water, mud, slurry, or debris,</p>	<p><b>Section 749</b> – Water or gas</p> <p>(1) An employer must apply to the Director for an acceptance if a working face approaches to within 100 metres horizontally of</p> <p>(a) a projection onto the working face of a place that is likely to contain a dangerous accumulation of water or gas, or</p> <p>(b) inactive workings that have not been examined and found free from accumulations of water or gas.</p> <p>(2) An application for an acceptance under subsection (1) must include a scheme certified by a professional engineer.</p> <p>(3) A working face referred to in subsection (1) may not be advanced unless the Director has issued an acceptance.</p>	<p><b>Section 110</b> - Advancing within 300 m of a body of water or material at a coal mine that could flow</p> <p>In a coal mine, if a working face is advancing towards an area that is less than 300 m from a body of water or material that could flow, an employer must ensure that</p> <p>(a) 1 exploration drill hole is driven in advance of a shortwall or longwall working face; and</p> <p>(b) if there is a solid barrier of competent, unworked material of 150 m or less between the body of water and roof of the face,</p> <p>(i) soundings are taken, at reasonable distances, for the purposes of determining the depth of the water, to a distance of at least 300 m in advance of the working face,</p> <p>(ii) measurements are taken at the working face at least once every 3 months for the purpose of determining the thickness of the barrier, and</p> <p>(iii) the location of the soundings and the measurements required by subclauses (i) and (ii) are marked on a plan of the underground workings that is kept readily available for examination by mine workers.</p>	<p>Solid Measure</p> <p><b>55</b> - No coal mine shall be worked below the sea bottom or below a body of water or material that may flow, except under the following conditions:</p> <p>(a) a solid barrier of unworked mineral of 50 m or more shall be left between the workings of a submarine lease and any other submarine lease;</p> <p>(b) subject to paragraph (c), where a coal seam or stratified deposit is worked, there shall be a cover of 55 m or more of solid measure; and</p> <p>(c) where a passageway is driven, there shall be a cover of 30 m or more of solid measure.</p>
<p>Diesel Emissions – RCD (Respirable Combustible Dust)</p>	<p><b>6.37.2</b> Diesel Equipment Ventilation In a mine or part of a mine in which diesel equipment is operating underground</p>	<p>Unable to find a reference in Part 36.</p>	<p><b>Section 214</b> - Air flow to active working where diesel engine operating</p>	<p>Not specifically mentioned.</p>

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What provisions are required as to exposure to diesel particulate matter (DPM) ?	<p>(1) measurements of the quantity of air flowing shall be taken at intervals not exceeding once a week,</p> <p>(2) tests shall be made at least once a shift, in the general body of the air, on the exhaust side of the operating diesel equipment, for nitrogen dioxide or oxides of nitrogen and other gases specified by an inspector,</p> <p>(3) the time-weighted average exposure of a worker to airborne respirable combustible dust shall be no more than 1.5 milligrams per cubic metre of air, and</p> <p>(4) the worker may request that tests be conducted to determine the volume of air flow, carbon monoxide, nitrogen dioxide, formaldehyde, or respirable combustible dust contents of the atmosphere.</p> <p><b>Section 6.37.3</b> The measurements required to be taken under sections 6.37.2(1) and 6.37.2(2) shall be recorded in a book kept for that purpose.</p> <p><b>Section 6.6.1</b> – Diesel Equipment Underground (1) The manager shall ensure that written procedures for the operation and maintenance of diesel-powered equipment are established.</p> <p>(2) The fuel for a diesel engine shall conform with CAN/CGSB-3.16-99, "Mining Diesel Fuel," Special-L.S.</p> <p>(3) A minimum of 0.06 cubic metre per second of ventilating air for each kilowatt of power of the diesel-powered equipment operating shall be circulated by mechanical means through every workplace where diesel-powered equipment is operating.</p> <p>(4)(a) No piece of mobile diesel equipment shall be left unattended while the engine is running.</p> <p>(b) On parking a piece of mobile diesel equipment, there shall be a cool down period as established by the OHSC or the manufacturer's specification.</p> <p>(c) Once the operator leaves the piece of equipment the master switch shall be turned off.</p>		<p>An employer at a non-coal mine must ensure that the air flow to an active working where a diesel engine is operating reduces the concentration of airborne respirable combustible dust to prevent the exposure of a person to a time-weighted average concentration of more than 1.5 mg per m<sup>3</sup> of air averaged over an 8-hour period.</p> <p><b>Section 215</b> - Testing of air where diesel engine operating</p> <p>(1) An employer must ensure that a competent person tests, with respect to each diesel engine operating underground,</p> <p>(d) for a minimum of 4 hours at least every 6 months in a non-coal mine, the airborne respirable combustible dust concentration in the air</p> <p>(i) adjacent to and downwind of the exhaust of the engine, and</p> <p>(ii) in the operator's breathing zone.</p> <p>(4) A competent person performing a test under subsection (1) or (3) must record and sign the following information for each diesel engine tested:</p> <p>(a) date and location of test;</p> <p>(b) machine type, number and engine serial number;</p> <p>(c) flow of ventilating air measured in cubic metres per second;</p> <p>(f) respirable combustible dust concentration, measured in milligrams per cubic metre of air.</p>	
Degassing What degassing procedures are required when fans are restarted ?	<p><b>Section 6.34.1</b> – Interruption to Main Fan - If the main system of ventilation for an underground mine is stopped, other than through a brief interruption of the power supply, all persons shall be withdrawn to the surface of the mine or to an approved refuge station in accordance with the manager's emergency procedures, and there shall be no entry of persons until the ventilation has been restored and the workings inspected and declared safe by an authorized person.</p> <p><b>Section 6.36.2</b> Where auxiliary ventilation systems are necessary, the manager of an underground mine shall prepare rules and procedures for the installation and use of auxiliary ventilation systems and, in the case of a coal mine, for the degassing of headings. A copy of the procedures shall be posted at a conspicuous location at the mine.</p>	<p><b>Section 720</b> – Reverse flows</p> <p>(1) An employer must ensure that the ventilation system is designed and maintained so that it allows the air flow in the mine to be reversed.</p> <p>(2) A worker must not reverse the air flow of a main fan without the underground coal mine manager's authorization.</p> <p><b>Section 725</b> Fan operating procedures</p> <p>(1) An employer must ensure that</p> <p>(a) if a booster fan or auxiliary fan stops, workers in an area that is affected by the stopping move to a place that is adequately ventilated, and</p> <p>(b) a competent worker tests the affected area to ensure it is adequately ventilated before other workers enter the area.</p> <p>(2) An employer must ensure that an auxiliary fan is not restarted unless a competent worker has</p> <p>(a) inspected the area underground that is serviced by the auxiliary fan and has tested for flammable gases,</p> <p>(b) declared in writing that it is safe to restart the auxiliary</p>	<p><b>Section 225</b> - Response to fan failure at a coal mine</p> <p><b>225</b> (1) If a fan fails at a coal mine, an employer must ensure that</p> <p>(a) all persons in the area affected by the failure, except those working to repair the fan, withdraw to a safe place;</p> <p>(b) every electrical installation in the area affected by the failure is de-energized and remains de-energized until the ventilation is restored; and</p> <p>(c) diesel-powered equipment in the area affected by the failure is shut down and remains off until the ventilation is restored.</p> <p>(2) At a coal mine, if a fan that fails remains stopped for more than 30 minutes, an employer must report the following to the Director as soon as reasonably practicable:</p> <p>(a) the reason for the failure;</p> <p>(b) the time the fan stopped;</p> <p>(c) the duration of the failure; and</p> <p>(d) any remedial action taken.</p> <p>(3) Once a fan in a coal mine is repaired, an employer at a coal mine must ensure that adequate ventilation is restored and that a person who has been designated as a mine</p>	<p>Safe operating procedures for fans</p> <p><b>116</b> (1) Where a main fan, booster fan or auxiliary fan stops for any reason, every person who is in an area that is affected by the stoppage shall be evacuated to a place that is ventilated in accordance with subsection 110(1).</p> <p>(2) A qualified person shall, before any other person enters an area that has been evacuated pursuant to subsection (1), inspect the area to determine whether it is ventilated in accordance with subsection 110(1).</p> <p>(3) Where a main fan or booster fan stops for any reason for more than 30 minutes, the mine manager shall, without delay, submit a written report of the circumstances under which it stopped to a safety officer at the district office.</p> <p>(4) Where an auxiliary fan stops, no person shall restart the auxiliary fan unless a qualified person has</p> <p>(a) inspected the area underground that is serviced by the auxiliary fan and has tested for flammable gases; and</p> <p>(b) informed the person that it is safe to restart the auxiliary fan.</p> <p>(5) The mine manager shall prepare procedures to be followed in the event of the stoppage of an auxiliary fan</p>

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		<p>fan, and (c) posted a copy of the declaration in a conspicuous location at the mine. (3) An employer must develop a code of practice to be followed if an auxiliary fan stops and post it at a conspicuous location at the surface of the mine. (4) If a main fan or booster fan stops for more than 30 minutes, an employer must immediately give the Director a report of the circumstances under which it stopped.</p> <p><b>Section 726 – Stopping fan</b> (1) A worker must not stop a fan that provides ventilation for a mine without the consent of the mine official in charge. (2) If workers withdraw because a fan stops or there is a decrease in ventilation, an employer must ensure that no worker is re-admitted to the mine, to part of the mine or to a split until (a) the fan is in operation and ventilation is restored, (b) the work areas are examined by a mine official, (c) a report that the workings are safe is made by a mine official in a book that is kept at the mine for that purpose, and (d) a copy of the report is posted in a conspicuous location. (3) Subsection (2) does not apply to the mine official examining the work area.</p> <p><b>Section 733 – Degassing procedures</b> (1) An employer must ensure that procedures for degassing headings are prepared and certified by a professional engineer. (2) An employer must ensure that a copy of the procedures for degassing headings is posted at a conspicuous location at the mine.</p>	<p>examiner, underground manager, or supervisor tests for flammable gas in the area that was affected by the failed fan and in other areas where flammable gas is likely to accumulate, and determines that the areas are safe for re-entry. (4) An employer must ensure that no person enter[s] an area affected by a failed fan until the area is considered to be safe for re-entry in accordance with subsection (2). (5) Despite clause (1)(c), diesel-powered equipment may be used to transport persons directly and immediately to a safe place under the direction of a supervisor responsible for the area as long as the methane gas concentration in the area affected by the failed fan does not exceed 1.25% by volume in the air being tested.</p> <p><b>Section 226 - Procedures for auxiliary ventilation in coal mine</b> (1) An employer at a coal mine must ensure that a competent person develops procedures, certified by a ventilation engineer for (a) the installation and use of an auxiliary ventilation; (b) the removal of flammable gas from active workings; (c) any changes to the ventilation procedures that were in place prior to the introduction of the auxiliary ventilation. (2) An employer must post in a conspicuous place on the surface a copy of the procedures required by subsection (1).</p> <p><b>Section 227 - Auxiliary ventilation at coal mine</b> (1) An employer at a coal mine must provide auxiliary ventilation to (a) an active working that advances more than 5 m from the primary intake airway; and (b) a raise that advances more than 5 m from the primary intake airway, and must locate the auxiliary ventilation controls outside of the raise. (2) If an auxiliary fan stops at a coal mine, no person is permitted to restart the auxiliary fan unless a competent person (a) inspects the area of the auxiliary fan and the area that is serviced by the auxiliary fan and tests for flammable gas in both areas; and (b) informs the person that it is safe to restart the auxiliary fan.</p>	<p>and shall post a copy of those procedures in a conspicuous place at the surface of the coal mine.</p>
<p>Riding Conveyor Belts Is riding on conveyor belts allowed ?</p>	<p><b>Section 4.4.16 – Conveyor belts</b> (1) No person shall ride on a conveyor belt. (2) No person shall cross a conveyor belt except at an established foot bridge not less than 500 mm in width equipped with guardrails. (3) Every conveyor way shall be provided with a walkway or other acceptable access for maintenance and inspection purposes. (4) Every accessible section of a conveyor shall be provided with a pull cord to stop the conveyor in an emergency and the controls shall be arranged so that they have to be reset manually before the conveyor can be restarted after an emergency stop. (5) On every conveyor which can be started automatically by remote control or where the operator has limited</p>	<p><b>Section 603 – Riding conveyor belts</b> (1) A worker must not ride on a conveyor belt unless the conveyor installation is certified by a professional engineer and designated by the employer as a riding conveyor belt. (2) An employer must ensure that a conveyor designated as a riding conveyor belt complies with the following (a) it is at no place steeper than 15 degrees from the horizontal plane; (b) it has head room clearance along its entire length of at least 0.9 metres; (c) it has a maximum belt speed of 2.65 metres per second; (d) it has a belt width of not less than 915 millimetres; (e) it has mounting platforms with non-slip surfaces that (i) are not less than 1.5 metres long and 0.6 metres wide, and</p>	<p>Not found.</p>	<p>Not found.</p>

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	<p>visibility of the whole conveyor, an audible start up warning device shall be installed and there shall be a time delay of at least 10 seconds between the end of a minimum 10 second warning and conveyor start up.</p> <p>(6) All head, tail, drive, and tension pulleys of a conveyor shall be effectively guarded at their nip points and the guards shall extend for a distance of at least 1 m from the nip point.</p> <p>(7) A belt conveyor used underground, or a belt conveyor more than 15 m in length installed in a building, or other closed-in structure, shall be provided with a belt slip detection device to stop the drive motor in the event of belt blockage or slippage, and when required by the inspector, with an effective sprinkler system and plugged chute switches which shall stop the conveyor when a plugged chute condition occurs.</p>	<p>(ii) have a clearance of 2.4 metres above the platform for the length of the platform plus 10 metres beyond the platform in the direction the belt travels;</p> <p>(f) it has dismounting platforms with non-slip surfaces that</p> <p>(i) are not less than 15 metres long and 0.6 metres wide,</p> <p>(ii) are fitted with a handrail, and</p> <p>(iii) have adequate head room clearance to allow workers to dismount without stooping;</p> <p>(g) the mounting and dismounting platforms are electrically illuminated;</p> <p>(h) it has reflective signs that clearly indicate</p> <p>(i) the mounting platforms,</p> <p>(ii) the dismounting platforms, and</p> <p>(iii) the approaches to dismounting platforms at 30 metres, 20 metres and 10 metres from the dismounting place;</p> <p>(i) it has a safety device that automatically stops the belt if a worker travels beyond the dismounting platform;</p> <p>(j) it has automatic brakes that apply when the belt is stopping.</p> <p>(3) An employer must develop safe operating procedures for workers who are required to travel on a riding conveyor belt.</p> <p>(4) An employer must post the safe operating procedures for a riding conveyor belt in conspicuous and appropriate locations.</p>		
<p>Remote controlled equipment What are the guidelines on the use of remote controlled equipment ?</p>	<p><b>Section 6.18.1</b> - Remote control equipment Before any equipment that can be moved by remote control is introduced at a mine, the manager shall</p> <p>(1) Provide, and have approved by the chief inspector, a plan showing that the system, device or controller is capable of operating only the specific piece of equipment it is designed to operate.</p> <p>(2) Ensure that other forms of energy are not capable of rendering the equipment inoperative causing uncontrolled activation or operation of the equipment.</p> <p>(3) The controller be equipped with a lock-out device that renders it inoperative when not in use.</p> <p>(4) Ensure the transmitter is equipped with an emergency stop mechanism that when activated applies the brakes and shuts down the equipment.</p> <p>(5) For mobile equipment, if the transmitter is hand held, is equipped with a device that automatically works in the same manner as the emergency stop mechanism if the transmitter is tilted more than 15% from the level position.</p> <p>(6) For fixed or tracked equipment a device which causes the machine to cease operating if controls are returned to the neutral position.</p> <p>Section 6.18.2 - Where remote controlled equipment is to be used at a mine the manager shall have established operating procedures which shall include</p> <p>(1) safe location for the operator,</p> <p>(2) allows for a clear view of the working area,</p> <p>(3) safe interaction between mechanical and remotely controlled equipment,</p>	<p>CSA424.M-88/90</p>	<p><b>Section 262</b> Remote-controlled equipment (1) An employer must ensure that remote-controlled equipment</p> <p>(a) has a selector device that makes it possible to choose either a manual or remote means of controlling the equipment;</p> <p>(b) has a red emergency switch on the transmitter that, when pressed, stops the equipment as soon as reasonably practicable;</p> <p>(c) that is mobile equipment,</p> <p>(i) is equipped so that if the remote-control system fails, the mobile equipment will be brought to an immediate stop,</p> <p>(ii) has a device that will stop the engine of the equipment and apply the brakes when the equipment reaches an inclination of 45° from the horizontal, and</p> <p>(iii) is used only</p> <p>(A) within the operator's sight, or</p> <p>(B) if a camera on board the equipment instantly transmits an image of the location of the equipment to a monitor seen by the operator.</p> <p>(2) Despite clause (1)(c), the remote-controlled mobile equipment may be operated manually if</p> <p>(a) it is possible to do so; and</p> <p>(b) manual operation will not adversely affect the health and safety of the operator, or mine workers in close proximity to the operating equipment.</p> <p><b>Section 263</b> Procedures for remote-controlled equipment An employer must develop procedures that ensure that</p> <p>(a) there is no inadvertent or unpermitted start-up of remote-controlled equipment;</p>	<p>Not found</p>



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	<p>(4) a method for recovering equipment which has broken down, and</p> <p>(5) if applicable, procedures to ensure contiguous operations do not interfere with remote signals.</p>		<p>(b) a person in the area of remote-controlled equipment is protected from being struck by the equipment;</p> <p>(c) a remote-control can only operate 1 unit of remote-controlled equipment at a time; and</p> <p>(d) a person operates only 1 unit of remote-controlled mobile equipment at a time.</p> <p><b>Section 264</b> Remote-controlled equipment in contiguous mines</p> <p>The managers of 2 contiguous mines must develop coordinated procedures that ensure that a remote-control device for equipment in one mine cannot operate remote-controlled equipment in the other mine.</p> <p><b>Section 265</b> Information recorded for each remote-control</p> <p>(1) An employer must record the particulars of each remote-control device, including the</p> <p>(a) brand;</p> <p>(b) model;</p> <p>(c) serial number;</p> <p>(d) frequency used; and</p> <p>(e) maintenance record.</p> <p>(2) An employer must ensure that a person responsible for adjustments or maintenance to a remote-control device has signed the record required by subsection (1) for the device.</p> <p>(3) An employer must keep a record required by subsection (1) for 2 years after the date the remote-control device is no longer used in the mine.</p>	