

The Mines Regulations

Repealed

by Chapter O-1.1 Reg 2 (effective July 16, 2003).

Formerly

Saskatchewan Regulation 284/78
(effective September 1, 1978).

NOTE:

This consolidation is not official. Amendments have been incorporated for convenience of reference and the original statutes and regulations should be consulted for all purposes of interpretation and application of the law. In order to preserve the integrity of the original statutes and regulations, errors that may have appeared are reproduced in this consolidation.

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SASKATCHEWAN REGULATION 284/78

under *The Occupational Health and Safety Act, 1977 – Section 13*

SCHEDULE

MINES REGULATIONS UNDER SECTION 13 OF THE OCCUPATIONAL HEALTH AND SAFETY ACT, 1977

Short Title

400.00 These regulations may be cited as “The Mines Regulations”.

PART I

INTERPRETATION AND APPLICATION

Interpretation

402.00 In these regulations, unless the context otherwise requires, the expression:

- (a) “**Act**” means The Occupational Health and Safety Act, 1977;
- (b) “**appointed physician**” means a medical practitioner appointed by the employer pursuant to section 24.00 of the occupational health and general regulations;
- (c) “**approved**” means approved by the chief inspector;
- (d) “**chief inspector**” means the chief inspector of mines for the department;
- (e) “**competent**” means qualified by knowledge, experience and temperament to perform a specific duty;
- (f) “**inspector**” means an occupational health officer appointed under the Act;
- (g) “**employer at a mine**” means any employer employing workers at a mine;
- (h) “**engineer**” means a registered professional engineer entitled to practice in accordance with the Engineering Profession Act;
- (i) “**machinery**” includes steam and other engines, boilers, furnaces, milling and crushing apparatus, hoisting and pumping equipment, material handling equipment, chains, trucks, tramways, blocks, tackle, ropes, tools and all appliances used in, about or in connection with a mine;
- (j) “**mine**”, when used as a noun, includes an opening or excavation in, or working of the ground for the purpose of winning, opening up or proving a mineral, or of gaining or winning a mineral, and also includes a quarry, excavation or opening in the ground made for the purpose of searching for or removing mineral, soil, earth, rock, quartz, stone or clay, and all ways, works, engines, machinery, plant, buildings, furnaces, roast yards and premises under or above ground used in connection with crushing, reducing, melting, refining or treating any mineral, soil, earth, rock, quartz, stone or clay;

- (k) **“mine”** when used as a verb, or **“mining”** includes any mode or method of working whereby the soil or earth or any rock, stone, quartz, salt or clay, may be disturbed, removed, carted, carried, washed, dissolved, sifted, roasted, smelted, refined, crushed or otherwise dealt with for the purpose of obtaining any mineral therefrom, whether the same may have been previously disturbed or not;
- (l) **“mine employer”** is the employer at a mine who operates the mine;
- (m) **“open pit mine”** includes open pit mine, strip mine, quarry, gravel pit, sand pit and clay pit;
- (n) **“plan”** includes a map, section, correct copy or tracing of an original plan;
- (o) **“rockburst”** means a sudden bursting of a mass of rock around a mine opening that may cause an air blast or ground tremor;
- (p) **“shaft”** includes a winze;
- (q) **“shift”** means a body of workers whose hours for beginning and terminating work in the mine are the same or approximately the same;
- (r) **“supervisor”** means any person who is engaged exclusively in the direction or overseeing of the work of other persons and includes manager, superintendent, mine captain, shiftboss and foreman;
- (s) **“workings”** are those parts of a mine where mineral has or is being worked.

22 Sep 78 SR 284/78 s402.00.

Application

402.02 These regulations apply to all employers and self-employed persons and workers and other persons to whom the Act applies with respect to a mine except where the context of the regulations makes it clear that it applies only to certain of such persons.

22 Sep 78 SR 284/78 s402.02.

Generality not limited

402.04 When for greater certainty a specific regulation is contained within these regulations, it shall not limit the generality of any other regulation.

22 Sep 78 SR 284/78 s402.04.

PART II
PROCEDURES FOR OPENING AND CLOSING A MINE

Notice of opening, re-opening or closing down a mine required

- 404.00(1)** the mine employer shall give to the chief inspector written notice of,
- (a) the commencement of work at a mine or major new part of a mine at the time of the commencement;

- (b) the intended installation, including the specifications and layout of any hoisting facility, any power supply facility, any ore treating facility, and the proposed method of mining at least three months prior to the commencement of mining or the installation of the facility;
 - (c) the resumption of work, after an interruption in work at the mine of two months or more at the time of the resumption of work.
- (2) The mine employer shall give to the chief inspector written notice of the closing down or abandonment of a mine or major part of a mine one month before the date of closing down and such notice shall give, for the approval of the chief inspector, a description of the abandonment procedures with regard to the following:
- (a) the requirements of section 404.02 as to the closure of shafts and entrances from the surface, the fencing of pits and other openings on the surface and the safety of the mine site;
 - (b) the requirements of section 422.36 as to the disposal of explosives and blasting agents;
 - (c) the requirements of sections 438.16 and 438.18 as to the abandonment of shaft compartments for hoisting purposes and the disposition of hoisting ropes;
 - (d) the requirements of section 406.06 as to the filing of plans and sections.

22 Sep 78 SR 284/78 s404.00.

Bulkheads required for disused shafts and openings to be fenced

404.02(1) Where a shaft or raise opening to the surface has been abandoned or work therein has been discontinued, the mine employer shall cause the top of the shaft or raise to be covered by a bulkhead of reinforced concrete at bedrock or at the top of the concrete collar of the shaft or raise, to the satisfaction of an inspector except that where, in the opinion of the inspector, this is not reasonably practicable the requirement of subsection (2) shall apply.

(2) Where any open pit or other dangerous opening has been abandoned, the mine employer shall securely fence such pit or opening using steel posts set in concrete and wire fencing, or otherwise provide protection against inadvertent access to the satisfaction of an inspector except that the chief inspector may grant an exemption, in writing, if in the opinion of the chief inspector such mine workings present no greater hazard than the natural topographic features of the district.

(3) Where any structure or other place or thing associated with the mining operation is, or may become dangerous, the mine employer shall securely fence such structures, places or things or otherwise provide protection against inadvertent access to the satisfaction of an inspector.

22 Sep 78 SR 284/78 s404.02.

Notice of contract work at a mine

404.04 The mine employer shall give written notice to the chief inspector when a contract has been let for,

- (a) surface or underground exploration work involving diamond drilling or the removal of rock by drilling and blasting;
- (b) mining operations including shaft sinking, raising, drifting, stope preparation, and repair work;
- (c) the production of ore and waste by open cast or underground mining methods;
- (d) the long-term electrical or mechanical maintenance of the mine, plant and equipment; and
- (e) any other major engineering or construction work.

22 Sep 78 SR 284/78 s404.04.

**PART III
PLANS, RETURNS AND RECORDS TO BE KEPT**

Plans to be kept

406.00 Every mine employer shall cause the following plans to be kept to a scale acceptable to the chief inspector and in no case shall they be more than three months out of date,

- (a) a surface plan showing the boundaries of the property, all lakes, streams, roads, railways, electric transmission lines, main pipe lines, buildings, shaft openings, adits, open surface workings, diamond drill holes, boreholes, outcroppings of rocks, dumps and tailings disposal areas;
- (b) underground plans of each level, showing all underground workings, shafts, drifts, crosscuts, diamond drill holes, dams and bulkheads, and each level shall be shown on a separate plan;
- (c) vertical mine sections at suitable intervals and at suitable azimuths showing all shafts, drifts, crosscuts, stopes, raises and other mine workings in relation to the surface including the location of the top of bedrock, surface of overburden, and the bottom and surface of any known water course, and each section shall be shown on a separate drawing;
- (d) adequate ventilation plans showing the direction and quantity of the main air currents, locations of permanent fans, ventilation doors, stoppings and connections with adjacent mines.

22 Sep 78 SR 284/78 s406.00.

Plans to be produced and progress to be marked on plans

406.02(1) On any inspection of a mine, the mine employer shall, if required, produce to the inspector all plans and sections of the workings referred to in section 406.00.

(2) The mine employer shall, if required by the inspector cause to be marked on such plans and sections the progress of the mine up to the time of the examination or inspection, and shall furnish the inspector with a copy or tracing thereof.

22 Sep 78 SR 284/78 s406.02.

Plans of working mines to be filed

406.04 Copies of the plans required by section 406.00 certified by the mine employer shall be forwarded to the chief inspector by the said employer on or before the thirty-first day of March in each year, showing the workings of the mine up to and including the thirty-first day of December next preceding.

22 Sep 78 SR 284/78 s406.04.

Plans to be filed before abandonment

406.06(1) Before a mine or any part of a mine is abandoned, closed down or otherwise rendered inaccessible, all underground plans and sections referred to in clauses (b) and (c) of section 406.00 shall be brought up to date and a certified copy thereof forwarded by the mine employer to the chief inspector.

(2) Before all work at a mine has ceased, the surface plan referred to in clause (a) of section 406.00 showing all openings to underground workings shall be brought up to date and a certified copy thereof forwarded by the mine employer to the chief inspector.

22 Sep 78 SR 284/78 s406.06.

Plans to be treated as confidential

406.08 Every copy of a plan forwarded under section 406.06 shall be preserved as a permanent record but no person except an official of the departments of labour or mineral resources shall be permitted, without the consent of the owner of the plan to see the plan so filed except when, in the opinion of the chief inspector, it is necessary in the interest of safety to show the plan to the owner of an adjoining property or surface rights.

22 Sep 78 SR 284/78 s406.08.

Notification of injuries

406.10(1) Notwithstanding any other accident reporting requirements, the chief inspector may require that the mine employer shall forward to him,

- (a) employment and accident statistics in a prescribed form for each month at the end of the month;
- (b) such other particulars as the chief inspector may require.

(2) The mine employer shall provide each of the co-chairpersons of the occupational health committee with a copy of the accident statistics submitted by virtue of subsection (1).

22 Sep 78 SR 284/78 s406.10.

Records open to inspector

406.12 The employer at a mine shall,

- (a) preserve at the mine every document, including any record, report, or log book required by these regulations for three years except where otherwise stated;
- (b) when a mine is to be abandoned, make suitable arrangements with the chief inspector for the preservation of those documents that are relevant to the continued health of workers.

22 Sep 78 SR 284/78 s406.12.

PART IV
NOTIFICATION OF ACCIDENTS AND DANGEROUS OCCURRENCES

Notice of incidents involving loss of life

408.00 Where in or about any mine an incident that causes loss of life to any worker occurs, the mine employer shall,

- (a) immediately notify the chief inspector as to the time, place and nature of the incident by telephone or telegraph and as soon as practicable thereafter by writing to the chief inspector on the prescribed form;
- (b) forthwith notify a coroner having jurisdiction within the area where the incident occurred.

22 Sep 78 SR 284/78 s408.00.

Scene to be undisturbed

408.02 The mine employer shall take all reasonable steps to ensure that, except for the purpose of saving life or relieving human suffering, no person interferes with anything at the scene of, or connected with any incident referred to in sections 408.00, 408.06, and 408.08 until an inspector has examined the scene.

22 Sep 78 SR 284/78 s408.02.

Permission to alter scene

408.04 Notwithstanding section 408.02, an inspector may permit work to be undertaken at the scene of the incident to such an extent as may be necessary to permit the work of the mine to be proceeded with, provided that,

- (a) photographs or drawings showing details of the scene of the incident have been made prior to such work; and,
- (b) the co-chairpersons of the appropriate occupational health committee or designates have inspected the site of the incident.

22 Sep 78 SR 284/78 s408.04.

Notice of serious injuries

408.06(1) Where in or about a mine an incident occurs whereby a worker receives serious bodily injury as defined in subsection (3), the mine employer shall notify the chief inspector as to time, place and nature of the incident within a period not exceeding twenty-four hours from the time of the incident by telephone or telegraph and as soon as reasonably practicable thereafter by writing to the chief inspector on the prescribed form.

(2) At the end of each month the mine employer shall forward to the chief inspector, on the prescribed form, the details of every incident occurring during the month in which a worker was injured at the mine and for which compensation was paid by the Workers' Compensation Board.

(3) For the purpose of subsection (1), a serious bodily injury shall include any of the following:

- (a) a fracture of the skull;
- (b) a fracture of the spine;
- (c) a fracture of the pelvis;

- (d) a fracture of the femur;
- (e) a fracture of the humerus;
- (f) a fracture of the fibula or tibia;
- (g) a fracture of the radius or ulna;
- (h) an amputation of a major part of a hand or foot;
- (i) the loss of sight of an eye;
- (j) any serious internal haemorrhage;
- (k) any burn caused by electricity which requires medical attention;
- (l) any injury caused directly or indirectly by explosives;
- (m) any other injury likely to endanger life or cause permanent injury;
- (n) any asphyxiation or poisoning by gas effecting a partial or total loss of physical control.

22 Sep 78 SR 284/78 s408.06.

Notice of dangerous occurrences

408.08 Where at any mine there occurs any of the following incidents whether or not loss of life or personal injury is caused thereby, the mine employer shall, within twenty-four hours next after such occurrence, send notice in writing to the chief inspector and shall furnish, upon request, such particulars in respect thereof as the chief inspector may require,

- (a) any incident of real or potential danger involving the hoist, sheave, hoisting rope, shaft conveyance or shaft timbering or lining;
- (b) any inrush of water from old workings or otherwise;
- (c) any failure of an underground dam or bulkhead;
- (d) any outbreak of fire underground or any outbreak of fire on the surface causing structural damage;
- (e) any premature or unexpected explosion or ignition of explosives;
- (f) any unusual gaseous conditions in a mine working;
- (g) any unexpected or non-controlled subsidence or caving of mine workings or rockburst;
- (h) any failure in use of the braking or steering systems of any wheeled vehicle used for the haulage or loading of ore or waste or any loss of control of any vehicle conveying any worker which was of real or potential danger.

22 Sep 78 SR 284/78 s408.08.

Notification of incident to Occupational Health Committee

408.10(1) Every employer required to give notification of any incident under sections 408.00, 408.06 and 408.08 shall forthwith notify the co-chairpersons of the appropriate occupational health committee.

(2) A co-chairperson of the appropriate occupational health committee or designate shall be permitted to make an investigation into such an incident.

22 Sep 78 SR 284/78 s408.10.

Notice of occurrence of fire and need of rescue equipment

408.12 Where in or about a mine a fire occurs that endangers the health or safety of any worker or requires the services of mine rescue personnel the mine employer shall immediately notify the chief inspector.

22 Sep 78 SR 284/78 s408.12.

PART V
DESIGN OF MINE WORKINGS

Two means of egress to the surface required

410.00(1) The mine employer at every underground mine shall provide and maintain at all times two independent means of egress to the surface except that the chief inspector may give written approval to defer this requirement during the exploration and development phases of the mine.

(2) The employer shall ensure that,

- (a) the two means of egress required by subsection (1) shall at no point be nearer than thirty metres to each other;
- (b) any structures covering a means of egress required under this section shall be so constructed as to reduce the danger from fire to a minimum and that only metal or other nonflammable material shall be used in the construction of this structure;
- (c) every means of egress shall be of sufficient size to afford an easy passageway for workers wearing self-contained breathing apparatus; and
- (d) every means of egress required by this section shall be inspected once a month by a competent person who shall make a report in writing to the employer.

22 Sep 78 SR 284/78 s410.00.

Two means of egress required underground

410.02(1) The mine employer at a mine shall provide and maintain two means of egress from every underground part of a mine where workers regularly work except that a single means of egress shall be permitted from,

- (a) a drift or raise while being advanced;
- (b) a room within a panel while being advanced; or
- (c) any other place where an inspector has given written approval.

(2) Each means of egress required by this section shall,

- (a) lead to a different means of egress to the surface;
- (b) be entirely separated from the other by airtight stoppings or doors;
- (c) be traversable with safety and reasonable convenience.

22 Sep 78 SR 284/78 s410.02.

Emergency provisions for hoisting in event of power failure

410.04(1) The mine employer at every underground mine where the egress from a mine is solely by means of shafts not equipped with ladders shall provide to the satisfaction of the chief inspector means whereby workers can be hoisted to the surface in the event of any failure to any hoisting, power transmission or control system or utility power supply.

(2) Every such means shall be thoroughly tested every twelve months and the record of the test shall be recorded in the Hoisting Machinery Record Book under the signature of the person making the test.

(3) The mine employer at every mine where access is solely by means of shafts shall take effective precautions to ensure that there is no possibility of any fire occurring involving any part of the electrical distribution systems to the hoists which could simultaneously disable every hoist suitable for hoisting workers from that mine.

(4) The mine employer shall make adequate provision at every mine where any worker is hoisted in a shaft not equipped with a manway to enable any such worker trapped in a conveyance in the shaft to be rescued.

22 Sep 78 SR 284/78 s410.04.

Safety of mine workings

410.06(1) It shall be the duty of the mine employer of every underground mine,

(a) to take with respect to every place in the mine, such steps by way of either controlling movement of the strata in the mine or by supporting or scaling the roof and sides of that place as may be necessary for ensuring the safety of workers in the mine.

(b) to take such steps as may be necessary to ensure possession at all times of all relevant information for determining the nature and extent of any steps that shall be taken in order to discharge efficiently the duty imposed on that employer by the foregoing clause.

(2) It shall be the duty of any mine employer referred to in subsection (1),

(a) to take such steps as may be necessary to ensure that that employer is at all material times in possession of all information which indicates or tends to indicate the presence or absence, in the vicinity of any workings carried on or proposed to be carried on in the mine, of,

(i) any disused workings;

(ii) any rock or stratum containing or likely to contain water, other liquid, or gas;

(iii) any material that is likely to flow;

(b) to take such steps as may be necessary for the purpose of evaluating any such information which comes into the employer's possession; and

(c) to take with respect to every working in the mine, such steps as may be necessary to prevent any inrush into the workings of gas, water, liquid or other material from any disused working or strata.

- (3) The mine employer shall at the request of an inspector produce all information, plans, test results, calculations, or other records which are relevant to the safe design and location of workings in respect to subsections (1) and (2) and allow the inspector to make copies as necessary.
- (4) The chief inspector may require the mine employer to supply a report by a competent engineer on any matter relevant to this section where the chief inspector has reason to believe there may be a potential danger to any worker employed at the mine.
- (5) An inspector who makes copies of any information required by this section shall not reveal such information to any person other than an employee of the department or its agent.
- (6) In this section,
- (a) **“place”** shall include any drift, entry, raise, shaft, stope, room or other place where workers work or pass;
 - (b) **“roof and sides”** shall include back, footwall, hanging wall, roof and sides.

22 Sep 78 SR 284/78 s410.06.

Surface subsidence to be determined

410.08 Without prejudice to the generality of section 410.06, the mine employer at any mine where bedded deposits are mined beneath water bearing strata shall perform annually or at such other intervals approved by the chief inspector a suitable survey to determine the surface subsidence, if any, induced by that mining and shall preserve such information for the life of the mine.

22 Sep 78 SR 284/78 s410.08.

Boundary Pillars

410.10 Where mine workings controlled by more than one mine employer approach each other, the employers shall jointly determine the size of any barrier pillar and the method of mining adjacent to that pillar necessary to fulfil their duties under section 410.06 except that where such employers cannot agree, the chief inspector may determine the size of any barrier pillar required and the method of mining to be used.

22 Sep 78 SR 284/78 s410.10.

Limit to workings approaching the boundary

410.12(1) Unless the mine employers mining sand, clay, gravel or other unconsolidated material on adjoining properties agree to dispense therewith, the mine employer shall not carry out any mining operation within a distance from the property boundary of half of the height of the total open pit face and no material that sloughs from within this distance shall be removed but such material shall be allowed to form a natural slope.

(2) Unless the mine employers mining consolidated material on adjoining properties agree to dispense therewith the mine employer shall not carry out any mining operation within a distance of five metres of the property boundary.

22 Sep 78 SR 284/78 s410.12.

Design of open pit workings

410.14(1) The mine employer at an open pit shall take all reasonably practicable steps to ensure that the workings are designed and operated in such a manner as to,

- (a) secure the stability of the open pit face;
 - (b) secure the stability of any waste material including spoil piles or lagoons, which might otherwise prejudice the safety of any worker at that mine;
 - (c) prevent the inflow of any water from the strata or any surrounding bodies of water that may prejudice the safety of any worker in the mine.
- (2) The employer shall, upon request, make available to an inspector such information as is necessary to determine that the requirements of subsection (1) have been complied with.
- (3) The chief inspector may require the mine employer to supply a report by a competent engineer on any matter relevant to this section where the chief inspector has reason to believe there may be a potential danger to any worker employed at the mine.
- (4) The design of the open pit shall include the provision of benches at suitable intervals where the height of the working face and the nature of the material are such that falling material may endanger workers.
- (5) Except where approved by the chief inspector the height of any bench shall be no greater than the maximum operating height of the loading equipment used plus two metres.

22 Sep 78 SR 284/78 s410.14.

Design of haulage-ways

410.16(1) The mine employer shall ensure so far as is reasonably practicable that all haulage and access roads at an open pit are designed, constructed and maintained,

- (a) to reduce to a minimum the danger from slipping or skidding of vehicles or mobile equipment;
- (b) to enable vehicles or mobile equipment to be driven past each other safely;
- (c) to avoid steep slopes and sharp bends wherever practicable;
- (d) to make provision for emergency run off lanes or effective impact barriers where steep slopes or sharp bends are unavoidable; and
- (e) to make provision for berms or other suitable protection where roads are situated alongside a dangerous slope.

22 Sep 78 SR 284/78 s410.16.

Report may be required on structure or equipment

410.18 The chief inspector may require the employer at a mine to supply a report by a competent engineer assessing the condition of any equipment in that mine where the chief inspector has reason to believe that the condition may endanger any worker employed at that mine.

22 Sep 78 SR 284/78 s410.18.

PART VI
SUPERVISION AND INSTRUCTION OF WORKERS

Responsibility for appointing competent persons

412.00 Except as otherwise herein provided the employer at a mine shall appoint sufficient number of competent persons to undertake duties pursuant to these regulations.

22 Sep 78 SR 284/78 s412.00.

Knowledge of language

412.02 The employer at a mine shall ensure so far as is reasonably practicable that every worker at a mine has an adequate knowledge of such language as may be necessary to enable the worker to carry out his duties in a safe manner.

22 Sep 78 SR 284/78 s412.02.

Supervisor's to require certificates

412.04(1) After January 1, 1980, every worker employed underground or in an open pit working at a mine shall be under the daily supervision of a supervisor who has been appointed by the employer at a mine and satisfies the requirements of subsection (2).

- (2) The supervisor shall,
- (a) be conversant with the language normally used at the mine;
 - (b) have either,
 - (i) at least three years experience in or about the practical working of a mine; or
 - (ii) obtained a degree or other qualification in mining or a related discipline from a university or technical institute approved by the chief inspector and have had not less than one year's experience in or about the practical workings of a mine; or
 - (iii) equivalent approved experience.
 - (c) where applicable to the type of mine and duties to be performed, hold a certificate of competency in supervisory duties in an emergency as prescribed in section 418.02, an authorization to blast as prescribed in section 422.02 and a first aid certificate approved by the chief occupational medical officer.
 - (d) be the holder of a certificate which states that the chief inspector is satisfied that the holder has the knowledge of The Occupational Health and Safety Act, 1977 and regulations appropriate to a supervisor.
- (3)(a) The employer at a mine may appoint as a supervisor any person who satisfies the requirements of clauses (a), (b) and (c) of subsection (2) but such an appointment shall be valid only until such time as the chief inspector arranges for that supervisor to be examined on his knowledge of the Act and regulations.
- (b) Where an employer at a mine appoints a person under clause (a) he shall forthwith inform the chief inspector of this appointment in writing.

(4) The chief inspector may restrict the application of the certificate issued by him to any mine and class of mines or any activity within a mine.

(5) The duration of the certificate issued by the chief inspector shall be for an initial period of five years and may be renewed for further periods of five years.

(6)(a) The employer at a mine shall take reasonable steps to ensure that any supervisor who has been employed regularly in that capacity prior to the promulgation of these regulations is instructed in and understands those parts of the Act and regulations under the Act pertinent to his duties.

(b) Where the requirements of clause (a) are fulfilled to the satisfaction of the chief inspector he may issue to that supervisor a certificate that satisfies the requirements of section (2), clause (d).

22 Sep 78 SR 284/78 s412.04.

Duty of employer to have work supervised

412.06 The employer at a mine shall take all reasonably practicable steps to ensure that:

(a) all work at the mine is done by competent workers except that this shall not apply where a worker is receiving instruction under section 412.12 and adequate precautions have been taken to ensure that worker's safety;

(b) all operations at the mine are adequately supervised;

(c) work of unusual hazard is continually supervised and that only workers who have been thoroughly instructed as to the hazards and proper procedures shall be assigned to do the work;

22 Sep 78 SR 284/78 s412.06.

Provisions for workers working alone

412.08(1) The employer at a mine,

(a) shall not require any worker to perform work alone in any place where the worker's safety may be prejudiced by virtue of the absence of direct communication with another person;

(b) shall make provision where necessary for the safety of any worker working alone to contact that worker personally or by radio, telephone or other suitable means at least once in any two hour period.

22 Sep 78 SR 284/78 s412.08.

Examination of workings

412.10(1) The mine employer shall institute a program which shall be in writing for the examination of all parts of the mine, other than parts of the mine which have been barricaded or fenced off by rope or similar means bearing a notice prohibiting any worker from entering that part of the mine, such that:

(a) the examination shall be made by a competent person or persons appointed by the employer;

- (b) the examinations are at such intervals, with due regard to the nature of the work carried on and the conditions existing in that part of the mine, that the safety of any worker therein is ensured so far as is reasonably practicable;
 - (c) any interval specified for any part of the mine where mineral is being worked by hand or mechanical means, where drilling or blasting is taking place or where any worker is working alone shall not be greater than one working shift;
 - (d) all reports of examinations shall be made in writing to the mine employer who shall countersign such reports and the chief inspector may prescribe a form for the purpose of such reports;
 - (e) the mine employer shall take any action necessary to rectify any condition prejudicial to the safety or health of workers recorded in such a report;
 - (f) provision is made where there is more than one shift per day, for any information relevant to the safety of workers in any part of the mine to be given in writing to the appropriate supervisor on the succeeding shift;
- (2)(a) A worker shall not enter a part of the mine which has been barricaded or fenced off by rope or similar means unless instructed to do so by the employer at a mine.
- (b) The employer at a mine shall not instruct or permit a worker to enter or work in any barricaded or fenced off part of the mine unless the conditions for safe entry or work therein have been determined and the worker has been instructed in those conditions.

22 Sep 78 SR 284/78 s412.10.

Instruction required

412.12(1) The employer at a mine shall institute a scheme whereby every worker who has newly commenced work at that mine or been assigned work underground or in an open pit for the first time or been assigned any other work for which he has not received instruction be given subject to subsection 5,

- (a) adequate instruction respecting the Act and associated regulations applicable to that work;
- (b) adequate information on the available first aid facilities and procedures for treatment of injury at that mine;
- (c) adequate instruction on procedures in event of a fire or any other reasonably foreseeable emergency at the mine relevant to that worker's place of work;
- (d) adequate instruction in the safe and healthy procedures to be used in performing his work; and
- (e) an adequate period of time under close supervision to become familiar with the dangers of his work.

- (2) The employer shall appoint, in writing, a person who shall administer the requirements of this section and such person shall notify the employer forthwith, in writing, where the requirements of this section have not been complied with.
- (3) A written record of the scheme shall prescribe for each type of work,
- (a) the content of the instruction required;
 - (b) the method of instruction including, where necessary, practical instruction;
 - (c) the time to be allotted to such instruction.
- (4) A record shall be kept of all instruction given to any worker by virtue of this section and a copy of such a record shall be given to that worker.
- (5) Where a worker has had previous experience in the mining industry and it can be shown to the satisfaction of the person appointed under subsection (2) that such experience is equivalent to the requirements of subsection (1), the person so appointed may accept such experience in whole or part as fulfilling those requirements of subsection (1) which are applicable.
- (6) The scheme shall provide that where any worker receives instruction from any person that person is competent to give such instruction and has adequate means and time to give all necessary instructions.

22 Sep 78 SR 284/78 s412.12.

PART VII WORKING PROCEDURES AND METHODS

Protective equipment

414.00 Notwithstanding and in addition to the requirements of any other regulations under the Act, the employer at a mine shall,

- (a) ensure that an approved safety hat is worn by every worker employed in the underground part of a mine;
- (b) provide any safety hat required by this section;
- (c) ensure that approved safety footwear is worn by every worker employed in the underground part of a mine.

22 Sep 78 SR 284/78 s414.00.

Falling object protection

414.02 Where an inspector has reason to believe a danger may exist to any worker operating mining equipment from any falling ore, rock or other material, he may require the employer at a mine to provide adequate protection on the equipment to ensure so far as is reasonably practicable that the worker is protected from this danger and any protection provided shall be designed and certified by an engineer.

22 Sep 78 SR 284/78 s414.02.

Scaling and provision of scaling bars and gads

414.04(1) Without prejudice to the generality of section 410.06 the employer at a mine shall ensure that effective steps are taken to secure any place where workers are working by scaling or other suitable methods of controlling the roof or sides.

(2) The employer at a mine shall provide and maintain an adequate supply of suitably designed and properly dressed scaling bars, gads and other equipment necessary for scaling.

22 Sep 78 SR 284/78 s414.04.

Changing rooms and lunchrooms

414.06(1) The employer at a mine shall provide adequate, suitable and well maintained facilities for workers to change and dry their clothing and to wash or shower themselves and where applicable, separate facilities shall be provided for both male and female workers.

(2) Where ten or more persons are employed in a building or group of buildings on the surface and where reasonably practicable underground, the employer at a mine shall provide a suitable place for eating that is kept clean, warm, quiet and dry at all times while in use.

22 Sep 78 SR 284/78 s414.06.

Responsibility of worker

414.08 The employer at a mine shall require every worker,

(a) to examine his own work place and equipment at reasonable intervals to ensure to the best of his ability that they are safe for any work required to be done;

(b) to use at all times, when the nature of the work so requires, all devices and equipment and wear all articles of clothing that are required to be used and worn by that worker under these regulations and to take reasonable care of all such equipment.

22 Sep 78 SR 284/78 s414.08.

Behaviour of persons at a mine

414.10 The employer at a mine shall take all reasonable steps to ensure that,

(a) no person consumes or brings to or keeps alcoholic beverage at a mine except that where persons are resident at that mine, alcoholic beverages may be permitted in suitable areas specified in writing by the employer; and

(b) no person is allowed to work at or about a mine while under the influence of alcohol or under the influence of any drug which impairs his ability to work safely.

22 Sep 78 SR 284/78 s414.10.

Provision on interference with safety equipment

414.12 No worker shall improperly,

(a) remove, displace, damage, destroy or carry off any first aid or emergency equipment, any safety device, safeguard, notice or warning furnished for use in or about a mine or interfere in any way with the proper use thereof by any other worker;

- (b) interfere with the use of any method or process adopted for the protection of that worker of any other worker in a mine; or
- (c) interfere with or damage any fire protective device.

22 Sep 78 SR 284/78 s414.12.

Check-in and check-out system

414.14 The mine employer at every underground mine shall provide and maintain an effective system to record workers who go underground and record those workers who return to the surface and the record shall be examined at suitable intervals by competent persons who shall report forthwith to the employer when any worker is not accounted for.

22 Sep 78 SR 284/78 s414.14.

Marking means of egress

414.16 The mine employer at an underground mine shall,

- (a) post legible signs showing the means of egress in prominent places underground;
- (b) post legible signs identifying every working place and travelway;
- (c) post in conspicuous positions underground a current mine plan showing the workings, ventilation and means of egress.

22 Sep 78 SR 284/78 s414.16.

Precautions when pulling chutes

414.18 The employer at a mine shall take all reasonably practicable steps to ensure that,

- (a) where a chute is to be pulled, adequate precautions are taken to protect any worker who may be affected;
- (b) where material has been pulled from a chute, every place likely to be affected is examined by a competent person before any other worker enters and where there is, or may be a hang up, prevent any worker entering the affected area except under supervision for the purpose of making the place safe.

22 Sep 78 SR 284/78 s414.18.

Guarding mill holes, manways, etc.

414.20(1) The mine employer at a mine shall so far as is reasonably practicable ensure that,

- (a) the top of every mill hole, manway or other opening is kept adequately covered or otherwise adequately protected;
- (b) legible signs are posted at the top and bottom of each manway to indicate whether that manway is open or closed to workers;
- (c) the top of every raise or other opening to a level is kept securely covered, fenced off or protected by a suitable barricade to prevent inadvertent access thereto.

- (2) The employer at a mine shall ensure that,
- (a) where any worker is required to work in the vicinity of the top of a shaft, raise, millhole or other opening, suitable life-lines and safety belts are provided;
 - (b) no worker is permitted to work over or in the vicinity of the top of any millhole, raise or other opening unless that worker is wearing a suitable life-line and safety belt.

22 Sep 78 SR 284/78 s414.20.

Precautions when material is hung up in a drawpoint

414.22 The employer at a mine shall so far as is reasonably practicable ensure that no worker enters any drawpoint, chute, transfer raise or other mine opening used for the passage of any material by gravity in which the material is hung up unless that worker has been authorized by the employer after the condition has been examined and found safe for the work to be performed.

22 Sep 78 SR 284/78 s414.22.

Signs designating repair work in manway

414.24 Where repair work is in progress in any manway or conditions that may endanger travel through any manway arise, the mine employer shall close off the manway and post adequate signs at all entrances to that manway prohibiting travel.

22 Sep 78 SR 284/78 s414.24.

Precautions with marking diamond drill holes

414.26(1) The mine employer shall plot every diamond drill hole on the working plan of the appropriate level.

(2) Where any blasting is to be performed in a mine working within five metres of any point of possible intersection with a diamond drill hole, the employer at a mine shall securely fence off or guard the collar and any other point of intersection of that diamond drill hole.

(3) The mine employer shall mark the collar and any point of intersection of each underground diamond drill hole, at the time that drilling is discontinued or an intersection made and the marking shall consist of a single capital letter "H" in clearly visible paint measuring three hundred millimetres by three hundred millimetres placed within one metre of the collar or intersection.

22 Sep 78 SR 284/78 s414.26.

Precautions to be taken in an open pit

414.28(1) Unless otherwise authorized in writing by an inspector the mine employer shall remove all unconsolidated material lying within two metres from the edge of the open pit and beyond this distance all unconsolidated material shall be sloped to the natural angle of repose.

(2) The mine employer shall not permit any undermining of the working face at any open pit where unconsolidated material is worked.

- (3) Where an open pit is worked in benches the mine employer shall ensure that any accumulation of loose rock on these benches that may endanger any worker working below is removed.
- (4) Where any worker is required to work on a open pit face where that worker may be in danger of falling,
 - (a) the employer at a mine shall provide an approved life line and safety belt and shall ensure the life line is properly secured and attended by another worker;
 - (b) the employer shall require the worker to wear the safety belt and life line.
- (5) The mine employer shall make adequate provision at every open pit mine for workers to enter and leave the open pit.

22 Sep 78 SR 284/78 s414.28.

Use of dredges

414.30(1) For the purpose of this section “**dredge**” means any equipment floating on water for the purpose of extracting mineral.

- (2) The mine employer shall ensure that,
 - (a) every dredge is equipped with adequate and suitable fire-fighting equipment;
 - (b) no flammable material, other than reasonable amounts of fuel or lubricant is stored on the dredge;
 - (c) where any worker is working alone on a dredge effective provision is made for communication with that worker at all times;
 - (d) when any worker is on a dredge not connected to the shore by a walkway there shall be available for immediate use at least two suitable boats, one of which shall be based at the dredge and the other at the shore;
 - (e) adequate provision is made for the evacuation of an injured worker from the dredge and, where this is by boat, such a boat shall be of suitable size and construction.
- (3) The mine employer shall provide for each dredge,
 - (a) sufficient readily available approved life-jackets to equip every worker working on that dredge or being transported in a boat;
 - (b) a life line readily available for immediate use on each side of the dredge;
 - (c) adequate guard rails on the dredge at any place where a worker may fall into the water;
 - (d) adequate means of egress from any engine room or control cabin.

22 Sep 78 SR 284/78 s414.30.

Precautions when working on a stockpile

414.32(1) The mine employer where material is stored in a stockpile shall prepare suitable rules to ensure so far as is reasonably practicable that the stockpile is operated in a safe manner and that workers use safe working procedures.

(2) The rules for the operation of a stockpile shall without restricting the generality of the foregoing subsection include provisions for,

- (a) the supervision of the operations on that stockpile;
- (b) the training of workers on that stockpile;
- (c) any necessary limitations on the use of equipment on or in the vicinity of that stockpile;
- (d) controlling the formation of dangerous slopes or undermining of that stockpile;
- (e) the control of drawpoints and dumping operations.

(3) The rules required under this section shall be prominently posted in such a manner that they are accessible at all times to workers working on that stockpile.

(4) Every employer at the mine and every worker working on a stockpile shall comply with the rules so posted.

22 Sep 78 SR 284/78 s414.32.

Handling molten material in blast furnaces or smelters

414.34(1) The mine employer where there is a blast furnace or smelter shall prepare suitable rules to ensure so far as is reasonably practicable that any molten metal or other material is handled by a safe method, that equipment is maintained in safe working condition and that workers use safe working procedures.

(2) The rules for handling molten metal or other material shall without restricting the generality of the foregoing subsection include provision for,

- (a) the supervision of operations in that blast furnace or smelter;
- (b) the training of workers in the operation of the blast furnace or smelter;
- (c) any limitations on the use of equipment in or near the blast furnace or smelter;
- (d) controlling the contact of molten metal or material with cold damp surfaces;
- (e) preventing the dangerous spilling or splashing of molten metal or material;
- (f) warning to be given and precautions taken when molten metal or material is to be moved; and
- (g) the effective examination and maintenance of equipment.

(3) The rules required under this section shall be prominently posted in such a manner that they are accessible at all times to workers working at the blast furnace or smelter.

(4) Every employer at the mine and every worker at a blast furnace or smelter shall comply with the rules so posted.

22 Sep 78 SR 284/78 s414.34.

Ladders and manways in mine workings

414.36(1) The mine employer shall provide a suitably equipped manway in every timbered shaft.

(2) The mine employer shall ensure that where a ladder is provided in any manway underground or in a shaft or headframe associated with that shaft and the manway is inclined at an inclination to the horizontal of,

(a) seventy degrees or more,

(i) substantial platforms shall be installed at intervals not exceeding seven metres; and

(ii) the ladders shall be offset to cover the openings in the platforms;

(b) under seventy degrees but over fifty degrees,

(i) substantial platforms shall be required at intervals not exceeding seven metres; and

(ii) the ladders may be continuous through the platforms.

(3)(a) Any opening in a platform required by this section shall be just large enough for a worker wearing self-contained breathing apparatus to pass through.

(b) The opening shall be large enough to allow a stretcher bearing an injured worker to pass through.

(4) Any ladder required by this section shall project at least one metre above the associated upper platform except where suitable handrails are provided.

(5) The mine employer shall ensure that every ladder in a manway in a mine is suitably constructed, installed and maintained to reduce to a minimum the danger of a worker falling therefrom and shall be firmly fixed to the side or shaft timber and not suspended by any rope or similar means.

(6) The mine employer shall ensure that a landing platform is installed at every point where ladders are offset.

(7) The mine employer shall ensure that every permanent ladderway in an untimbered raise is provided with a suitable guardrail.

(8) Except during shaft sinking operations the employer at a mine shall not provide or permit the use of wire rope or chain ladders for climbing purposes in a mine and in no circumstance shall any wire rope ladder having frayed or broken wires be used.

(9) The mine employer shall cause the manway in a shaft to be separated from the compartment of the shaft in which material is hoisted by a suitable and tightly closed partition.

(10) The mine employer may provide a stairway in a shaft inclined at less than fifty degrees from the horizontal and every stairway in a shaft shall be equipped with suitably placed handrails.

22 Sep 78 SR 284/78 s414.36.

Steeply inclined raises

414.38(1) Subject to subsection (3) the mine employer shall ensure that every raise that is inclined at more than fifty degrees to the horizontal and that is to be driven more than twenty metres slope distance is divided into at least two compartments, one of which shall be maintained as a ladderway and equipped with ladders.

(2) The mine employer shall cause the timbering in such a raise to be installed as near as is reasonably practicable to the face but in no case shall the distance between the face and the top of the timbering exceed eight metres.

(3) Where mechanical equipment of a type approved by the chief inspector is used, raises inclined at more than fifty degrees from the horizontal may be driven more than twenty metres slope distance without being divided into compartments as required under subsection (1).

22 Sep 78 SR 284/78 s414.38.

Raise climbers

414.40(1) The employer at a mine shall ensure that,

(a) each raise climber is examined visually each day by a competent worker to ascertain its condition;

(b) each raise climber is examined each week by a competent worker sufficient to ascertain that all mechanical and electrical parts and safety devices are functioning properly and are in satisfactory condition;

(c) a worker is not permitted to operate a raise climber until he has been fully instructed in its use and operation by a competent person appointed by the employer;

(d) each raise climber is fitted with more than one independent means of braking, each capable of stopping the climber and holding it in place;

(e) the operator of a raise climber ascertains at the commencement of each shift whether or not the brakes are in a safe working condition;

(f) the rated load capacity of a raise climber as certified by an engineer is not exceeded;

(g) a log book is provided for every raise climber and a record of all inspections, maintenance and repairs shall be entered by the worker carrying out the inspection, maintenance or repair which shall be signed by that worker and where any test reveals the raise climber is not in satisfactory condition the worker shall report this condition forthwith to the employer;

(h) every report in the log book is countersigned by the employer;

- (i) the log book shall be available to an inspector at all times.
- (2) The employer at a mine shall not leave or permit any worker to remain at any place in or leading from the raise when the raise climber conveyance is removed from that place and the raise climber provides the only means of access from that place.

22 Sep 78 SR 284/78 s414.40.

PART VIII FIRE PREVENTION AND CONTROL AND EMERGENCY PROCEDURES

Prevention and control of fire at a mine

- 416.00(1)** The employer at every mine shall take all reasonably practicable steps to prevent an outbreak of fire at the mine and provide effective means to control any fire that may occur at the mine.
- (2) The mine employer shall draw up an effective procedure which shall provide for the safety of all workers in the event of a fire and the control of that fire whether on the surface or underground.
 - (3) The employer at a mine shall inform each worker of, and instruct him in, any duties which he may be required to perform by virtue of subsection (2).
 - (4) The mine employer shall post the details of the procedure at suitable places on the surface and underground at the mine.

22 Sep 78 SR 284/78 s416.00.

Provision and testing of warning system

- 416.02(1)** At every underground mine producing over one hundred tons of ore per day and any other mine that may be designated by an inspector the mine employer shall provide a suitable emergency warning system and the details of the system shall be submitted to the chief inspector before installation and any subsequent modification; and,
- (a) this system shall at all times be made available and kept ready for instant use for the purpose of warning workers underground of an emergency;
 - (b) every worker shall proceed when the warning is activated to the shaft station or as otherwise provided for in the procedures stated in section 416.00.
- (2) At least once in each year the mine employer shall test the procedure required by section 416.00 by a simulated emergency and a report and plan shall be submitted to the chief inspector forthwith describing the simulated conditions at the mine and the effectiveness of the procedure.
 - (3) A test of the effectiveness of the emergency warning system which may be combined with the test required by subsection (2) shall be made at least once in each year, or as required by an inspector, and a report of such tests including the functioning of any equipment shall be submitted by the mine employer to the chief inspector forthwith.
 - (4) An inspector may require the modification of the procedure where any test required by virtue of subsection (2) indicates that the existing method is inadequate.

(5) The employer at a mine shall give to every worker working underground instruction on the warning system and the procedures to be adopted when the system is activated.

(6) The mine employer at a mine shall ensure so far as is reasonably practicable that any place where a serious fire could develop underground at a mine shall be monitored by a heat sensing device coupled to an alarm or fire suppression system.

22 Sep 78 SR 284/78 s416.02.

Provision of fire-fighting equipment

416.04(1) The mine employer shall provide and maintain suitable and adequate fire-fighting equipment,

- (a) in or about every headframe or other entrance to an underground mine;
- (b) in every hoistroom;
- (c) at or about other places on the surface of a mine where a fire may occur;
- (d) in any work place underground where a fire may occur;
- (e) at or about any electrical equipment where a fire hazard may exist;
- (f) as required by sections 414.30, 416.22, 416.34, 444.02, 446.02 and 446.32 of these regulations.

(2) The mine employer shall appoint sufficient persons to make a monthly inspection of all fire-fighting equipment including any warning system required in section 416.02 and to make a report in writing to the employer stating that such an inspection has been made and certifying the conditions found.

(3) The mine employer shall countersign such a report and shall ensure that any deficiencies are corrected forthwith.

(4) The mine employer shall cause all fire-fighting equipment to be suitably located and conspicuously marked.

22 Sep 78 SR 284/78 s416.04.

Fire hazard area

416.06(1) Where a fire hazard may be created in an area of the mine by smoking or by the use of open flame equipment, matches or other means of producing heat, the mine employer shall designate the area a **“fire hazard area”**.

(2) A “fire hazard area” shall be properly identified by means of suitable warning signs around the perimeter of that area and the mine employer shall cause such signs to be installed and maintained as long as the area is so designated.

(3) The employer at the mine shall take all reasonable steps to ensure that a worker does not smoke, use open flame equipment, matches or other means of producing heat or fire in a “fire hazard area”.

22 Sep 78 SR 284/78 s416.06.

Fire precautions in buildings in proximity to mine entrance

416.08(1) Subject to subsection (2) and (3) the mine employer shall not permit or cause any building to be erected within fifteen metres of any closed-in portion of a headframe or portalhouse, except that the building housing the mine ventilating fan may be erected within such a distance and the building housing the hoist and power plant equipment may be erected within such distance provided that the distance is not less than ten metres.

(2) Subject to approval in writing by the chief inspector, a building may be constructed so as to accommodate facilities adjoining or as an extension to the headframe, shafthouse or portalhouse if the structure is of non-flammable materials and separated by fire barriers from the shaft.

(3) Subject to approval in writing by the chief inspector a hoist may be located above the mine shaft provided the supporting and enclosing structures are constructed of non-flammable material and suitable fire prevention and fire fighting arrangements are provided.

(4)(a) The mine employer at any mine where an adit is covered by a building or is in close proximity to any other fire hazard shall provide a suitable door to prevent the flow of any products of combustion from a fire into the adit; and

(b) Where an inspector has reason to believe the provision of a door is not sufficient the inspector may require the installation of other fire doors or other fire prevention or fire fighting precautions to be taken.

22 Sep 78 SR 284/78 s416.08.

Location of boilers and diesel engines

416.10 The mine employer shall not cause or permit any steam boiler or diesel engine to be installed within twenty-two metres of the center line of the collar of any shaft or other entrance to a mine.

22 Sep 78 SR 284/78 s416.10.

Location of internal combustion engines

416.12 The mine employer shall not cause or permit any internal combustion engine using gasoline or other highly volatile liquid or flammable gas to be installed within fifteen metres of the building housing the hoist or within thirty metres of the center line of the collar of any shaft or other entrance to a mine.

22 Sep 78 SR 284/78 s416.12.

Exhaust of internal combustion engines

416.14 Where an internal combustion engine is installed in a building at any mine the mine employer shall make effective provision,

(a) for the exhaust gases from the engine to be conducted outside the building;

(b) to prevent exhaust gases re-entering the building or entering the intake of any air compressor or contaminating the atmosphere of any adjacent buildings or the mine workings.

22 Sep 78 SR 284/78 s416.14.

Storage of liquid fuels

416.16 The mine employer shall not cause or permit any liquid fuel to be stored within thirty metres of the collar of a shaft or other entrance of a mine except that this shall not apply to any fuel in the fuel tank of operating equipment and that where this equipment is located in a permanent location the natural drainage from that location shall be such that the flow is in a direction opposite to the location of that shaft or mine entrance.

22 Sep 78 SR 284/78 s416.16.

Transfer of liquid fuel

416.18 The mine employer shall,

- (a) arrange the fuel tank of any internal combustion engine installed within a building so that the actual transfer of fuel to the fuel tank takes place outside the building and the fuel is conducted to the tank in a tightly jointed pipe and any displaced air from the fuel tank is conducted to a safe point outside the building before being discharged to the atmosphere;
- (b) equip each fuel tank installed within a building with a reliable means to prevent overfilling;
- (c) not permit the transfer of liquid fuels from one container to another by the direct application of air under pressure except where the equipment and conditions of use have been approved by an inspector.

22 Sep 78 SR 284/78 s416.18.

Storage of flammable liquids and materials in headframe

416.20 The mine employer shall not store or permit any flammable liquid or material to be stored in a headframe or portalhouse except that where adequate precautions are taken the chief inspector may approve in writing the storage of flammable liquids or materials subject to any condition he deems necessary.

22 Sep 78 SR 284/78 s416.20.

Storage transport of flammable liquids underground

416.22(1) The mine employer shall,

- (a) cause all flammable liquid stored underground to be stored in a suitable enclosed container which shall be suitably identified as to the contents;
 - (b) not store underground at any time more fuel oil than is sufficient for two day's operations;
 - (c) not store underground at any time more flammable liquid other than fuel oil than is sufficient for seven day's operations;
 - (d) not store underground any fuel oil and any quantity of other flammable liquids in excess of one thousand litres except in a manner and place approved in writing by the chief inspector and a copy of the written approval shall be posted in the storage place.
- (2) Any place designated as a storage place in subsection (1) shall,
- (a) be situated with regard to the ventilating system of the mine in such a manner that a minimum number of workers would be affected by products of combustion from a fire in that place;

- (b) be equipped with adequate fire-fighting equipment which shall include the provision of fire doors or other effective means of sealing off that place and automatic fire suppression equipment;
 - (c) be adequately ventilated;
 - (d) be designated a "fire hazard" area;
 - (e) not be used for the storage of material other than fuel oil or flammable liquid;
 - (f) not be used as a travelway.
- (3) The mine employer shall not transport or permit any flammable liquid to be transported underground in a mobile supply tank unless the tank has been approved by an inspector and is suitably identified as to its contents.
- (4) The employer at a mine shall not transfer or permit the transfer of any fuel oil by air pressure underground at a mine.
- (5) The employer at a mine shall make adequate provision to ensure that,
- (a) spillage of flammable liquids is reduced to a minimum;
 - (b) any possible spillage is contained in a safe manner; and
 - (c) any spillage that may be hazardous is absorbed by non-flammable material and removed from the mine in a fire-proof receptacle within twenty-four hours.

22 Sep 78 SR 284/78 s416.22.

Flame resistant hydraulic fluid

- 416.24(1)** The employer at a mine shall ensure that in equipment operating underground purchased after January 1, 1979 and in other equipment operating underground by January 1, 1981, all hydraulic fluids used shall be of a fire-resistant type acceptable to the chief inspector or where this is not reasonably practicable, the chief inspector may approve the use of an integrated fire suppression system that would give an equivalent degree of protection to workers.
- (2) The chief inspector may require that a report by a competent engineer shall be provided by the employer together with any information he has as to the practicability of using flame resistant hydraulic fluids in any equipment.

22 Sep 78 SR 284/78 s416.24.

Provision for disposal of refuse

- 416.26(1)** The mine employer shall take adequate steps to ensure that,
- (a) flammable refuse does not accumulate in or about any headframe, hoistroom or portalhouse or any other plant building on the surface of a mine;
 - (b) flammable refuse does not accumulate in the underground workings of a mine by providing for its removal to the surface at least once in each week and more frequently if necessary;
 - (c) all timber not in use in a mine is taken within reasonable time from the mine; and

(d) any flammable refuse is not deposited into any mine working abandoned or otherwise.

(2) The employer at a mine shall provide suitable covered metal containers for the temporary disposal of flammable refuse at all suitable places including shaft stations, shops, lunch rooms, buildings and enclosures necessary for the housing of machinery, equipment or stores and such containers shall be regularly emptied and the contents disposed of in a suitable manner.

22 Sep 78 SR 284/78 s416.26.

Building fires underground prohibited

416.28 The mine employer shall not cause or permit any fire to be built, set or maintained underground for any purpose but this shall not refer to any oxyacetylene torch or similar controlled flame.

22 Sep 78 SR 284/78 s416.28.

Fire-proof structures required underground

416.30(1) The mine employer shall ensure that,

(a) every building or enclosure necessary for the housing and maintenance of machinery and equipment underground in a mine is designed and constructed so as to reduce the fire hazard to a minimum; and

(b) all underground shops, lunch rooms and other buildings are located, constructed and maintained to reduce the fire hazard to a minimum.

22 Sep 78 SR 284/78 s416.30.

Fire doors required adjacent to shaft

416.32(1) The mine employer shall ensure that there is a sufficient number of doors of fire-resistant construction to,

(a) isolate the workings of the mine from any shaft; and

(b) isolate each shaft from any other shaft.

(2) Any door required by subsection (1) shall be,

(a) kept clear of obstructions so as to be readily usable at all times;

(b) constructed and maintained to reduce leakage to a minimum;

(c) be installed so that they would not open inadvertently should the ventilation of the mine be reversed; and

(d) be capable of being opened from both sides.

22 Sep 78 SR 284/78 s416.32.

Fire protection where torches are used

416.34(1) Where any gas or electric welding or cutting equipment, blow torch or other heat producing device or material is used underground in any mine or in any headframe, hoistroom or portalhouse or building in which the outbreak of fire might endanger any entrance to the underground workings the employer at a mine shall ensure that,

(a) where practicable all combustible material within a radius of three metres or upon which sparks or hot material might fall, shall be made wet with water before hot work is begun, and again, after hot work is finished;

- (b) the area is inspected for smoldering fire between one and two hours after the hot work is finished;
 - (c) adequate fire fighting equipment, ready for use, is on hand at all times during the operation and until the inspection required by subsection (b) has been completed;
 - (d) hot work is not conducted within eight metres of a place where any explosive is stored or is being transported;
 - (e) every worker is required to exercise all due care when carrying out burning or welding operations to avoid initiating a fire and to ensure that there is no possibility of a fire occurring subsequently as a result of these activities.
- (2) Unless otherwise approved by the chief inspector where cylinders of compressed gas are being transported underground the employer at a mine shall cause all fittings, including regulators and manifolds to be disconnected from the cylinders and the valves on the cylinder to be protected in a suitable manner and any such protective device shall be replaced at any time a cylinder is left unattended for other than a short period.
- (3) In all cases where cylinders of compressed gas are operated from within any cage, skip or other shaft conveyance or where the cylinders are set up in a location not readily accessible to the worker operating the nozzle equipment, the employer at a mine shall cause a second competent worker to be employed at all times to attend to the operation of the cylinder control devices.
- (4) In all cases where cylinders of compressed gas are used underground for the purpose of supplying cutting or welding equipment the employer at a mine shall ensure that every reasonably practicable precaution is taken to avert the possibility of damage to or failure of the regulators, manifolds and hoses used in conjunction with the equipment.
- (5) The employer at a mine shall not cause or permit any device for the generation of any gas for supplying cutting or welding equipment to be used in underground workings of any mine.
- (6) The employer at a mine shall cause all cylinders containing compressed gas to be suitably supported in a safe place.

22 Sep 78 SR 284/78 s416.32.

PART IX MINE RESCUE

Establishment of mine rescue stations and substations, etc.

- 418.00(1)** Every mine employer situated in an area where there is not a mine rescue station established by the division shall install, equip, operate and maintain a mine rescue substation at such place and in such a manner as the chief inspector may direct.
- (2) At every mine rescue substation directed by the chief inspector to be established under subsection (i),
- (a) such equipment as the chief inspector may direct shall be installed and maintained; and

(b) the mine employer shall appoint a person who shall possess a certificate of competency in mine rescue instruction to be responsible for the maintenance of the equipment and training of mine rescue teams.

22 Sep 78 SR 284/78 s418.00.

Certificates of competency in mine rescue

418.02 The chief inspector may issue a certificate of competency to any person who has demonstrated by examination or otherwise that that person is competent to undertake the duties specified in these regulations as a holder of that certificate and such certificates shall be called,

- (a) "certificate of competency in mine rescue work";
- (b) "certificate of competency in mine rescue instruction";
- (c) "certificate of competency in supervisory duties in an emergency".

22 Sep 78 SR 284/78 s418.02.

Provision of mine rescue personnel

418.04(1) Every mine employer shall cause a sufficient number of workers including supervisors to be trained by a competent person as mine rescue persons and the chief inspector may specify the number of workers who should be trained and the content of their training program.

(2) The mine employer shall cause a sufficient number of workers trained as mine rescue persons to be readily available and the chief inspector may specify the number of workers who shall be available.

(3) No worker shall be qualified to be a mine rescue person unless that worker has,

- (a) been certified within the last preceding twelve months, by a physician, to be fit to work in breathing apparatus under arduous conditions;
- (b) a certificate of competency in mine rescue work and is trained in the use of the breathing apparatus in use at the mine; and
- (c) has taken part in such training sessions during the preceding twelve months as may be specified by the chief inspector.

(4) The mine employer shall keep a record of all certificates required by subsection (3).

(5)(a) The mine employer shall prepare a procedure to be adopted in the event that it is necessary to call out and employ mine rescue personnel in an emergency; and

- (b) the procedure shall be kept posted in prominent places and every worker involved in the procedure shall be instructed in that worker's duties.

22 Sep 78 SR 284/78 s418.04.

Supervision of mine rescue operations

418.06 The mine employer shall appoint a competent person or persons who shall supervise, subject to any direction that may be received from the chief inspector, mine rescue teams in all mine rescue work and recovery operations conducted at a mine.

22 Sep 78 SR 284/78 s418.06.

Restriction on workers taking part in rescue work

418.08 The mine employer shall not permit any worker to take part in any mine rescue operation involving the use of breathing apparatus unless that person,

- (a) has been authorized to do so; and
- (b) has been medically examined by a physician at the time of the operation except that in an emergency, in the initial stages of an operation, it will be sufficient for the worker to have had the medical examination within the last twelve months.

22 Sep 78 SR 284/78 s418.08.

Mine rescue to be performed only by a team

418.10 The mine employer shall,

- (a) not permit any worker to take part in a rescue operation involving the use of breathing apparatus except as a member of a team of no less than five mine rescue persons or such other number as the chief inspector may permit where this can be done without prejudice to the safety of workers;
- (b) appoint a competent team captain who shall have direct control and be responsible for the safety of the team and shall not take part in any work other than that directly involving the safety of the team.

22 Sep 78 SR 284/78 s418.10.

Provision of refuge stations and rescue equipment

418.12(1) The mine employer shall provide and maintain such refuge stations as are necessary for the protection of workers employed underground and every such refuge station shall be provided with food, water, air, first aid supplies and telephonic communication to the surface. Such stations shall be separated from adjoining workings by doors or stoppings so arranged and equipped that any noxious atmosphere can be prevented from entering the station.

(2) The chief inspector may direct that a refuge station be provided where he has reason to believe this is necessary for the protection of the workers.

(3) Every refuge station shall be located accurately with respect to surface co-ordinates.

(4) The mine employer shall provide and maintain in every underground hoistroom suitable respiratory protective equipment for the hoist operator and every hoist operator shall be adequately trained in its use.

22 Sep 78 SR 284/78 s418.12.

Self rescue apparatus

418.14(1) The chief inspector may require where there is adequate reason to do so that the mine employer shall make suitable provision whereby every worker in a mine or part of a mine shall at all times carry self-rescue apparatus or that sufficient self-rescue apparatus is stored in a suitable place or places underground.

(2) The mine employer shall instruct each worker who may be required to use self-rescue equipment in the proper method of use and the dangers of using such equipment improperly.

(3) Nothing in these regulations shall prevent the use of self-rescue apparatus by workers underground in an emergency for the purpose of securing their safety.

22 Sep 78 SR 284/78 s418.14.

Maintenance of breathing apparatus

418.16 The mine employer shall,

- (a) adequately maintain all testing apparatus, breathing apparatus and resuscitating apparatus and refuge stations required by this part;
- (b) appoint a person who shall examine all such apparatus and stations and report in writing to the employer as to their condition at intervals not exceeding one month;
- (c) countersign such a report and ensure that any deficiencies are corrected forthwith.

22 Sep 78 SR 284/78 s418.16.

**PART X
CONTROL OF UNDERGROUND WATER**

Control of water underground

420.00(1) For the purpose of this Part:

- (a) **“bulkhead”** means any structure built for the purpose of impounding water or confining air under pressure in a drift, crosscut or any other mine opening and constructed in such a manner as to completely close off the drift, crosscut and other mine opening;
- (b) **“dam”** means any structure built for the purpose of impounding water in a drift, crosscut or other mine opening and built in such a manner as to permit an unobstructed overflow of the water.

(2) The mine employer shall not construct or permit any dam to be constructed behind which more than twenty-five cubic metres of water may be impounded without the written permission of the chief inspector, and then only when constructed in accordance with plans and specifications that have been approved by the chief inspector.

(3) The mine employer shall not construct or permit any bulkhead to be constructed without the written permission of the chief inspector and then only when constructed in accordance with plans and specifications that have been approved by the chief inspector.

(4) The mine employer shall cause the location of every underground dam and bulkhead to be clearly shown on the mine plans.

(5) Nothing in this part shall be interpreted to prevent the construction of any dam or bulkhead in the case of an emergency provided that a report covering the emergency measures taken shall be reported to the chief inspector forthwith.

(6) The mine employer at every working mine shall provide suitable and efficient machinery and appliances for keeping the mine free from water, the accumulation of which might endanger the lives of any worker in the mine or in any adjoining mine.

22 Sep 78 SR 284/78 s420.00.

PART XI
STORAGE, TRANSPORT AND USE OF EXPLOSIVES

Interpretation

422.00 In this Part, unless the context otherwise requires, the expression:

- (a) **“blasting agent”** means any material or mixture intended for blasting, not otherwise classified as an explosive and in which none of the ingredients is classified as an explosive, provided that the finished product as mixed and packaged for use or shipment, cannot be detonated by a No. 8 detonator when unconfined;
- (b) **“cartridge”** means a quantity of explosive enclosed in a wrapping;
- (c) **“capped fuse”** means a safety fuse to which a detonator has been attached by crimping;
- (d) **“detonator”** means a device used in firing explosives in the form of cartridges and includes blasting cap, electric blasting cap and delay electric blasting cap;
- (e) **“detonating fuse”** means an explosive core contained within a waterproof covering that for detonation requires a detonator attached thereto and for the purposes of this Part detonating fuse shall be an explosive;
- (f) **“explosive”** means any mixture of solids or solids and liquids capable of rapid and violent decomposition into large volumes of gas and which may be detonated by a No. 8 detonator when unconfined;
- (g) **“fuse”** means any safety fuse;
- (h) **“magazine”** means a building, storehouse, structure or place in which any explosive is kept or stored, whether in or about a mine, and includes any detonator storage building, detonator and fuse house and thawing house, but does not include any storage box for storing explosives;
- (i) **“primer cartridge”** means a cartridge into which a hole is punched and a detonator is inserted for firing the charge either by fuse or electric current;
- (j) **“socket”** means a hole or part of a hole remaining after the hole has been loaded with explosives and the charge fired and that is not known to be a misfired hole, and includes bootleg.

22 Sep 78 SR 284/78 s422.00.

Authorization to blast required

422.02(1) The employer at a mine shall not require or permit any person to conduct a blasting operation in or about a mine unless that person has a written authorization to blast issued by the mine employer.

(2) Subject to subsection (3), the mine employer may only issue an authorization to blast to a worker at the mine provided that worker,

- (a) has an adequate knowledge of the language normally used at the mine;
- (b) has had adequate mining experience to undertake the duties of blasting safely;
- (c) is of good character and trustworthy;

- (d) is the holder of a certificate issued by an inspector stating that the holder has an adequate knowledge of the regulations and safe procedures pertaining to blasting.
- (3) The mine employer may issue a written authorization to blast to a worker if the worker complies with clauses (a), (b), and (c) of subsection (2) but such an authorization shall be valid only until such time as an inspector can examine that worker on knowledge of the regulations and procedures pertaining to blasting.
- (4) A duplicate of any written authorization to blast issued by the mine employer shall be forwarded to the chief inspector.
- (5) An inspector may endorse any certificate to the effect that the worker examined may undertake blasting under certain restrictions and the employer shall incorporate those restrictions in the written authorization to blast.
- (6) A mine employer may revoke or suspend an authorization to blast at any time for adequate reason and shall inform the chief inspector forthwith of any such action and the reason for the action.
- (7)(a) A worker shall not prepare or detonate any explosive unless that worker holds a valid authorization to blast issued in writing by the mine employer except that any suitable worker may under the direction of the holder of an authorization to blast assist in the blasting operation.
- (b) Where it is not reasonably practicable for the worker to carry such an authorization on his person a list of authorized workers may be posted.

22 Sep 78 SR 284/78 s422.02.

Precautions to be taken with explosives

422.04(1) The employer of a mine shall cause all explosives and blasting agents to be handled and transported with due care and not subjected to any undue physical shock.

(2) The employer at a mine shall not permit any worker to smoke while handling, transporting or using explosives or within eight metres of any magazine or other place in which explosives or blasting agents are stored or handled.

22 Sep 78 SR 284/78 s422.04.

Marking of explosive packages

422.06 The mine employer shall not use or permit the use of any explosive unless there is plainly printed or marked on every original package containing such explosive,

- (a) the name and place of business of the manufacturer;
- (b) the strength of the explosive;
- (c) the date of its manufacture.

22 Sep 78 SR 284/78 s422.06.

Fume classification of explosives

422.08 The mine employer shall not use or permit the use of any explosive underground at a mine other than,

- (a) explosive of Fume Class I as established by the Explosives Branch of the Department of Energy, Mines and Resources of Canada; or
- (b) any explosive or blasting agent permitted by the chief inspector.

22 Sep 78 SR 284/78 s422.08.

Preparation of blasting agents at a mine

422.10 The mine employer shall not prepare or permit the preparation of any blasting agent at a mine unless it is prepared by a manufacturer authorized to do so by the Explosives Branch of the Department of Energy, Mines and Resources of Canada and the employer has notified the chief inspector.

22 Sep 78 SR 284/78 s422.10.

Storage of explosives and blasting agents on the surface

422.12(1) Except as otherwise herein provided, the mine employer shall ensure that all explosives, blasting agents and detonators at a mine are stored on the surface in suitable magazine used only for that purpose and,

- (a) every such magazine shall be under the direction of the mine employer or a person appointed by the mine employer;
- (b) any such magazine shall not be erected or maintained at any mine unless the site and design of the structure has been approved and a permit issued by the chief inspector;
- (c) the permit shall state the maximum quantity and type of explosive or blasting agent or detonators that may be stored in the magazine and where the magazine contains only blasting agents the maximum quantity of blasting agent that may be stored shall be twice the maximum quantity permitted for explosive;
- (d) where explosives and blasting agents are stored together on the surface, the total quantity of explosives and blasting agent shall not exceed the maximum quantity permitted for explosives;
- (e) the permit shall be posted in the magazine;
- (f) the mine employer shall cause every such magazine to be kept securely locked at all times when the attendant is not present;
- (g) the mine employer shall cause every such magazine to be suitably marked to indicate that explosives or blasting agents are stored therein and signs to that effect shall be posted beside the road approaches to the magazine at least two metres above the ground and eight metres distance from the entrance.

(2)(a) Except as provided for in clause (e), the mine employer shall ensure that any magazine for the storage of high explosive, blasting agent or detonators on the surface of a mine is not nearer to any public place than the minimum distance prescribed in clause (b) for the appropriate maximum quantity of high explosive to be stored in that magazine.

(b)

<i>The maximum quantity of high explosive to be stored in the magazine in kilograms</i>	<i>The minimum distance in metres from a public place class A</i>	<i>The minimum distance in metres from a public place class B</i>
50	23	23
100	23	32
200	26	52
250	30	60
300	34	68
400	41	82
500	47	94
600	53	105
800	65	130
1,000	75	150
2,000	120	240
4,000	175	350
5,000	190	389
6,000	200	400
7,000	210	420
10,000	240	480
20,000	300	600
25,000	320	640
30,000	340	680
40,000	380	760
50,000	410	820
100,000	525	1,050
150,000	588	1,175

(c) Any public place where persons pass or assemble in the open shall be classed as a public place class A for the purpose of clause (b) and without prejudice to the generality of this clause shall include any railway, airport, public road, navigable water, reservoir or dam, public recreation area, sports ground or any private road to a factory, hospital, educational or religious institution.

(d) Any public building in which persons assembly shall be classed as a public place class B for the purpose of clause (b) and without prejudice to the generality of this clause shall include any dwelling house, retail store, government or public building, educational or religious institution, place of entertainment, factory, building used for the storage in bulk of flammable substances or storage, use or manufacture of explosive.

- (e) Where it is not practicable to situate a magazine at a distance equal to, or greater than, the minimum prescribed distance the chief inspector may permit in writing a lesser distance provided the safety of persons is not prejudiced and the chief inspector may make such conditions as are necessary to ensure the safety of any person.
- (3) The mine employer shall not permit any ferrous metal to be kept or used in any magazine where explosives are stored except where it is necessary to use such a metal to adequately secure the explosive and where the metal is so used, it shall be sheathed with a suitable material so far as is reasonably practicable.
- (4) The mine employer shall not permit any open flame to be taken within eight metres of any magazine or place on the surface in which explosives or blasting agents are stored.
- (5) The mine employer shall ensure that every magazine or place on the surface in which explosives or blasting agents are stored is protected where necessary by a suitable firebreak and that flammable materials are not stored nearer than eight metres to the magazine or place.

22 Sep 78 SR 284/78 s422.12.

Storage of explosives and blasting agents, blasting agents underground

- 422.14(1)** The mine employer shall not permit any explosive, blasting agent, detonator, fuse or igniter cord to be stored underground in excess of the necessary underground requirement for forty-eight hours, and no quantity exceeding one hundred and fifty kilograms of explosives or three hundred kilograms of blasting agents shall be stored in any one place underground without the written permission of the chief inspector.
- (2) Where the mine employer makes application to the chief inspector to store explosive or blasting agent underground in excess of those quantities prescribed in subsection (1) the chief inspector may issue a permit to establish an underground explosive magazine subject to such conditions as he may prescribe.
- (3) Where explosives and blasting agents are stored together the total quantity of explosives and blasting agents shall not exceed the maximum quantity permitted for explosives.
- (4) The mine employer shall cause all explosives and blasting agents underground to be stored,
- (a) at suitable locations and not in any place where there is a possibility of a train, car or other vehicle colliding with the explosive container;
 - (b) except as provided for in subsection (2) in a storage box.
- (5) The mine employer shall ensure that underground storage boxes for explosives, blasting agents or detonators are substantially constructed, designed for easy cleaning, painted red and conspicuously marked "EXPLOSIVES – DANGER".
- (6) The mine employer shall cause all unused explosives in or about any working place at a mine to be returned to a magazine or storage box.

- (7) The mine employer shall not permit any ferrous metal to be kept or used in any underground magazine in which explosives or blasting agents are stored except where it is necessary to use such a metal to adequately secure the explosive and where this metal is so used it shall be sheathed with a suitable material so far as is reasonably practicable.
- (8) The mine employer shall not permit any open flame to be taken within eight metres of any place underground where explosives or blasting agents are stored.
- (9) The mine employer shall cause every underground explosive magazine to be kept securely locked at all times when an attendant is not present.

22 Sep 78 SR 284/78 s422.14.

Location of underground storage place

422.16 The mine employer shall ensure that no explosive, blasting agent or detonator is stored underground within sixty metres of any shaft station, refuge station, electrical substation, fuel storage place, workshop or lunchroom.

22 Sep 78 SR 284/78 s422.16.

Storage of detonators

422.18 The mine employer shall ensure that,

- (a) no detonator or capped fuse is stored with any other explosive or taken into a magazine or place where any other explosive is kept;
- (b) where any detonators or capped fuses are stored underground, they shall be stored in separate, suitable, closed containers or magazines and no such containers or magazines shall be located within eight metres of any other explosive or blasting agent;
- (c) all detonating fuse is stored in the explosives magazine or storage box and not in the same storage place as any detonator or capped fuse.

22 Sep 78 SR 284/78 s422.18.

Care of magazines

422.20(1) The mine employer shall so far as is reasonably practicable keep every magazine at a mine meticulously clean, dry and free from grit and other extraneous material at all times.

(2) The mine employer shall cause all broken cartridges of explosive or spilled blasting agent to be cleaned up and suitably disposed of forthwith.

(3) The mine employer shall cause all the shelves and floors of every magazine to be treated, when necessary, with a suitable neutralizing agent to remove any traces of explosive substance.

(4) The mine employer shall post and maintain in every magazine a copy of the rules in reference to the care and use of explosives.

22 Sep 78 SR 284/78 s422.20.

Control and inspection of magazines and storage boxes

422.22(1) For every magazine for which a permit has been issued under sections 422.12 and 422.14 the mine employer shall maintain an accurate record of,

- (a) the total quantity of explosive, blasting agent and the number of detonators within the magazine;
 - (b) the date, quantity and type of any delivery of explosive, blasting agent or detonators to that magazine;
 - (c) the date, quantity, type and name of person to whom any explosive, blasting agent or detonator was issued;
- (2) The persons responsible for accepting or issuing any explosive blasting agent or detonators shall record the action over their signature.
- (3) The record shall be countersigned by the person required to make the inspection under subsection (4).
- (4) A person or persons appointed by the mine employer shall make a thorough weekly inspection of all explosives, blasting agents and detonators and all magazines, cap and fuse houses, storage boxes in or about a mine used for the purpose of storing explosives, blasting agents and detonators and shall make a report in writing to the employer as to the conditions found.
- (5) The mine employer shall take immediate steps to have any unsuitable conditions corrected and to have any deteriorated explosives, blasting agents or detonators disposed of by a procedure approved by an inspector.

22 Sep 78 SR 284/78 s422.22.

Transportation of explosives and blasting agents in vehicles

422.24(1) This section shall apply on the surface of a mine and underground in a mine as required by section 422.30, subsection (2).

- (2) The employer at a mine shall ensure that,
- (a) every motor vehicle used for carrying explosives or blasting agents is maintained in sound mechanical condition;
 - (b) the word "EXPLOSIVES" is painted in letters at least one hundred and fifty millimetres in height in luminous paint to be clearly visible from the back, front and sides of the vehicle;
 - (c) the metal parts of such vehicle that may come in contact with containers of explosives or blasting agents shall be covered with suitable material.
- (3) The employer at a mine shall not permit any other material to be carried in or on any vehicle in which explosives or blasting agents are being carried.
- (4) The employer at a mine shall not permit any motor vehicle to be loaded with more than eighty per cent of its rated carrying capacity when carrying explosives or blasting agents.
- (5) The employer at a mine shall ensure that any explosives or blasting agents carried by a vehicle is adequately secured.
- (6) The employer at a mine shall ensure that no detonator is carried in the same vehicle as any other explosive or blasting agent except as provided for in section 422.32, subsection (1).

- (7) The employer at a mine shall ensure that any vehicle carrying explosives or blasting agents is not left unattended.
- (8) The employer at a mine shall not permit any worker other than those workers necessary for the handling of explosives or blasting agents to travel on a vehicle that is carrying explosives or blasting agents.
- (9) The employer at a mine shall not permit any worker to smoke on a vehicle that is transporting explosives or blasting agents.
- (10) The employer at a mine shall ensure that the engine of any vehicle that is carrying explosives or blasting agents is not left running during the loading or unloading of explosives.
- (11) The employer at a mine shall ensure that a vehicle is not refuelled when carrying explosives or blasting agents except in an emergency and he shall report the details of any such occurrence to the chief inspector.
- (12) The employer at a mine shall cause any explosives or blasting agents that are not required immediately to be returned to the magazine and not to be left in any vehicle.
- (13) The employer at a mine shall require the driver of any vehicle carrying explosives or blasting agents to drive in a careful manner and to stop the vehicle before crossing any railway track.
- (14) When any vehicle is used to carry any explosives or blasting agents at a mine, the employer at a mine shall ensure that it is in the charge of a competent worker.

22 Sep 78 SR 284/78 s422.24.

Transfer of explosives from storage places

422.26 The mine employer shall ensure that,

- (a) where any explosives or blasting agents are to be transferred from a designated storage place to any other designated storage places or points of use the transfer is done without undue delay;
- (b) any such transfer of explosives or blasting agents is conducted or supervised by a person authorized for that purpose;
- (c) explosives or blasting agents are not left at any level station or near the shaft collar or other entrance to the mine.

22 Sep 78 SR 284/78 s422.26.

Transportation of explosives or blasting agent in shaft

422.28 When any explosive or blasting agent is to be transported in a shaft conveyance the mine employer shall ensure that,

- (a) the operation is conducted or supervised by a person authorized for that purpose;
- (b) the authorized person informs the cagetender and hoist operator that explosive or blasting agent is to be transported;

- (c) material other than the explosives or blasting agent is not transported at the same time; and
- (d) only the cagetender and workers transporting the explosive or blasting agent shall travel in the shaft conveyance with the explosive or blasting agent.

22 Sep 78 SR 284/78 s422.28.

Transportation of explosives or blasting agents underground

422.30(1) The employer at a mine shall ensure that:

- (a) where explosives or blasting agents are transported in a vehicle underground in a mine that vehicle is driven at a reasonable speed consistent with the prevailing conditions;
- (b) where mechanical track haulage is used, the haulage locomotive shall be maintained on the forward end of the train carrying explosives or blasting agents except that where this is not reasonably practicable the locomotive may be at the rear of the train provided a worker is positioned to give warning to the driver or any other worker of any danger arising from this procedure;
- (c) the car carrying explosives or blasting agents is separated from the locomotive by an empty car or drawbar of equivalent length;
- (d) explosives or blasting agents are not carried on the locomotive;
- (e) where a trolley locomotive is used in the transportation of explosives or blasting agents in any mine, the car carrying the explosives or blasting agents shall be protected from contact with any trolley wire.

(2) Where trackless equipment is used for the transportation of explosives or blasting agents underground, section 422.24 shall apply.

22 Sep 78 SR 284/78 s422.30.

Transportation of detonators

422.32(1) The employer at a mine shall ensure that subject to subsection (2) where detonators are transported in a mine,

- (a) they are transported in suitable closed containers containing not more than one thousand detonators; and
- (b) any detonators or capped fuses are kept separate from other explosives or blasting agents.

(2) Without prejudice to the generality of subsection (1),

- (a) a worker may carry explosives or blasting agents with capped fuses from the nearest storage place to the point of use without placing them in separate closed containers provided the explosives or blasting agents are kept apart from the capped fuses; and
- (b) primers may be transported provided,
 - (i) they are made up as near to their point of use as is reasonably practicable and safe and only for immediate use;
 - (ii) they are transported in suitable, closed containers; and
 - (iii) the detonators are removed from the primer if the primer is no longer required for immediate use.

22 Sep 78 SR 284/78 s422.32.

Reporting defective explosives

422.34(1) Every occurrence of suspected defective explosive, blasting agent, fuse or detonator shall be reported by the mine employer to the chief inspector together with the name and address of the manufacturer and all available pertinent information.

(2) The mine employer shall ensure that any explosive, blasting agent, fuse or detonator that has become defective due to time or method of storage is not used but is disposed of forthwith by a method approved in writing by an inspector.

22 Sep 78 SR 284/78 s422.34.

Disposal of explosives at a shutdown mine

422.36(1) The mine employer shall ensure that,

(a) when the mine is being closed down all explosives, blasting agents, fuses and detonators are disposed of but no explosive, blasting agent, fuse or detonator shall be disposed of other than by a method approved in writing by an inspector;

(b) no explosive, blasting agent, fuse or detonator is stored at a closed-down mine without the written permission of the chief inspector.

(2) Explosives, blasting agents, fuses or detonators left at a closed-down mine without the permission of the chief inspector may be disposed of by an inspector. The amount of the expenses incurred thereby shall be payable by the owner or lessee of the mine to the Crown and shall be recoverable at the suit of the minister in any court of competent jurisdiction.

22 Sep 78 SR 284/78 s422.36.

Certain explosives to be used first

422.38 The mine employer shall cause the explosives or blasting agents that have been stored for the longest period to be used first, provided that they are not defective.

22 Sep 78 SR 284/78 s422.38.

Explosives not to be taken from mine

422.40 A person shall not take away from a mine any explosive, blasting agent, fuse or detonator without the written permission of the mine employer.

22 Sep 78 SR 284/78 s422.40.

Thawing explosives

422.42 The employer at a mine shall ensure that,

(a) no frozen explosive is used for any blasting operation in or about a mine;

(b) no explosive is thawed except by a method approved in writing by the chief inspector.

22 Sep 78 SR 284/78 s422.42.

Explosives not to be used to blast hot material

422.44 The employer at a mine shall ensure that no explosive or blasting agent is used to blast or break up rock or other material where, by reason of its heated condition, there is any danger or risk of premature explosive of the explosive or blasting agent.

22 Sep 78 SR 284/78 s422.44.

Explosives not to be removed from paper container

422.46 A worker conducting a blasting operation shall not remove any explosive from its original container or cartridge.

22 Sep 78 SR 284/78 s422.46.

Procedure before drilling

422.48 The employer at a mine shall ensure that,

- (a) before drilling is commenced in any working place the exposed face is washed with water and thoroughly examined for any explosive or blasting agent in cut-off holes of misfired charges; and
- (b) where water cannot be used, a method of examining each face for any explosive or blasting agent in cut-off holes or misfired charges approved in writing by an inspector, shall be used.

22 Sep 78 SR 284/78 s422.48.

Size of drill holes

422.50 The employer at a mine shall ensure that each drill hole is of suitable size to permit the free insertion to the bottom of the hole of a cartridge of explosive or blasting agent without using excessive pressure.

22 Sep 78 SR 284/78 s422.50.

No drilling near charged holes

422.52 The employer at a mine shall ensure that a drilling operation is not conducted within eight metres of any face where the charging of holes with explosive or blasting agent has commenced until such time as the charge or charges have been fired except that a hole may be drilled as provided for in section 422.58, subsection (4).

22 Sep 78 SR 284/78 s422.52.

Sockets

422.54 The employer at a mine shall not permit any worker to drill in any underground working,

- (a) within one hundred and fifty millimetres of any socket or hole that has been charged and blasted;
- (b) on any face containing undetonated explosive or blasting agent except as provided for in section 422.58, subsection (4);
- (c) within three hundred millimetres of any old cut bottom or any shatter or burn cut that has been charged and blasted.

22 Sep 78 SR 284/78 s422.54.

Charging holes

- 422.56(1)** A worker at a mine conducting a blasting operation shall not use any iron or steel tool to charge a hole with explosive or blasting agent or use such a tool otherwise in any hole containing explosive or blasting agent.
- (2) The employer at a mine shall ensure that no explosive or blasting agent is charged by pneumatic means unless,
- (a) the explosive or blasting agent is of a suitable type approved by the chief inspector; and
 - (b) the type of equipment and the procedures have been approved in writing by an inspector.
- (3) The employer at a mine shall ensure that where pneumatic charging methods are used in conjunction with electric blasting caps only collar priming is permitted.
- (4) The worker conducting a blasting operation shall ensure that where pneumatic charging methods are used,
- (a) any detonator is kept at least eight metres away from the loading operation until all the holes have been charged and the charging device has been disassembled;
 - (b) the worker operating the pneumatic charging device does not handle any detonator until any static electricity remaining on that worker has been effectively discharged.

22 Sep 78 SR 284/78 s422.56.

Missed holes

- 422.58(1)** Where a worker conducting a blasting operation fires a round of shots that worker shall,
- (a) whenever possible count the number of shots;
 - (b) where a misfire is suspected for any reason notify the employer; and
 - (c) conspicuously mark the collar of each hole in which a charge has misfired.
- (2) The employer at a mine shall make effective provision such that,
- (a) where a misfired charge has not been fired at the end of the shift that fact together with the location of the hole is reported to the supervisor in charge of the next shift to enter that working place before work is commenced by that shift;
 - (b) subject to subsection (3), any explosive charge that has misfired or any part of a charge that remains in a hole after blasting is not withdrawn but is blasted without undue delay at a safe and suitable time.
- (3)(a) A hole that has been charged with a water-soluble explosive or blasting agent may be washed out by a method approved by an inspector.
- (b) The explosive or blasting agent may be withdrawn from a hole where specific instructions on the procedure to be used have been given by a supervisor and the operation is supervised by that supervisor.
- (4) The employer at a mine shall ensure that where it is necessary to drill a hole in order to blast a misfired charge the drilling of such a hole is directed by a supervisor who shall be responsible for ensuring that the direction, position and depth of the hole is safe.

(5) The mine employer shall ensure that no development heading is abandoned or work therein discontinued until the material broken at the firing of the last round has been cleared from the face and the whole face of the heading has been thoroughly examined for explosive or blasting agent in any cut-off hole or misfired charge and found to be safe.

22 Sep 78 SR 284/78 s422.58.

Safety of workers during blasting

422.60(1) Any worker at a mine who is conducting a blasting operation shall before initiating the blast,

(a) cause all workers to be withdrawn from the place to be blasted or any other place where the safety of the workers may be endangered by the blast except that a worker or workers may remain to assist the worker conducting the blasting operation;

(b) cause the entrances to any such place to be effectively guarded to prevent the return of or entry of any worker to that place and for the purpose of this clause, the posting of signs alone shall not be deemed to be adequate protection to warn of blasting operations;

(c) instruct any person posted to guard an entrance under clause (b) that he shall not move until the worker conducting the blasting operation has given his instructions to do so.

(2) Immediately before initiating any blast the worker conducting the blasting operation shall cause due warning to be given by shouting "FIRE" or as provided for by subsection (3).

(3) At any surface blasting operation where the extent of the operation is such as to render the warning required by subsection (2) to be inadequate, the mine employer shall provide an approved warning device and rules for the operation of the device and the worker in charge of the blasting operation shall ensure that the warning is given in accordance with these rules.

(4) Where it is necessary to control traffic on a public road during a blasting operation and permission has been obtained where necessary from the appropriate authority, the employer shall cause an adequate number of workers equipped with suitable red flags and adequate signs to be positioned to warn and control traffic approaching the danger area.

22 Sep 78 SR 284/78 s422.60.

Breaking through to mine workings

422.62 The employer at a mine shall ensure,

(a) that where a connection between mine workings is to be made a thorough examination of the working, towards which the active working is proceeding, is carried out and work shall not proceed unless it is safe to do so;

(b) every approach to the point of connection in the working which is being approached shall be guarded when any charge within five metres of breaking through is to be blasted.

22 Sep 78 SR 284/78 s422.62.

Safety fuse

422.64 The employer at a mine shall ensure that where safety fuse is used in any blasting operation,

- (a) the capped fuse is supplied in standard lengths with suitable burning times;
- (b) the uncapped end is equipped with an igniter cord connector.

22 Sep 78 SR 284/78 s422.64.

Number of workers and lights

422.66(1) Where more than one shot is to be fired other than by a remote ignition method, the worker conducting the blasting operation shall not do so unless he is accompanied by at least one other worker and except where the blasting operation is to be conducted on the surface in daylight, each worker shall carry a light.

(2) Where more than one shot is to be fired by safety fuse, the worker conducting the blasting operation shall ignite the safety fuse only by using igniter cord.

22 Sep 78 SR 284/78 s422.66.

Length of fuse

422.68(1) The employer at a mine shall ensure that any fuse shorter than one metre is not used in any blasting operation except where the fuse is ignited by a remote ignition method.

(2) The worker conducting a blasting operation shall not light any fuse at any place other than the end of the fuse.

22 Sep 78 SR 284/78 s422.68.

Detonator required and to fire in sequence

422.70 The worker conducting a blasting operation shall not charge any hole with any explosive or blasting agent unless a properly prepared detonating agent is placed in the charge and shall fire the charge in its proper sequence in the round.

22 Sep 78 SR 284/78 s422.70.

Loading and firing required in one operation

422.72(1) The worker conducting a blasting operation shall,

- (a) ensure that all holes that are charged with explosive or blasting agent in one loading operation are fired in one blasting operation;
- (b) ensure so far as is reasonably practicable that any hole that has been charged with explosive or blasting agent or an explosive or blasting agent charge that has been set by that worker shall not be left unfired but shall be fired by that worker at the first opportunity consistent with the rules for blasting at the mine;
- (c) where it is not reasonably practicable to fire a charge as prescribed in clause (b) the worker conducting the blasting operation shall forthwith inform the employer of the circumstances.

(2) The employer at a mine shall ensure that at any place in which there are holes charged with explosive or blasting agent that have not been blasted at the end of the shift is guarded or barricaded or otherwise protected against unauthorized entry.

22 Sep 78 SR 284/78 s422.72.

Precautions when blasting rounds in parts

422.74 A worker conducting a blasting operation shall not blast parts of a round separately in a drift or raise without allowing sufficient time to clear the drift of fumes and to cool the rock to a point where there is no danger of premature detonation by heated ground.

22 Sep 78 SR 284/78 s422.74.

Interval before return to scene of blast

422.76(1) Where the firing has been done by means of safety fuses, the worker conducting the blasting operation shall not leave or permit any other worker to leave the place of refuge from the blast and return to the scene of the blast within the number of minutes that is equal to seven times the number of metres in the longest fuse used in the blasting operation and such time shall be calculated from the time the last shot is heard.

(2)(a) Where the blasting has been done by means of electric delay action detonators and two or more shots have been fired, the worker conducting the blasting operation shall not leave or permit any other worker to leave the place of refuge and return to the scene of the blast within ten minutes of the time at which the blasting circuit is closed; except that,

(b) where no shot is heard and a faulty circuit is indicated, the circuit may be repaired immediately after the worker conducting the blasting operation has ensured that the blasting switch is locked in the open position and the lead wires are short-circuited.

(3) Where there is reason to believe there has been a misfire in a blasting operation the worker conducting the blasting operation shall not return to the scene of the blast or permit any other worker to return within one hour of the time that the fuse or fuses were lit or the blasting circuit was closed.

(4) The worker conducting the blasting operation shall not return to the scene of any reblasting operation or permit any other worker to return within thirty minutes of the time that the charge was reblasted.

22 Sep 78 SR 284/78 s422.76.

Provision of ventilation during blasting operations

422.78(1) Where blasting is being done in a raise or stope or other working place the employer at a mine shall ensure that suitable precautions are taken to prevent closure of the entrance to the working place or interference with the effective circulation of air by broken material produced by that blast.

(2) The employer at a mine shall ensure that before any worker returns to a place of work after a blasting operation adequate ventilation has been provided to remove any harmful gas or fumes.

(3) Except where the conditions after a blast can be predicted with reasonable accuracy the employer to fulfil the duty prescribed in subsection (2) shall examine the place of work with approved testing apparatus and such tests shall be conducted in conjunction with a worker at that place.

22 Sep 78 SR 284/78 s422.78.

Time for blasting

422.80 The employer at a mine shall cause the times for blasting to be so fixed that workers are exposed as little to dust and smoke as is reasonably practicable.

22 Sep 78 SR 284/78 s422.80.

Places where electric current to be used for blasting

422.82(1) The employer at a mine shall ensure that blasting is initiated only by an electric current where,

- (a) a shaft is being sunk,
- (b) a raise is being driven,
- (c) a place is unusually wet, or
- (d) an inspector has so ordered.

(2) An inspector may approve any other method of initiation if, in the inspector's opinion, this will not prejudice the safety of any worker.

22 Sep 78 SR 284/78 s422.82.

Blasting by direct current or blasting machine

422.84(1) Where more than one detonator is to be initiated by electrical means at any one time the employer at the mine shall ensure that,

- (a) only a blasting machine of an approved type is used; and
- (b) no dry cell or other storage battery is used for this purpose except where such a dry cell or storage battery is incorporated in an approved blasting machine.

(2) The employer at a mine shall ensure that every blasting machine shall be kept in a suitable place and adequately maintained.

22 Sep 78 SR 284/78 s422.84.

Approved device for firing shots from power distribution system

422.86(1) The employer at a mine shall ensure that where the source of energy for firing a charge is from an electrical power distribution system the blasting device,

- (a) is of approved design;
- (b) is constructed so that it automatically opens the circuit by gravity and short circuits the blasting cable or wires;
- (c) has the live side within a fixed locked box;
- (d) is accessible only to a person authorized to conduct a blasting operation or for maintenance purposes.

(2) The mine employer shall ensure that where blasting is done simultaneously in more than one area of the mine from a single source of electricity, all workers are checked out of the affected areas prior to blasting and the firing of the blast shall be under the direct supervision of a supervisor appointed in writing by the employer for this purpose.

22 Sep 78 SR 284/78 s422.86.

Precautions to be taken when blasting by electricity

422.88 Where blasting is done by electricity the worker conducting the blasting operation shall ensure that,

- (a) the lead wires are short-circuited at all times except when the charge or charges are to be fired;
- (b) any lead wire or firing cable is not allowed to make contact with any rail, air or water line or lighting or power cable and that any bare wire is not allowed to make contact with the roof or side of any working place at any time;
- (c) the firing cables leading to the face are short-circuited while the leads from the detonators are being connected to each other and to the firing cables and that no such short-circuit is removed until every worker has withdrawn to a place of safety;
- (d) the short-circuit is replaced immediately after the cables have been disconnected from the blasting machine or the blasting switch has been opened;
- (e) no firing cables used to initiate a blast at one working place shall be used to initiate a blast in another working place until all proper precautions have been taken to ensure that no such firing cables have any connection with the leads from the first working place;
- (f) no worker is permitted to enter any place where a charge has been fired until the firing cables have been disconnected from the blasting machine or portable direct current battery and have been short-circuited or the switch of the approved blasting switch is open, the firing cables are short-circuited and the blasting box is locked;
- (g) where more than one shot is to be fired electrically, the electrical circuit is tested with an approved circuit testing device and found to be satisfactory before the shots are fired;
- (h) no electric detonator is stored or placed within eight metres of any energized electric conductor other than a cable used in the blasting operation unless adequate precautions are taken to prevent premature initiation.

22 Sep 78 SR 284/78 s422.88.

Separate storage boxes in open pit

422.90(1) The employer at a mine may store explosives in an open pit where necessary provided the employer ensures that,

- (a) explosives and detonators shall be stored in separate boxes which are kept at least eight metres apart;
- (b) such boxes shall contain not more than twenty-four hours requirement of explosive;
- (c) each box shall be of stout wooden construction covered on the outside with not less than twenty gauge steel plate and equipped with a lid of similar construction;
- (d) no box shall be placed within sixty metres of any blasting site;

- (e) every box containing explosive shall be marked "EXPLOSIVES" and painted red in colour;
 - (f) every box containing explosive shall be locked except for the withdrawal and replacement of explosive and the key shall be retained in the possession of a worker or workers authorized by the employer.
- (2) Where blasting operations are halted for two hours or longer in an open pit, the worker conducting the blasting operation for that open pit shall return all explosives and detonators in the open pit to the storage boxes prescribed in subsection (1).

22 Sep 78 SR 284/78 s422.90.

Drilling near explosives in an open pit

422.92 The employer at a mine shall ensure that in any open pit,

- (a) no hole is drilled within three hundred millimetres of any socket;
- (b) where mining is by benches, the drilling pattern in alternate benches shall be staggered a distance equal to half the interval between adjacent holes in the pattern;
- (c) no hole is drilled where any part of the hole would be within eight metres of any hole charged with explosive or blasting agent except that such a hole may be drilled under the direct supervision of a competent supervisor for the purpose of,
 - (i) clearing a blocked hole; or
 - (ii) placing an additional hole for the blasting of a misfired charge in accordance with section 422.58.

22 Sep 78 SR 284/78 s422.92.

Prohibition of vehicles near loaded holes

422.94 The employer at a mine shall ensure that no part of any machinery other than the vehicle carrying explosives or as provided in section 422.92, clause (c) shall be operated within eight metres of the collar of any hole that is charged or being charged with explosive or blasting agent.

22 Sep 78 SR 284/78 s422.94.

Protection against lightning

422.96(1) In every mine the employer at a mine shall ensure that adequate precautions are taken to prevent any premature discharge of explosive, blasting agent or detonator due to lightning.

(2) In every mine where any explosive or blasting agent is fired by electrical means the employer at a mine shall institute a system whereby every reasonable effort is made to warn workers using the explosive or blasting agent of the approach of an electrical storm.

(3) The employer at a mine where explosives or blasting agents are being used on the approach of an electrical storm shall ensure that,

- (a) all lead wires are short-circuited and in the case of an open pit covered forthwith;

- (b) all charging operations are stopped; and
 - (c) where any charges have been loaded and connected, all workers are withdrawn from the area and remain at a safe distance until the danger from the electrical storm has passed.
- (4) The mine employer shall on the approach of an electrical storm ensure that any surface magazine is closed and every worker in or about the magazine is withdrawn to a safe place for the duration of the storm.
- (5) At every underground mine the mine employer shall ensure that,
- (a) every feeder cable from the surface is protected with a suitable lightning-arrestor near the point of entry to the mine;
 - (b) no lightning-arrestor ground is connected to any rail, track, pipe line or other conductor entering the mine;
 - (c) where an electrical power distribution system is used for blasting,
 - (i) every circuit supplying energy for blasting is fed from an approved isolating transformer or from an underground power source supplying no other equipment and shall have adequate capacity for the number of detonators required;
 - (ii) a fused service switch with provision for locking is installed between the source of power and the blasting switch;
 - (iii) a horizontal lightning gap of not less than two metres is provided between the service switch and the blasting switch and such gap shall be closed only at the time of blasting.

22 Sep 78 SR 284/78 s422.96.

Radio transmitters

422.98 The employer at a mine shall ensure that no electric blasting operation is carried out within a reasonable distance to be prescribed in writing by the chief inspector of any radio transmitter and such a distance shall be based on the type and power output of that transmitter.

22 Sep 78 SR 284/78 s422.98.

Blasting on claims

423.00(1) Where blasting operations are to be performed on mining claims the employer at a mine or self employed person shall,

- (a) notify the chief inspector of the intention to use explosives;
 - (b) obtain a permit for the storage of explosives on the property;
 - (c) comply with those sections of the regulations regarding the storage, use and disposal of explosives as are applicable.
- (2) Where parties working contiguous or adjacent claims or mines disagree as to the time of setting off blasts, either party may appeal to an inspector, who shall decide upon the time at which blasting operations thereon may be performed, and the inspector's decision is final and shall be observed by all such parties in future blasting operations.

22 Sep 78 SR 284/78 s423.00.

Offence to commit careless act

- 423.02(1)** An employer at a mine, self-employed person or worker shall not,
- (a) commit a careless act with an explosive or where explosives are stored; or
 - (b) omit or neglect to report immediately to the employer at the mine the discovery of any such act having been committed.
- (2) The employer at a mine shall,
- (a) make a prompt investigation when an act specified under subsection (1) or any suspected breach of these regulations in this Part is discovered by or reported to that employer;
 - (b) report each such act to the chief inspector within 24 hours of the time when he has been made aware thereof.

22 Sep 78 SR 284/78 s423.02.

**PART XII
SHAFT SINKING**

Sinking program

424.00 Where any shaft is to be sunk the mine employer shall submit to the chief inspector three months before shaft sinking commences suitable drawings and specifications covering,

- (a) the shaft lining program;
- (b) the equipment to be used;
- (c) the sinking procedure;
- (d) the signal system to be used; and
- (e) the shaft collar.

22 Sep 78 SR 284/78 s424.00.

Shaft collar

424.02 The mine employer shall ensure that the collar of every shaft or raise opening at the surface is made secure.

22 Sep 78 SR 284/78 s424.02.

Design of equipment

424.04 The employer at a mine shall ensure that where a vertical shaft is being sunk,

- (a) a suitable crosshead is used with any shaft conveyance as soon as the shaft is deep enough for this to be practicable but in no case shall the depth of the shaft exceed sixty metres unless a suitable crosshead is installed;
- (b) a chain shall not be attached to any shaft conveyance in a manner that could cause inadvertent dumping of the conveyance;

- (c) every crosshead is of an approved design;
- (d) every shaft conveyance and device such as the bail, safety latch or other attachment to the bucket is of an approved design.

22 Sep 78 SR 284/78 s424.04.

Shaft timbering

424.06 Where a shaft is to be lined with timber the mine employer shall ensure that,

- (a) suitable and adequate timbering is installed; and
- (b) during the shaft sinking operation such lining is installed as close as is reasonably practicable to the bottom of the shaft but in no case shall the distance from the timber to the shaft bottom exceed fifteen metres.

22 Sep 78 SR 284/78 s424.06.

Other shaft linings

424.08 Where a shaft is to be lined with concrete or steel and concrete the mine employer,

- (a) shall ensure that the lining is of adequate strength and suitable construction; and
- (b) shall specify a reasonable maximum distance to be permitted between the lower extremity of any temporary or permanent lining and the shaft bottom and shall submit the specifications to the chief inspector.

22 Sep 78 SR 284/78 s424.08.

Doors – protection from dumping

424.10(1) The employer at a mine shall ensure that in every shaft during sinking operations adequate provision is made and used,

- (a) to ensure that the conveyance is not dumped while the dumping doors are open; and
 - (b) to prevent spillage falling into the shaft.
- (2) The employer at a mine shall submit the design of the provisions for the purpose specified in subsection (1) to the chief inspector.
- (3) The employer at a mine shall provide a suitable door to cover the sinking compartment at the collar of every shaft while sinking operations are in progress and the door shall be kept closed at all times when persons, tools or material are being loaded into or unloaded from any shaft conveyance at the collar of the shaft except this shall not apply when the conveyance is being unloaded and the precautions required by subsection (1) are being taken.
- (4) Any door required by subsection (3) shall be,
- (a) so arranged that when in the fully opened position, it shall be securely held by a suitable latching device; or
 - (b) controlled by devices which will prevent the accidental movement of the door and ensure the door is correctly positioned.

22 Sep 78 SR 284/78 s424.10.

Hoisting persons in buckets

424.12 During shaft sinking operations the employer at a mine shall ensure that,

- (a) a worker shall not be permitted to ride on the rim or outside of any shaft conveyance;
- (b) a worker shall not be permitted to ride in any shaft conveyance containing any ore or waste;
- (c) a worker shall not be permitted to ride in any shaft conveyance containing material except that where necessary small items may be carried, provided adequate precautions are taken to ensure the safety of the worker;
- (d) the shaft conveyance is in the charge of an authorized worker and only this worker shall be permitted to give signals for the movement of the conveyance;
- (e) every worker riding in a shaft conveyance is required to obey the instructions of the worker in charge and maintain proper discipline.

22 Sep 78 SR 284/78 s424.12.

Lowering workers after blasts

424.14(1) During shaft sinking operations the employer at a mine shall take effective steps to ensure a shaft conveyance used for returning workers to the working place following any blasting operation is not lowered on the initial trip beyond the point where, owing to the blast, it may be unsafe to go without a careful examination and in no case shall the point be less than fifteen metres above the blasting set or bulkhead or the top deck of the sinking stage.

(2) The shaft conveyance shall be lowered from the point mentioned in subsection (1) only on signal from the worker in charge of the same and at a speed in order to be fully under control, by signal, of such a worker.

(3) Only sufficient number of workers shall be carried on the trip mentioned in subsection (1) as are required to properly conduct a careful examination of the shaft.

22 Sep 78 SR 284/78 s424.14.

Bucket or skip not to be lowered directly to bottom of shaft

424.16(1) During shaft sinking operation the employer at a mine shall take effective steps to ensure that,

- (a) the shaft conveyance is not lowered directly to the bottom but is held at least five metres above the bottom and remains there until a separate signal to lower the same has been given;
- (b) when chairing and releasing the crosshead the hoist is operated only at creep speed.

22 Sep 78 SR 284/78 s424.16.

Overhead protection in sinking operations

424.18(1) During shaft sinking operations the employer at a mine shall ensure that no worker is permitted to be below any other worker working in the shaft unless the worker in the lower position is protected from the danger of falling material by a securely constructed covering extending over a sufficient portion of the shaft to afford adequate protection.

(2) When any worker is on or below a shaft mucking machine in a shaft the employer at a mine shall cause the machine to be secured in an approved manner.

22 Sep 78 SR 284/78 s424.18.

Prohibition of open hooks

424.20 During shaft sinking operations the employer at a mine shall not permit any open hook to be used for the suspension of any staging, working platform, conveyance or other equipment in the shaft.

22 Sep 78 SR 284/78 s424.20.

Procedure before hoisting bucket

424.22 During shaft sinking operations the employer at a mine shall take effective steps to ensure that,

- (a) a shaft conveyance is not moved from the top or bottom of a shaft until the worker in charge thereof has steadied it or caused it to be steadied;
- (b) a shaft conveyance is not moved from the bottom of a shaft until the worker in charge thereof has examined it and has removed any mud or other material that may be sticking to it;
- (c) the shaft conveyance is filled only in such a manner that no piece of loose mineral or material projects above the level of the brim.

22 Sep 78 SR 284/78 s424.22.

Means of escape during shaft sinking

424.24(1) During shaft sinking operations the employer at a mine shall provide a suitable footway or ladderway from the collar to the blasting set or sinking stage in every shaft, except that in an untimbered shaft an independently powered escape conveyance may be used in place of a ladderway and such a conveyance shall be fully operational before the shaft exceeds a depth of thirty metres.

(2) The employer at a mine shall provide an auxiliary ladder that reaches from the permanent ladders, blasting set or sinking stage to the bottom in such a position that it may be promptly lowered to any point at which workers are working.

22 Sep 78 SR 284/78 s424.24.

Shaft sinking in the sediments

424.26(1) Where applicable, all the provisions of these regulations shall apply to the operation, control and management of any shaft being sunk in any area of Saskatchewan underlain by sediments and, in addition, the requirements of this section shall apply to and be observed at any such shaft sinking operation.

(2) Before commencing to drill any hole for the consolidation of a shaft site by a freezing method, the mine employer shall notify the chief inspector, in writing, of the intention to do so.

(3) The mine employer shall set out in the notice the location of the proposed shaft and the number and depth of the holes that are to be drilled.

(4) The mine employer shall ensure a substantial pillar is left around every shaft at each working horizon to adequately protect the shaft from any damage due to movement of the strata, and that the radius of the shaft pillar is determined by a competent engineer in this field and that the specification is submitted to the chief inspector.

22 Sep 78 SR 284/78 s424.26.

PART XIII SHAFT INSPECTIONS AND SAFETY OF SHAFTS

Shaft inspection

426.00(1) The mine employer shall ensure that every shaft including guides, timbers, walls, compartments and other equipment within or attached to the shaft for which other provision is not made in these regulations is thoroughly examined at least once each week.

(2) A report of each inspection carried out under subsection (2) shall be entered in the Shaft Inspection Record Book as specified in section 440.06.

22 Sep 78 SR 284/78 s426.00.

Protection for workers in shafts

426.02(1) The employer at a mine shall take effective steps to ensure that no worker is caused or permitted to,

(a) work or conduct any examination in any part of a shaft or in that part of the headframe used in conjunction therewith, while hoisting operations other than those necessary for doing such work or conducting such examination, are in progress in that compartment;

(b) work or conduct any examination in a shaft or in any shaft station, loading pocket, pump station or other opening adjacent to that shaft or in that part of a headframe used in conjunction therewith unless that worker is adequately protected from accidental contact with any moving hoisting conveyance or from the danger of falling objects which may be accidentally dislodged.

(c) enter or cross a hoisting compartment of a shaft in which hoisting operations are being carried on, except for the purpose of entering or leaving the shaft conveyance in that compartment or for the purposes of carrying out work in, or examination of, that shaft as provided for in clause (a) and (b).

(2) Before any work or examination is to be performed as provided for in this section the employer at a mine shall make effective provision for the hoist operator on duty at the time to be informed that the work or examination is to be performed and the precautions that are to be taken. The hoist operator shall make an entry in the Hoist Operator's Log Book as specified in section 440.08 and the employer shall countersign the entry as soon as practicable.

(3)(a) Where any worker is required to be on or below any staging or working platform suspended in a shaft or raise, or where the staging or working platform is being moved, the employer at the mine shall provide and cause suitable safety chains or cables to be used in addition to the means of suspension of such platform or staging.

(b) The employer at a mine shall permit only such workers as are necessary for moving any such staging or working platform to be on the staging or working platform when it is moved.

22 Sep 78 SR 284/78 s426.02.

Lining compartments

426.04(1) The mine employer shall ensure that in every headframe of a timbered shaft,

(a) each skip compartment has a substantial lining from the collar to the dumping position and where there is any station immediately below the collar where workers enter or alight from the conveyance, the lining shall extend from that station to the dumping position;

(b) where material is handled in a cage compartment, a substantial lining is provided around that compartment except on the side on which material is to be loaded or unloaded. Such lining shall extend above the collar a distance of not less than the height of the conveyance plus two metres and shall extend below the collar at least two metres.

(2) The mine employer shall ensure that in every timbered shaft the skip compartment is separated from the cage compartment by a substantial partition and each compartment is lined at each level. Such a compartment shall be lined at each level in a manner similar to clause (b), subsection (1).

(3) Wherever a counterweight is used in a timbered shaft the mine employer shall ensure that it is operated in a separate enclosed compartment and wherever a counterbalance is used in an untimbered shaft, it is so guarded that it does not endanger workers at pass points or at any level or other point of access to the shaft.

(4) In every headframe of a shaft that is not timbered the mine employer shall ensure that adequate suitable partitions are installed to prevent any material from a skip falling onto any worker.

22 Sep 78 SR 284/78 s426.04.

Fencing of shafts and other openings

426.06(1) The mine employer shall ensure that every shaft opening on the surface, on each level and at each other point of access to the shaft is securely fenced or protected by a suitable gate which shall be kept closed at all times except for the purpose of loading or unloading the conveyance.

(2) This section does not prevent the temporary removal of the fence or gate when necessary provided,

(a) the mine employer causes suitable precautions to be taken; and

(b) the fence or gate is replaced as soon as reasonably practicable thereafter.

(3) Where vehicles are used adjacent to the shaft the gate shall be so designed and constructed to withstand the impact of any vehicle sufficiently to prevent any danger to the shaft or worker in the shaft.

(4) Where an inspector has reason to believe a danger may exist the inspector may require the provision and use of stop blocks or any other device to protect the shaft in addition to the requirements of subsection (1).

22 Sep 78 SR 284/78 s426.06.

Access to shaft stations

426.08 At each level or other point of access to the mine workings from the shaft the mine employer shall provide,

- (a) a safe passageway to the workings from the hoisting compartment and standing room adjacent to the shaft;
- (b) a safe passageway from the shaft manway to the mine workings.

22 Sep 78 SR 284/78 s426.08.

Installation of shaft guides

426.10 Where safety catches as provided for in section 432.16, clause (d) are used in a shaft the mine employer shall ensure that the guides, guide attachments and shaft timber or other lining are of sufficient strength and suitably designed, installed and maintained so that when the safety catches are activated they will grip the guides effectively and arrest the conveyance at any point in the shaft.

22 Sep 78 SR 284/78 s426.10.

Design of shaft facilities

426.12(1) The mine employer shall submit to the chief inspector details of any significant change in the design, construction and layout of any shaft facility or equipment in the shaft as soon as is reasonably practicable before the change is made.

(2) The chief inspector may require that the mine employer shall supply a report from an independent engineer on any matter pertaining to any shaft facility or equipment where the chief inspector has reason to believe there could be a danger to any worker at the mine.

22 Sep 78 SR 284/78 s426.12.

PART XIV HOISTING PROCEDURES

Requirements for hoisting workers

428.00(1) The mine employer shall provide except during sinking operations a suitable conveyance constructed as required by section 432.16 for lowering or raising workers in the shaft.

(2) The employer at a mine shall take effective steps to ensure that,

- (a) except during sinking, shaft inspection or maintenance operations a worker is not lowered or raised in a conveyance that does not meet the requirements of section 432.16;

- (b) a worker is not lowered or raised in a conveyance by a hoist that is simultaneously used for the hoisting of mineral or material except as provided for in clause (e) and subsection (3), clause (b);
 - (c) a worker is not lowered or raised in a conveyance at any time unless the doors of the same are securely closed, except that during shaft inspection the doors may be left open provided suitable precautions are taken;
 - (d) conveyance doors are not opened until a full stop has been made at the point or station signalled for, provided that in the case of an inadvertent stop at a point in the shaft other than a station, the conveyance doors may be opened and workers may leave the same on instructions to do so by the employer;
 - (e) a worker is not lowered or hoisted in a conveyance that is loaded with any mineral, material or equipment except that,
 - (i) where the conveyance has two or more decks workers may be lowered or hoisted on any deck provided no material or equipment is carried on that deck, and the total load does not exceed eighty-five percent of the maximum permitted load when material alone is carried, and any material or equipment in the conveyance is adequately secured;
 - (ii) where there is only one deck and the presence of a worker is required for the purpose of handling material or equipment, the worker may be lowered or hoisted on the same deck as that material or equipment provided adequate precautions are taken to ensure that worker's safety.
- (3)(a) In an emergency where it is necessary to ensure the health or safety of a worker the worker may be lowered or raised in a conveyance that does not meet the requirements of section 432.16.
- (b) A worker may carry personal hand tools or equipment in a conveyance provided suitable precautions are taken to prevent injury to any worker on the conveyance.

22 Sep 78 SR 284/78 s428.00.

Hoisting in charge of authorized person

- 428.02(1)** The mine employer shall ensure that every shaft conveyance in which any worker is lowered or raised is in the charge of a worker authorized by the employer in writing except that this section shall not apply when the conveyance is operating under automatic control.
- (2) At any time that workers are underground in an area served by a hoist, the employer at a mine shall take steps to ensure that either,
- (a) the worker authorized to be in charge of the conveyance, if not riding in the conveyance, is available within sound of the shaft signal at all times; or
 - (b) other suitable means approved by an inspector are provided whereby the conveyance may be made readily available for use in an emergency.

22 Sep 78 SR 284/78 s428.02.

Notice of number of workers permitted to ride

428.04(1) The mine employer shall post and maintain a notice at the collar of the shaft showing clearly the maximum number of workers permitted to ride on and the maximum load of materials that may be carried on the conveyance.

(2) The worker authorized by the employer to be in charge of a shaft conveyance shall require all workers riding on the conveyance to comply with the requirements of this section.

(3) At all times that workers are being lowered or hoisted in any conveyance every worker shall maintain proper discipline and shall obey the instructions of the worker in charge of the conveyance.

22 Sep 78 SR 284/78 s428.04.

Hoist operator to be at controls

428.06 The hoist operator shall remain at the hoist controls at all times the hoist is in motion unless the hoist is operating under automatic control.

22 Sep 78 SR 284/78 s428.06.

Automatic hoisting

428.08(1) Where a hoist is to be operated by automatic or semi-automatic controls, the mine employer shall submit the details of the installation and procedures to be adopted to the chief inspector and no such hoist shall be operated unless the chief inspector has approved the installation and procedures in writing.

(2) Where a hoist is being operated by automatic control the mine employer shall ensure that a competent hoist operator is readily available at all times when workers are underground.

(3) The mine employer shall provide on each automatic or semi-automatic hoist a device for the selection of manual, semi-automatic or automatic controls and such a device for the selection of control shall be operated only by the hoist operator.

(4) Whenever a hoist is put on automatic operation and at least once every twenty-four hours the mine employer shall require the hoist operator to initiate a brake test and to remain at the controls for sufficient time to observe that the automatic operation of the hoist is functioning properly.

(5) The mine employer shall provide on every automatic hoist suitable back-out switches that can operate only when the hoist is under manual control.

(6) The mine employer shall make provision on every automatic hoist such that where an emergency stop occurs during automatic hoisting operations, an alarm will sound and the competent hoist operator required under subsection (2) shall take such action as required.

(7) After an emergency stop the mine employer shall require the hoistman to return the hoist to manual control until such time as the hoist operator is satisfied that the hoist is operating normally.

22 Sep 78 SR 284/78 s428.08.

Control stations

428.10(1) The mine employer shall make provision on every hoist designed to be operated from either level control stations or the control stations in the conveyance whereby any device for the selection of the control station is operable only at the level at which the conveyance is stopped.

(2) The mine employer shall ensure that any device installed on a level or other landing place,

(a) for the purpose of selecting the conveyance destination and for initiating hoist motion is operable only at the level or landing place at which the conveyance is stopped, unless the installation has been approved for call system operation;

(b) for the purpose of initiating hoist motion shall subject to subsection (3),

(i) be operable only when the shaftgate at the level or landing place at which the conveyance is stopped is in the closed position;

(ii) be located so that it can be operated from inside the conveyance stopped at the level or landing place;

(iii) cause a delay of at least five seconds between the operation of the device used to initiate the hoist motion and the actual motion.

(3)(a) The mine employer shall ensure that any device for jogging the conveyance is so located that it cannot be operated from inside the conveyance;

(b) Notwithstanding the requirements of this section the device for jogging the conveyance may be activated while the shaftgate is open and without the delay prescribed in subsection (2).

(4) The mine employer shall ensure that any device installed in a conveyance for the purpose of controlling the hoist motion shall be,

(a) operable only when the conveyance doors are in the closed position;

(b) capable of initiating emergency stopping action to bring the conveyance to rest.

22 Sep 78 SR 284/78 s428.10.

Use of clutch and brake

428.12(1) The mine employer shall ensure that,

(a) when workers are in a shaft conveyance the corresponding drum of the hoist is kept clutched in;

(b) a worker is not permitted to enter a shaft conveyance or work upon or under a shaft conveyance when the corresponding drum of the hoist is unclutched, unless the conveyance is first secured in position by chairing or blocking except this clause shall not apply to shaft sinking operations;

(c) when the drum of a hoist is unclutched the brake of the drum shall be used only for the purpose of maintaining the drum in a stationary position and lowering shall not be done from an unclutched drum.

(d) before either drum of a double drum hoist is unclutched, the brakes shall be applied on both drums.

- (2) The mine employer shall require that,
- (a) the hoist operator shall not unclutch a drum of the hoist until the test required by section 432.44 subsection (1) has been made;
 - (b) before the hoist operator leaves the controls,
 - (i) the brakes shall be set;
 - (ii) the clutches shall be engaged or the conveyance on any unclutched drum shall be banked;
 - (iii) the power supply shall be disconnected;
- except that sub-clause (i) and (iii) of this clause shall not apply to any hoist operator leaving the controls of a hoist operating under automatic control.

22 Sep 78 SR 284/78 s428.12.

Raising and lowering material

428.14 The employer at a mine shall ensure that,

- (a) where any material is being raised or lowered in a shaft conveyance such material shall be loaded in a manner to prevent it from shifting its position and where necessary it shall be secured to the conveyance;
- (b) where any material projects above or below the side of the conveyance the material is securely fastened to the conveyance or lashed to the hoisting rope in such a manner that it cannot come in contact with the sides of the shaft, the timber supports or other equipment or cause damage to the rope;
- (c) open hooks are not used in connection with the suspension of any material in a shaft;
- (d) any slings, chains or other means to be used for lowering any material in a shaft are inspected by a competent worker before use and no such sling, chains or other device shall be used if damaged, kinked or in any other way faulty;
- (e) a competent worker supervises the slinging in a shaft of any material from a rope or shaft conveyance and that adequate precautions are taken to ensure such material does not slip by the provision of suitable safety chains or other suitable means.

22 Sep 78 SR 284/78 s428.14.

Chairs

428.16 The employer at a mine shall make effective provision to ensure that,

- (a) where chairs are used for the purpose of landing a shaft conveyance at any point in a shaft except when hoisting in balance from that point, such chairs are not put into operation unless the proper chairing signal has been given to the hoist operator;
- (b) chairs are not used when workers are to be raised or lowered.

22 Sep 78 SR 284/78 s428.16.

PART XV
HOISTING SIGNALS

Signals system to be provided

430.00 The mine employer shall provide in every working shaft a suitable means of communicating by distinct and definite signals to the hoistroom from the bottom of the shaft, every working level, collar and other landing place.

22 Sep 78 SR 284/78 s430.00.

Seperate signal for each compartment

430.02(1) A seperate, audible signal system shall be installed by the mine employer for the control of each shaft conveyance operated from a single hoist and there shall be a sufficient difference in the signals to the hoist operator that the signals are easily distinguishable.

(2) The control for the signal for movement of the shaft conveyance shall be located within easy reach of a worker in the shaft conveyance.

22 Sep 78 SR 284/78 s430.02.

Return signal

430.04(1) The mine employer shall install a return bell system unless exemption is obtained in writing from an inspector.

(2) Where a return bell system is installed, the hoist operator shall return the signal to the worker giving the signal when any worker is about to be lowered or raised.

22 Sep 78 SR 284/78 s430.04.

Permission for signalling devices to hoist operator on the conveyance

430.06 The mine employer shall ensure that no device for signalling to or communicating with the hoist operator is installed or operated in or on a shaft conveyance without the written permission of the chief inspector.

22 Sep 78 SR 284/78 s430.06.

Connection between hoistroom and cage call system

430.08(1) The mine employer shall ensure that the control for any signal used to call for the shaft conveyance shall be seperate from the hoist signal system and shall be clearly marked "CAGE CALL SYSTEM".

(2) There shall be no connection, electrical or otherwise, between the hoistroom and the cage call system at a shaft except where such a connection is approved in writing by the chief inspector.

22 Sep 78 SR 284/78 s430.08.

Voice communication between surface and levels

430.10(1) The mine employer shall install an effective system in all working shafts to provide voice communication between the surface, each level and every other landing place as may be necessary to provide communication in an emergency except that this shall not apply during shaft sinking operations.

(2) When another means of calling the shaft conveyance is provided, a telephone installed in accordance with subsection (1) may be located in the hoistroom.

22 Sep 78 SR 284/78 s430.10.

Signal line may be required

430.12 When required by an inspector the mine employer shall provide a signal line in each working compartment of each shaft to permit signals to be communicated to the hoist operator from any portion of the shaft.

22 Sep 78 SR 284/78 s430.12.

Code of signals and signalling procedures

430.14(1) The mine employer shall institute a procedure for signalling between the hoist operator and the worker in charge of a conveyance in accordance with the requirements of this section and ensure that it is properly used at all times.

(2) The following code of signals shall be used at every mine and a copy of the code shall be kept posted in every hoistroom at the shaft collar and at every level or other landing place in every working shaft,

- (a) one bell – stop immediately, if in motion (executive signal);
- (b) one bell – hoist (executive signal);
- (c) two bells – lower (executive signal);
- (d) three bells – workers about to ascend or descend (cautionary signal). (This signal shall be given by the worker in charge of the shaft conveyance before any worker is permitted to enter the conveyance and before any worker is permitted to leave the conveyance. It shall also be given when a stop has been made at a level and any worker on the conveyance is to be raised or lowered to another level. Where a return bell signal system is installed, the hoist operator shall return the three-bell signal before any worker is permitted to enter or leave the conveyance or be raised or lowered);
- (e) four bells – blasting signal (The hoist operator shall answer by raising the conveyance a short distance and letting it back slowly. Following a four-bell signal only a one-bell signal shall be required to signal for raising any worker away from a blast and the hoist operator shall remain at the controls until the act of hoisting has been completed);
- (f) five bells – release signal (executive signal)
 - (i) When a return bell system is installed, the hoist operator shall return the signal before moving the conveyance.
 - (ii) The hoist operator shall forthwith move the conveyance from the level at which the signal was given, and may, at the hoist operator's own discretion, perform any movement or series of movements involving the conveyance including bringing the conveyance to rest at any place in the shaft which is not a recognized stopping place. Once the conveyance has been brought to rest at a recognized stopping place, the hoist operator shall not move the conveyance again until a new signal is received.
 - (iii) The worker giving the release signal shall remain to guard the conveyance until it is moved from the place from which the release signal was given.

(3) Where a cage call system is in operation, the signal nine bells, shall be used to indicate an emergency, and,

- (a) shall be given only on the cage call system; and
 - (b) shall be followed by the signal for the level on which the emergency exists.
- (4) The following method and order shall be observed in giving signals,
- (a) strokes on the bell shall be given at regular intervals;
 - (b) signals shall be given in the order designated; first cautionary signal, second directory signal, third executive signal.
- (5)(a) A hoist operator shall not move the conveyance within a period of five seconds after receiving a signal designating a movement at any time that a worker is to be lowered or raised.
- (b) Where the worker giving the signal designating a movement of the hoist is to be lowered or raised in the conveyance that worker shall give the signal from within the conveyance.
- (6) After a hoist operator has received a three-bell signal the hoist operator,
- (a) shall not move the conveyance until a signal designating the movement required is received;
 - (b) shall not leave the controls of the hoist until the required movement has been completed;
 - (c) shall complete the required movement without interruption unless a stop signal is received or there is an emergency.
- (7) Where the hoist operator is unable to act within one minute of the time a completed signal was received, the hoist operator shall not move the conveyance until a complete signal has again been received.

22 Sep 78 SR 284/78 s430.14.

Notice regarding talking to hoist operator

430.16 Except in case of emergency or for the purpose of training no one shall speak to the hoist operator while the hoist is in motion and a sign to this effect shall be posted by the mine employer plainly visible to anyone approaching the hoist controls.

22 Sep 78 SR 284/78 s430.16.

Special signals

430.18(1) In addition to the code of signals required by section 430.14 the mine employer shall specify,

- (a) signals to designate all regular landings and working levels;
 - (b) signals to designate all hoisting movements not prescribed in this part.
- (2) Each signal prescribed in section (1) shall be,
- (a) readily distinguishable;
 - (b) approved by the chief inspector.

(3) All signals designated in section (1) and an adequate description of their application to the movements required shall be posted by the mine employer in every hoistroom, at the shaft collar and every level and other landing place in every working shaft.

22 Sep 78 SR 284/78 s430.18.

Precautions after inadvertent stop

430.20 The employer at a mine shall take steps to ensure that the shaft conveyance is not moved by the hoist operator until the proper signal has been received, except that in the event of an inadvertent stop at some point in the shaft other than at a station from which a signal may be given, the hoist operator may move the conveyance when assured that the hoist controls are in proper working order and when raising or lowering persons, the hoist operator has received instructions to do so from the employer.

22 Sep 78 SR 284/78 s430.20.

Only authorized person to give signal

430.22 The employer at a mine shall take effective steps to ensure that in any hoisting system not being a totally automatic system;

- (a) only a worker authorized by the employer is permitted to give a signal for moving or stopping the shaft conveyance except in an emergency;
- (b) the names or titles of every worker so authorized shall be posted in a suitable place;
- (c) a signal shall not be given unless the shaft conveyance is at the level from which the signal is to be given;
- (d) an unauthorized worker does not interfere with the signalling arrangements.

22 Sep 78 SR 284/78 s430.22.

**PART XVI
HOISTING EQUIPMENT**

Provisions for commissioning a hoist

432.00(1) In each new hoisting installation and modification of an existing installation no new hoist and no hoist that has previously been in use beyond the control of the employer shall be used by the mine employer unless that hoist is accompanied by a certificate from a competent engineer giving the maximum permissible unbalanced load and the maximum permissible total rope pull of the hoist for the conditions under which the hoist is to be operated and the mine employer shall ensure that the hoist shall not be loaded beyond the maximum load so specified.

(2) The specifications of the hoist and equipment and drawings showing the general arrangement of the hoist and headframe shall be submitted by the mine employer to the chief inspector.

- (3) The mine employer shall not make any alteration to any hoist designed to increase the hoisting capacity unless a competent engineer has certified in writing that the alteration is good engineering practice and complies with the requirements of these regulations and a copy of the certificate and the details of the alteration have been forwarded as soon as reasonably practicable to the chief inspector.
- (4) The mine employer shall ensure that before a new or modified hoist installation is put into service adequate tests are conducted to prove the proper working of all safety devices required by this regulation and the chief inspector shall be informed of the time of the tests.
- (5) The mine employer shall ensure that before each new or modified hoist is put into service,
- (a) any shafts, drums, mechanical linkage for controls, brake rods and any other part of a hoist or hoisting equipment, the failure of which could endanger any worker are subjected to a suitable non-destructive test;
 - (b) the method of non-destructive testing is approved.
- (6) The mine employer shall ensure that the records of any test required by this section shall be kept by the employer while the hoist is in service.

22 Sep 78 SR 284/78 s432.00.

Hoist drum specifications

- 432.02(1)** The mine employer shall ensure that in each installation of a newly acquired drum hoist, re-installation of a drum hoist and modification of an existing hoist designed to increase the hoisting capacity of the hoist,
- (a) the drums of the hoist are properly grooved to fit the rope used, except that in the case of shaft sinking, preliminary development operations and other operations of a temporary nature, hoists with plain drums may be used;
 - (b) flanges are provided on the drum of every hoist and if the drum is conical such other appliances are provided sufficient to prevent the hoisting rope from slipping off or coiling unevenly;
 - (c) the drums have sufficient rope-carrying capacity to permit hoisting from the lowest point to the highest point of travel in the shaft with no more than three layers of rope on the drum at any time;
 - (d) there is a minimum of three turns of rope upon the drum when the conveyance is at the lowest point of travel in the shaft;
 - (e) subject to clause (f) a hoist drum shall not have,
 - (i) a diameter less than eighty times the diameter of the hoisting rope in use when the diameter of such rope is greater than twenty-six millimetres.
 - (ii) a diameter less than sixty times the diameter of the hoisting rope in use when the diameter of such rope is not greater than twenty-six millimetres;
 - (f) in the case of shaft sinking and preliminary development operations a hoist having,
 - (i) a drum the diameter of which is not less than sixty times the diameter of the hoisting rope when the diameter of such rope is greater than twenty-six millimetres;

(ii) a drum the diameter of which is not less than forty-eight times the diameter of the hoisting rope in use when the diameter of such rope is not greater than twenty-six millimetres;

may be used provided that the chief inspector has approved the use of the hoist in writing and such limitations and conditions as the chief inspector may impose are complied with;

(g) the hoist and head sheaves are so located in relation to one another in order to permit the proper winding of the rope on the hoist drum; and

(h) where multiple layer winding is used, proper arrangements are provided to permit the rope to rise evenly from one layer to another and to wind properly without cutting down through a lower layer.

(2) The mine employer shall ensure that in each installation of a newly acquired friction hoist and any modifications of an existing friction hoist designed to increase the hoisting capacity of the hoist, the diameter of the friction pulley shall be,

(a) where the hoist is equipped with locked coil ropes not less than one hundred times the diameter of the rope;

(b) in any other case not less than eighty times the diameter of the rope.

22 Sep 78 SR 284/78 s432.02.

Hoist brake systems

432.04(1) The mine employer shall ensure that each drum hoist is equipped with,

(a) brakes that may be applied directly to each drum in order to readily stop and hold the drum under all conditions of loading, direction of travel and speed;

(b) brakes that are so arranged that they can be tested separately and whether the hoist is at work or at rest can be easily and safely manipulated by the hoist operator when that worker is at the levers controlling the hoist;

(c) brakes that for the purpose of lowering or raising workers or for shaft sinking are not operated by means of a hoist operator's foot unless such brakes are an auxiliary electrical device;

(d) adequate brakes that are maintained so that full braking torque may be exerted and each drum brake shall be equipped with a device which shall,

(i) give positive indication of brake wear or slack linkage such that adjustment is necessary; and

(ii) in the event of a slack brake linkage prevent the starting of the hoist;

(e) brakes that are so installed and maintained that in the event of an inadvertent or an accidental loss of pressure in the brake system the brakes can be applied.

(2) The mine employer shall ensure that each friction hoist is equipped with adequate brakes applied directly to the friction pulley, maintained to stop safely and hold the conveyance under all conditions of loading, direction of travel and speed.

(3) The mine employer shall ensure that where any hoist is to be used for raising or lowering any worker,

- (a) adequate auxiliary brakes are provided and maintained and such brakes shall be capable of being operated independently of the main braking system and capable of safely stopping the hoist when in motion;
- (b) at least one of the brake systems is arranged for automatic application of the brakes on the operation of any safety device specified in section 432.12, subsection (1), clause (a).

22 Sep 78 SR 284/78 s432.04.

Precautions when using clutch on drum hoists

432.06 The mine employer shall ensure that on any drum hoist fitted with a clutch drum,

- (a) the brake and clutch operating gear are so installed that it is not possible to unclutch a drum unless the brakes on the drum are applied and that it is not possible to release the brakes until the clutch of the drum is engaged;
- (b) the operating gear of the clutch of the drum is provided with locking gear to prevent the inadvertent withdrawal or insertion of the clutch.

22 Sep 78 SR 284/78 s432.06.

Depth indicator required

432.08(1) The mine employer shall ensure that on every hoist there is provided a suitable depth indicator that clearly and accurately shows to the hoist operator at all times,

- (a) the position of the shaft conveyance;
- (b) the positions in the shaft where any reduction in speed is prescribed by the employer for any reason;
- (c) the position of the overwind and underwind devices for the shaft conveyance or counterbalance;
- (d) the limits beyond which the conveyance shall not be moved.

(2) The mine employer shall provide in every new hoisting installation a suitable device to indicate to the hoist operator any failure of the drive to the hoist depth indicator.

22 Sep 78 SR 284/78 s432.08.

Provisions required in the event of overwind

432.10(1) The mine employer shall ensure that at each shaft or headframe in which a conveyance operates there is sufficient distance beyond the point at which the safety device required in section 432.12 is set so that the conveyance may be brought safety to rest before it or its attachments reach any permanent obstruction.

(2) The mine employer shall ensure that at every hoist installation where any worker is transported in a conveyance not equipped with safety catches, some suitable device is installed and arranged so that if the conveyance or counterbalance broke away from the rope during an overwind it would fall back the shortest practicable distance before it was arrested.

22 Sep 78 SR 284/78 s432.10.

Overwind, underwind, and overspeed protection on all hoists

432.12(1)(a) The mine employer shall ensure that on every hoist there are provided the following safety devices which will initiate automatic deceleration and cause the hoist to stop before the conveyance counterbalance or rope attachments can reach any permanent obstruction,

(i) suitable overwind or underwind devices operated by the drum or drums at definite points within the upper and lower limits of regular travel of the conveyance or counterbalance except that in shaft sinking operations an inspector may give permission for the underwind device to be dispensed with if adequate provision is made for the safety of persons in the shaft or conveyance;

(ii) a device in each hoisting compartment operated directly by the conveyance or counterbalance;

(iii) overspeed devices to operate when the maximum rope speed which shall be specified in writing by the mine employer is exceeded by a suitable predetermined amount;

(iv) retardation devices driven from the drum or drums which will enforce a gradual deceleration of the conveyance or counterbalance as it approaches the upper and lower limits of regular travel.

(b) On every hoist the mine employer shall make adequate provision whereby the hoist operator is warned audibly of the arrival of the conveyance at points in the shaft far enough from the top and bottom landing places to permit the hoist to be stopped in a normal manner before the conveyance reaches either landing place.

(c) The mine employer shall ensure that,

(i) where any hoist is used for transporting any worker in a skip or skip-cage assembly, a device is installed which will prevent the skip from being hoisted to the dumping position whenever any worker is being carried; and

(ii) except during shaft sinking operations a distinctive signal will be given automatically to the worker in charge of the conveyance when the device is put into operation.

(d) The mine employer shall provide on every electric hoist a manually operable backout device to permit backing out of an overwind or underwind position and this device shall,

(i) ensure that the hoist moves only in the proper direction;

(ii) ensure that the brakes holding a conveyance in an overwound or underwound position cannot be released until the driving torque has developed sufficiently to ensure movement in the proper direction.

(e) The mine employer shall provide where applicable a barrier or other suitable device to prevent that part of the conveyance carrying any worker from being inadvertently lowered into water in the sump of the shaft.

(2) The mine employer shall equip each friction hoist installation with,

(a) a device that will bring the conveyance to rest as quickly as is safely practicable in the event of slip occurring between the hoisting rope or ropes and the friction pulley when such slip exceeds a suitable predetermined amount;

- (b) a device that will compensate for any alteration in the effective position of a safety device caused by rope creep or slip and such adjustment shall take place only when the hoist is at rest and the brakes are applied;
- (c) a device that will initiate emergency stopping in the event of any abnormal movement of the tailrope loop or loops;
- (d) a device that will cause the hoist to be brought to rest in the event of any broken wire protruding from a hoist rope;
- (e) tapered guides or other approved devices above and below the limits of regular travel of the conveyance and arranged in order to brake and stop an overwound conveyance in the event of failure of other safety devices.

22 Sep 78 SR 284/78 s432.12.

Provision of protective circuits on electric hoists

432.14(1) The mine employer shall provide on each electric hoist suitable protective safety devices and protective circuits which when actuated will initiate automatic control of the power circuits in conjunction with automatic application of the brakes to bring the hoist and conveyances safely to rest under all conditions of permissible load, direction of travel, and speed.

- (2) These protective devices and circuits shall,
 - (a) be designed to be fail safe;
 - (b) be installed and maintained so as to provide positive protection at all times;
 - (c) operate at a minimum practicable voltage.
- (3) In addition to the requirements of section 432.12 every electric hoist shall have,
 - (a) such low voltage protective devices on the hoist control circuits as are necessary to effect the safe operation of the hoisting plant;
 - (b) overload protective devices on the hoist power circuit which will operate when there is a load on the hoist motors of a magnitude and duration exceeding the normal operating overload;
 - (c) short circuit protective devices on the hoist power circuit;
 - (d) a manually operable emergency stop switch installed within easy reach of the hoist operator when at the hoist controls, at each other location from which the hoist can be remotely controlled and at the skip dump and loading pocket;
 - (e) within plain view of the hoist operator an ammeter which shall indicate at all times the load on the hoist drive motor.
- (4) The employer at a mine shall take effective steps to ensure that no worker is permitted without proper authority to change the adjustment of or alter any safety or protective device on a hoisting installation.

22 Sep 78 SR 284/78 s432.14.

Construction of shaft conveyances

432.16(1) The mine employer shall ensure that every conveyance to be used for lowering or raising a worker installed after January 1, 1979 is designed by an engineer and shall in addition satisfy the following requirements,

- (a) the man riding deck shall be completely covered by an adequate roof extending over the full area of the deck;
- (b) the sides of the man riding deck shall extend from floor to roof and be of suitable construction and prevent any worker coming into contact with the sides of the shaft timbering or other installations in the shaft;
- (c) the man riding deck shall be equipped with doors which shall extend from the roof to the floor of the deck and shall be so designed that they cannot be opened outward from the conveyance.
- (d) the static factor of safety used in the design of the conveyance and for the determination of the maximum load of material that may be carried in, on or slung under the conveyance shall be not less than "ten".

(2)(a) For any conveyance to be installed after January 1, 1979 the mine employer shall obtain a certificate from an engineer specifying the maximum load of material that may be carried in, on or slung under the conveyance and any restrictions on operating conditions which shall be observed.

- (b) The mine employer shall ensure that the conveyance is not loaded above the maximum load or operated other than within the conditions specified in clause (a).

(3) Where a conveyance has provision for dumping the mine employer shall provide suitable protection to prevent inadvertent dumping.

(4)(a) Where a conveyance is to be fitted with safety catches the mine employer shall,

- (i) ensure they are of a design and construction capable of holding the conveyance at any time in the operating cycle while carrying the maximum load specified in subsection (2);
- (ii) submit to the chief inspector specifications of the safety catches before installation and before any subsequent modification;
- (iii) cause the safety catches to be tested according to the procedure specified in section 432.38 and shall inform the chief inspector of the results of such test.

(5)(a) The chief inspector may issue a permit for the use of any safety catches on a conveyance.

- (b) The mine employer shall not use any conveyance fitted with safety catches unless a permit has been issued for their use by the chief inspector.

Use of shaft buckets

432.18 Where a bucket is used in a shaft for other than sinking purposes the mine employer shall ensure that,

- (a) a set of doors as required by subsection (3) of section 424.10 is provided at the collar or other place where the bucket is loaded or unloaded and the doors shall be kept closed at all times that any material is being loaded into or taken out of the bucket;
- (b) a suitable landing device is used at every place where the bucket is being loaded or unloaded.

22 Sep 78 SR 284/78 s432.18.

Permissible loading of shaft conveyances

432.20(1) The mine employer where a new hoist has been installed or an existing hoist has been relocated or altered shall before that hoist is used obtain from the chief inspector a certificate stating the maximum number of workers and the maximum load of material that may be carried in the shaft conveyance.

(2) The chief inspector shall issue such a certificate if all the following requirements are satisfied,

- (a) the maximum load of material to be carried does not exceed that which the specifications given by an engineer indicate the hoist can safely handle;
- (b) the maximum load of material to be carried does not exceed that which gives a permitted load factor appropriate to that hoist and rope;
- (c) the maximum load of material to be carried does not exceed that which an engineer certifies to be the maximum for that conveyance;
- (d) the maximum load attached to the rope when workers are hoisted shall not be greater than eighty-five per cent of the maximum load when material is hoisted and for this purpose one worker shall be deemed to weigh ninety kilograms and the term "load" shall mean the sum of the maximum weight of any underslung rope, the weight of the conveyance, and the maximum load of material or workers as appropriate.
- (e) the chief inspector is satisfied that the hoist meets all other requirements of these regulations.

22 Sep 78 SR 284/78 s432.20.

Rope connection

432.22(1) The mine employer shall ensure that,

- (a) each hoisting rope and each tail rope, if any, is suitably and securely fastened to the shaft conveyance or counterbalance;
- (b) on every drum hoist each hoisting rope, including any attached to a counterbalance shall be securely fastened to the drum;
- (c) on all new installations or proposed changes to existing installations the method of making the aforesaid fastening is approved by an inspector;
- (d) in no case is an open hook used for such a fastening.

- (2) The mine employer shall ensure that:
- (a) each component of the suspension gear between a shaft conveyance or counterbalance and a hoisting or tail rope and any connections between components of a shaft conveyance shall have a static factor of safety when new of not less than “ten”;
 - (b) components of suspension units that are used between a hoisting rope and a shaft conveyance are not of welded construction;
 - (c) where required by an inspector the attachments between the rope and shaft conveyance are before use subjected to a suitable non-destructive test and a copy of the test result shall be filed and made available to an inspector and no component shall be used if any such test reveals it to be defective.

22 Sep 78 SR 284/78 s432.22.

Obstruction of the free passageway of the conveyance

432.24(1) The mine employer shall ensure that where any equipment is installed in a shaft at any place other than the upper or lower limits of normal travel of the conveyance and any moveable part of such equipment may interfere with the free passage of a conveyance,

- (a) positive locking devices for preventing such parts of the equipment from interfering with the free passage of the conveyance in the shaft are installed;
 - (b) position indicating lights are installed in view of the hoist operator which will,
 - (i) show a green light when such parts of the equipment are locked in a position that will permit free passage of the conveyance;
 - (ii) show a red light when such parts of the equipment are not so locked in a safe position;
 - (iii) be controlled by devices operated directly by such parts of the equipment.
- (2) The mine employer shall cause an adequate procedure to be adopted for the safe operation of the hoist with respect to such equipment.

22 Sep 78 SR 284/78 s432.24.

Headsheaves

432.26 The mine employer shall ensure that,

- (a) the minimum diameter of a headsheave and deflecting sheave is not less than the minimum diameter of a hoist drum that would be prescribed by these regulations for the same rope and duty;
- (b) every headsheave and deflecting sheave is machined properly to fit the rope;
- (c) every headsheave and deflecting sheave is properly aligned.

22 Sep 78 SR 284/78 s432.26.

Chairs on conveyance

432.28(1) The mine employer shall submit to the chief inspector the details of any device to be installed for the purpose of landing a shaft conveyance at any point in a shaft.

(2) Where chairs are used for the purpose of landing a shaft conveyance at any point in a shaft other than at the lowest point of travel, the mine employer shall ensure they are so arranged that they automatically fall clear and remain clear of the hoisting compartment when the conveyance is raised.

(3) The mine employer shall so design and install any chairs so that they cannot be operated from inside the conveyance.

22 Sep 78 SR 284/78 s432.28.

Provisions relating to tail, guide and rubbing ropes

432.30 The mine employer shall ensure that,

(a) at every hoisting installation where two or more tail ropes are used suitable devices are installed in the vicinity of the loops of such ropes whereby those loops are separated at all times;

(b) adequate provision is made to ensure that no tail rope rubs on any part of any steelwork in the shaft;

(c) adequate provision is made in every shaft where guide ropes or rubbing ropes are used for the correct alignment of the lower extremities of such ropes and the means of alignment shall allow unrestricted vertical movement of such ropes.

22 Sep 78 SR 284/78 s432.30.

Sump clearance

432.32 The mine employer shall ensure that water and spillage in a shaft sump are kept at such a level at all times that,

(a) every tail rope has a clear passage; and

(b) every guide and rubbing rope and its associated rope connections and tensioning devices is clear of such water or spillage.

22 Sep 78 SR 284/78 s432.32.

Examination of mechanical parts of hoisting system

432.34(1) The mine employer shall appoint sufficient competent persons to ensure,

(a) that the mechanical equipment forming part of, or associated with any hoist, including any conveyance, counterbalance, sheave wheel, attachment of the hoisting rope to the drum and shaft conveyance, overwind and underwind device, brake, interlock, depth indicator, mechanical hoist signalling equipment, shaft dumping and loading arrangement and sinking door is examined at least once each week;

(b) that where the hoist is a friction hoist every rope tread shall be examined at such regular intervals as to ensure the rope tread is constantly maintained in good condition; and

- (c) that where the hoist is a friction hoist every rope tread shall be measured at least once every six months and the control and safety devices recalibrated in accordance with any reduction in tread diameter.
- (2) The mine employer shall require a report of each inspection carried out under subsection (1) to be entered in the Hoisting Machinery Record Book specified in section 440.00 by the person making the inspection.
- (3) Where an inspector considers that the failure of any part of the hoist or hoisting equipment could endanger any worker the inspector may require that the mine employer shall conduct suitable non-destructive tests on that part and the results of the test shall be filed and made available to an inspector on request and the part shall not be used if the test was not satisfactory.

22 Sep 78 SR 284/78 s432.34.

Examination of electrical parts of hoisting system

- 432.36(1)** Every mine employer responsible for operating an electric hoist shall appoint sufficient competent persons to ensure that the electrical equipment forming part of or associated with the hoist, including the hoist motor, control apparatus, electrical safety devices and electrical hoist signalling equipment is examined at least once each week.
- (2) The mine employer shall require a report of each inspection carried out under subsection (1) to be entered in the Electrical Hoisting Equipment Record Book specified in section 440.02 by the person making the inspection.

22 Sep 78 SR 284/78 s432.36.

Approval and examination of safety catches

- 432.38(1)** Before a shaft conveyance equipped with safety catches and mechanism is first used for the purpose of hoisting or lowering any worker the mine employer shall conduct such tests as may be required by the chief inspector to demonstrate that the safety catches and mechanism function efficiently when loaded with the maximum load of material permitted by section 432.20 at any point in the operating cycle.
- (2)(a) When safety catches are fitted to a shaft conveyance the mine employer shall ensure that,
- (i) at least once in each day the safety catches are examined for cleanliness, proper adjustment and working condition;
 - (ii) at least once in every three months, the safety catches are tested by releasing the conveyance in a suitable manner from rest to determine whether the safety catches grip the guides.
- (b) The mine employer shall require a notation of the test to be made in the Hoisting Machinery Record Book specified in section 440.00 by the worker making the inspection.

22 Sep 78 SR 284/78 s432.38.

Hoist not to be used where any defect observed

432.40 The mine employer shall make effective provision such that,

- (a) on any examination required under these regulations of the shaft, shaft conveyance, hoist, hoist controls, signalling system or hoisting ropes, or of any attachment or appurtenance thereto there is discovered any weakness or defect whereby the safety of any worker may be endangered or where it became apparent to the hoist operator or any other worker that some weakness or defect has developed or is developing, any such weakness or defect shall be immediately reported to the mine employer and until the weakness or defect is remedied or the mine employer has determined it is safe to do so the hoisting plant shall not be used;
- (b) any repair, adjustment of, or alteration to any part, device or control on any hoist shall be made only by an authorized person.

22 Sep 78 SR 284/78 s432.40.

Special testing of hoisting equipment

432.42 An inspector may after consultation with the mine employer conduct or require to be conducted specific tests of the efficiency of any brake, clutch, overwind or underwind device, signalling system or other hoist control.

22 Sep 78 SR 284/78 s432.42.

Brakes and friction clutches to be tested

432.44(1) The mine employer shall require the hoist operator on each shift before the hoist operator moves the conveyance,

- (a) to ascertain whether or not the brakes are in proper condition by testing the brakes of the drums against the normal starting power of the engine or in the case of an electric hoist against the normal starting current and not to unclutch any drum of a drum hoist fitted with a clutch until this test has been completed and the brakes have been ascertained to be in good condition;
- (b) where a hoist is fitted with a friction clutch to test the holding power of the clutch when the brake of the corresponding drum is kept on and the brake of the other drum is kept off and in the case of a steam or air hoist the test shall be made against the normal starting power of the engine, and in the case of an electric hoist against the normal starting current.

(2) The mine employer shall ensure that,

- (a) the overwind and underwind devices are tested at least once every day the hoist is in operation;
- (b) after every stoppage of the hoist for repairs and for any other purpose in which the stoppage exceeds two hours duration, the hoist operator shall cause the conveyance to make one complete trip up and down the working portion of the shaft before any worker is raised or lowered to ascertain whether or not the hoist is in satisfactory condition.

(3) The mine employer shall require the hoist operator to record the results of all test stoppages and trips prescribed in this section in the Hoist Operator's Log Book specified in section 440.08 and where any test reveals the hoist is not in satisfactory condition he shall forthwith inform the mine employer.

22 Sep 78 SR 284/78 s432.44.

PART XVII
HOISTING, GUIDE AND RUBBING ROPES

Requirements before hoisting, tail or guide ropes can be used

434.00(1) The mine employer shall not use or permit the use of any hoisting rope, tail rope, guide rope or rubbing rope unless,

- (a) that rope has been tested by an approved rope testing laboratory; and
- (b) the employer is in possession of a certificate of that test indicating that rope is in satisfactory condition.

(2) The mine employer shall not use or permit the use of any hoisting rope, tail rope, guide rope or rubbing rope that is not accompanied by a certificate from the manufacturer giving the following information,

- (a) the name and address of the manufacturer;
- (b) the manufacturer's rope number;
- (c) the date of manufacture;
- (d) the diameter of the rope;
- (e) the weight of the rope;
- (f) the class of core;
- (g) the percentage by mass of lubricant in the core;
- (h) the trade name of the interior lubricant;
- (i) the number of strands;
- (j) the number of wires in each strand;
- (k) the diameter of the wires;
- (l) the breaking stress of the material of which the wire is made;
- (m) the standard torsion test of the wires;
- (n) the breaking load of the rope as determined by loading to destruction in a tensile machine;
- (o) the length of rope.

(3) When a hoisting rope, tail rope, guide rope or rubbing rope is put into service the mine employer shall cause the information required by subsection (2) to be entered in the "Rope Record Book" specified in section 440.04 together with the following information and forward a copy to the chief inspector,

- (a) the name of the person from whom the rope was purchased;
- (b) the date of purchase of the rope;
- (c) the date when the rope was installed in the present location;
- (d) the identification number of the rope;
- (e) the name of the shaft and compartment in which the rope is used;
- (f) the weight of the shaft conveyance and attachments;
- (g) the maximum load of material carried in the conveyance or weight or tension applied to the guide or rubbing rope;

- (h) the maximum length of a hoist rope in service below the sheave or the length of a tail, guide or rubbing rope;
 - (i) the maximum weight of a hoist rope in service below the sheave or the weight of a tail, guide or rubbing rope;
 - (j) the permitted load factor at the conveyance suspension and at the head sheave with the rope fully let out or at the guide or rubbing rope suspension point;
 - (k) the date installed and removed from previous location, if any.
- (4) In addition to the information required under subsection (2) and (3), the mine employer shall cause the following information to be entered in the "Rope Record Book",
- (a) a history of the rope giving the date on which the rope was first installed;
 - (b) the dates, if any, when the rope was shortened and the length of rope removed;
 - (c) the date of any breaking or electro-magnetic test;
 - (d) the date and reason for each occasion the rope is taken out of service.

22 Sep 78 SR 284/78 s434.00.

Number of specimens required

434.02(1) In any friction hoist installation where multiple ropes are used that have been laid up continuously during manufacture a specimen shall be submitted for the test required by section 434.00 cut from the portion between adjoining ropes such that,

- (a) in the case of three ropes, two specimens shall be required;
 - (b) in the case of four ropes, two specimens shall be required.
- (2) In any guide and rubbing rope installation where the ropes have been laid up continuously a specimen shall be submitted for the test required by section 434.00 cut from the portion between each pair of ropes.

22 Sep 78 SR 284/78 s434.02.

Precautions – used ropes

434.04(1) The mine employer shall not put back into service for the purpose of raising or lowering any worker a hoisting rope that has previously been removed from service in a shaft unless the rope has been properly maintained during the period when it was out of service and the rope has been examined and found to be in satisfactory condition.

- (2) The mine employer shall not put into service any hoisting rope, tail rope, guide rope or rubbing rope that has previously been used in a place beyond the control of the mine employer unless,
- (a) the rope has been properly examined and found to be in satisfactory condition;
 - (b) two standard test pieces, one from each end of the rope have been tested and found to be in satisfactory condition for further use; and
 - (c) the chief inspector has given permission in writing for the rope to be used.

22 Sep 78 SR 284/78 s434.04.

Splicing

434.06 The mine employer shall not use or permit the use of any rope that has been spliced for hoisting workers or materials in a shaft.

22 Sep 78 SR 284/78 s434.06.

Rope not to be reversed

434.08 The mine employer shall not reverse or permit the reversal of any hoisting rope unless,

- (a) two standard test pieces, one from each end of the rope, have been tested and found to be satisfactory for further use; and
- (b) the chief inspector has given permission in writing for the rope to be reversed.

22 Sep 78 SR 284/78 s434.08.

Rope dressing

434.10 The mine employer shall cause,

- (a) suitable rope dressing to be applied to every hoisting rope as often as is necessary to maintain the rope in satisfactory condition;
- (b) a report of the application of dressing to be recorded in the Hoisting Machinery Record Book and signed by the person who performed the work.

22 Sep 78 SR 284/78 s434.10.

PART XVIII

PERMITTED LOAD FACTORS FOR HOISTING, GUIDE AND RUBBING ROPES

Permitted load factor – hoisting ropes, drums, hoist installations

436.00(1) For the purpose of this section the permitted load factor shall be calculated by dividing the breaking strength of the rope as given in the test certificate required by section 434.00 by the sum of the weight of the shaft conveyance and attachments, the maximum weight of material carried in the conveyance, the weight of that portion of the rope that extends from the headsheave to the conveyance and the weight of that portion of the tail rope and attachments, if any, suspended below the conveyance.

(2) The mine employer shall ensure that the permitted load factor for any hoisting rope when newly installed on a drum hoist is,

- (a) not less than 8.5 when the conveyance is at the sheave wheel;
- (b) subject to clause (c) not less than 5.25 when the conveyance is at the lowest point of travel;
- (c) not less than 6.5 when the conveyance is in use for hoisting workers and the conveyance is not equipped with safety catches as provided for in section 432.16.

22 Sep 78 SR 284/78 s436.00.

Permitted load factor – hoisting ropes friction hoist installations

436.02(1) For purposes of this section the permitted load factor of the hoisting ropes for a given friction hoist installation shall be the lowest actual breaking strength of any rope, as given in the test certificate required by section 434.00 multiplied by the number of ropes, divided by the sum weight of the conveyance and attachments, the maximum weight of material carried in the conveyance, and the maximum weight of rope and attachments suspended from that side of the friction pulley.

(2) The mine employer shall ensure that when any hoisting rope is newly installed on a friction hoist, the permitted load factor shall be not less than 6.5 or as determined from the following formula where this is greater,

$$\text{permitted load factor} = 9.5 - 0.00246L$$

where “L” is the maximum length of rope, in metres, suspended below the friction pulley or headsheave.

22 Sep 78 SR 284/78 s436.02.

Permitted load factor – tail, guide and rubbing ropes

436.04(1) For the purposes of this section the permitted load factor for any tail, guide or rubbing rope in a shaft shall be calculated by dividing the breaking strength of the rope, as given in the test certificate required by section 434.00, by the maximum total weight supported by the rope at any place in the rope.

(2) The mine employer shall ensure that the permitted load factor for any tail rope is not less than 7 when installed.

(3) The mine employer shall ensure that the permitted load factor for any guide or rubbing rope is not less than 5 when installed.

22 Sep 78 SR 284/78 s436.04.

PART XIX**EXAMINATION AND REPORTING FOR HOISTING AND OTHER ROPES****External examination of ropes and safety appliances**

438.00(1) Every mine employer shall appoint sufficient competent persons who shall,

(a) at least once in each day examine the exterior of each hoisting and tail rope to detect the presence of any visible damage, distortion or corrosion and to note the appearance of the rope dressing;

(b) at least once in each month examine on each drum hoist,

(i) that portion of the hoisting rope that is not on the hoist drum when the conveyance is at its lowest stopping point and, for the purpose of such examination the rope shall be cleaned at suitable places and the person making the examination shall note the condition of the rope including any reduction in diameter, the superficial condition of the wires as to corrosion and fractures and the proportion of wear in the rope. The position of the places to be examined shall be changed each month except that any position showing an appreciable reduction in diameter, corrosion, broken wires or appreciable wear shall be re-examined at suitable intervals;

- (ii) that portion of the rope that normally remains on the drum when the conveyance is at its lowest stopping point and shall note the condition of the rope including any significant crushing or deterioration of the rope at crossover points;
 - (c) at each friction hoist installation,
 - (i) each month measure and record on a graph the stretch of every hoisting rope and the number of hoisting cycles completed with the rope and a copy of these results shall be forwarded to the chief inspector;
 - (ii) each month measure and record the diameter of every hoisting rope at suitable places and note the condition of the rope including any loss of diameter, the number and location of any broken wires and any corrosion, distortion or structural failure of the rope;
 - (iii) each month thoroughly examine the tail rope at suitable places including those areas adjacent to the attachments and in the loop when the conveyance is at a station and note the condition of the rope including the number and location of any broken wires and any corrosion, distortion or structural failure of the rope;
 - (d) each year that a hoisting rope or tail rope has been in service or as required by an inspector clean the rope at thirty metre intervals throughout the length of the rope and note the condition of the rope including the location of any broken wire and any corrosion, distortion or structural failure of the rope; and,
 - (i) in the case of a hoist rope take and record the caliper readings of the rope diameter at each interval; and
 - (ii) in the case of a tail rope open the rope in the areas where corrosion is greatest sufficient to examine the interior of the rope and note the condition of the rope;
 - (e) each year that a guide or rubbing rope has been in service thoroughly clean the ropes and measure and record the minimum rope diameters at intervals not exceeding thirty metres throughout its length, including every conveyance meeting point, shaft station, discharge and loading point, and note the condition of the rope including the location of any broken wire and any corrosion, distortion or structural failure.
- (2) The person making any examination required by subsection (1) shall enter the results of the examinations in the Hoisting Machinery Record Book specified in section 440.00 and sign the entry.

22 Sep 78 SR 284/78 s438.00.

Testing and recapping of drum hoist ropes

438.02 The mine employer shall ensure that on each drum hoist installation,

- (a) each hoisting rope is examined,
 - (i) by an electromagnetic testing device within the first six months of service and thereafter at intervals not exceeding six months or as required by an inspector; or
 - (ii) by any other method approved by the chief inspector.

(b)(i) after six months of service and thereafter at intervals not exceeding six months a portion of the hoisting rope not less than three metres length is cut off from the lower end above the attachment or clamps, and

(ii) after eighteen months any such length of rope which has been cut off is tested by an approved cable testing laboratory and the certificate of the test is kept and a summary noted in the Rope Record Book specified in section 440.04 and a copy of the test certificate is forwarded to the chief inspector.

22 Sep 78 SR 284/78 s438.02.

Testing and recapping of friction hoist ropes

438.04 The mine employer shall ensure that on each friction hoist installation,

(a) each hoisting rope is examined and adjusted, if necessary, at suitable intervals,

(i) to maintain the designed torque balance of the rope;

(ii) to maintain equal tension in multi-rope installations;

(b) each hoisting rope is examined,

(i) by an electromagnetic testing device within the first six months of service and thereafter at intervals not exceeding six months or as required by an inspector; or

(ii) by any other method approved by the chief inspector;

(c)(i) where practicable after every six months of service the position of each hoisting rope within the clamps is changed and where this is not practicable the attachment between the rope and the shaft conveyance or counterbalance is dismantled, thoroughly cleaned and the rope examined and the attachment shall not be reassembled unless the rope is in satisfactory condition; or

(ii) the rope within the clamps or attachment shall be examined by any other method approved by the chief inspector;

(iii) the person making any examination or carrying out any action required under this subsection shall make an entry of this in the Hoisting Machinery Record Book specified in section 440.00 and sign the entry.

22 Sep 78 SR 284/78 s438.04.

Testing and adjustment of tail, guide and rubbing ropes

438.06 The mine employer shall ensure that,

(a) each tail rope is examined,

(i) by an electromagnetic testing device during the first twelve months of service and thereafter at intervals not exceeding twelve months or as required by an inspector; or

(ii) by any other method approved by the chief inspector;

- (b) every guide and rubbing rope is examined,
 - (i) by an approved electromagnetic testing device during the first twelve months of service and thereafter at such intervals as is necessary to ensure that the rope is in a satisfactory condition; or
 - (ii) by any other method approved by the chief inspector;
- (c) every guide rope and rubbing rope is lifted through a minimum distance of one and one-half times the headframe capping length at least once every five years;
- (d) where in a guide rope there is any uneven wear that rope is turned through a suitable angle at suitable intervals of time to equalize the wear around it;
- (e) every examination required by this section shall be made by a competent person appointed by the mine employer and an entry shall be made in the Hoisting Machinery Record Book specified in section 440.00 by the person making the examination.

22 Sep 78 SR 284/78 s438.06.

Electromagnetic testing service

438.08 Where a mine employer uses an electromagnetic testing service to examine a rope for the purpose of sections 438.02, 438.04, and 438.06.

- (a) the service shall be approved by the chief inspector;
- (b) the dates and results of the electromagnetic tests shall be entered in the Rope Record Book specified in section 440.04;
- (c) a report of each electromagnetic test including graphs and interpretation shall be sent to the chief inspector by the mine employer within thirty days after the test is made.

22 Sep 78 SR 284/78 s438.08.

Cleaning and examination of rope connections

438.10(1) The mine employer shall ensure that each device or connection between a hoisting rope or tail rope and a shaft conveyance or between a hoist rope and a hoist drum shall,

- (a) be thoroughly examined after any operation involving any dismantling, reassembly, alteration or adjustment to such attachments or connections;
- (b) be cleaned and thoroughly examined at least once during any six month period except that in the case of a swivel connection this will be examined at intervals not exceeding one month.

(2) After any work or examination required by subsection (1) the mine employer shall ensure that no conveyance is used for the hoisting or lowering of workers until two complete trips have been made with the conveyance bearing the maximum load of material as specified in section 432.20.

- (3) The mine employer shall require the hoist operator to make a record of the two complete trips mentioned in subsection (2) in the Hoist Operator's Log Book specified in section 440.08.
- (4) An inspector may require the mine employer to have suitable non-destructive tests carried out on any part of a connection between the rope and conveyance, the failure of which could endanger a worker and the results of any such test shall be forwarded to the chief inspector.
- (5) The mine employer shall ensure that each rope attachment and mechanical tensioning device installed in conjunction with every guide and rubbing rope is examined visually at least once each week and is thoroughly cleaned and examined once each six months.
- (6) Every examination required by subsections (1), (4), or (5) shall be made by a competent person appointed by the mine employer and the result of the examinations shall be entered in the Hoisting Machinery Record Book specified in section 440.00 and signed by the person making the examination.

22 Sep 78 SR 284/78 s438.10.

Rope discard criteria

- 438.12(1)** The mine employer shall discard every hoisting rope used in a shaft when it has been two years in service unless an extension of rope life is approved by the chief inspector if he is satisfied from evidence submitted by the employer such as maintenance records, non-destructive test results and stretch curve that the rope is in good condition.
- (2) The mine employer shall discard every hoisting rope used in a shaft when it has been less than two years in service if in any part of the rope,
 - (a) the existing breaking strength has decreased to less than ninety per cent of the original breaking strength of the rope as determined by an approved electromagnetic test or by calculation based on reduction of diameter or by a destructive test whichever is the least;
 - (b) the extension of a test piece has decreased to less than sixty per cent of its original extension when tested to destruction; or
 - (c) the number of broken wires in a section of the rope equalling the length of one lay of the rope exceeds six; or
 - (d) any visual examination or electromagnetic test indicates any other defect which may endanger the safety of a worker; or
 - (e) significant corrosion or distortion occurs; or
 - (f) the rate of stretch in a friction hoisting rope begins to show a significant increase over the normal stretch noted during its service.
 - (3) The mine employer shall discard every tail rope used in a shaft when it has been three years in service unless an extension of rope life is approved by the chief inspector if he is satisfied from evidence submitted by the employer such as maintenance records and non-destructive test results that the rope is in good condition.

- (4) The mine employer shall discard every tail rope used in a shaft when it has been less than three years in service if in any part of the rope,
- (a) the existing breaking strength has decreased to less than eighty-five per cent of the original breaking strength of the rope as determined by an approved electromagnetic test or by calculation based on reduction of diameter or by a destructive test whichever is the least;
 - (b) the extension of a test piece has decreased to less than sixty per cent of the original extension when tested to destruction; or
 - (c) the number of broken wires in a section of the rope equalling the length of one lay of the rope exceeds six; or
 - (d) significant corrosion or distortion occurs; or
 - (e) any visual examination or electromagnetic test indicates any other defect which may endanger the safety of a worker.
- (5) The mine employer shall ensure that no guide rope or rubbing rope shall be used in a shaft where in any part of the rope,
- (a) significant corrosion or distortion occurs; or
 - (b) the number of broken wires in any section of the rope equalling the length of one lay of the rope exceeds six; or
 - (c) the existing strength of the rope has decreased to less than seventy-five per cent of the original strength of the rope as determined by an approved electromagnetic test or by calculation based on the reduction of diameter or by a destructive test whichever is the least;
 - (d) the extension of a test piece has decreased to less than sixty per cent of its original extension when tested to destruction; or
 - (e) an outer wire or rod has lost forty per cent of its radial depth.

22 Sep 78 SR 284/78 s438.12.

Action to be taken when defect found in hoisting rope

438.14(1) The mine employer shall make effective provision so that where on any examination required by this part there is discovered any weakness or defect whereby the safety of workers may be endangered such weakness or defect shall be immediately reported to the employer and until such weakness or defect is remedied the hoisting plant shall not be used.

(2) Where any examination discloses any unusual condition of the rope although not constituting sufficient reason for discarding the rope the mine employer shall notify the chief inspector forthwith and ensure that adequate examinations are made pending the inspector's examination.

22 Sep 78 SR 284/78 s438.14.

Notification of rope discard

438.16 When a hoisting rope is taken out of service from a shaft compartment the mine employer shall notify the chief inspector giving the date, reasons for discarding or discontinuing the use of the rope, disposition of the rope and such other information as the chief inspector may require.

22 Sep 78 SR 284/78 s438.16.

Ropes to be removed from shaft when hoisting ceases

438.18 When a shaft compartment has been abandoned for hoisting purposes the mine employer shall ensure that the hoisting rope is removed from the shaft forthwith.

22 Sep 78 SR 284/78 s438.18.

Special testing of used hoisting ropes

438.20 The chief inspector may require that test specimens shall be cut from any rope discarded for use in mine hoisting at points specified by the chief inspector and sent to an approved cable testing laboratory for testing if the chief inspector is of the opinion that such testing is in the interest of better mine hoisting practice.

22 Sep 78 SR 284/78 s438.20.

PART XX HOIST AND ROPE RECORDS

Hoisting machinery record book

440.00(1) The mine employer shall keep at the mine a book for each hoist called "Hoisting Machinery Record Book" in which shall be recorded,

- (a) a report of every examination referred to in sections 410.04, 432.34, 432.38, 434.10, 438.00, 438.04, 438.06, and 438.10;
- (b) a report of any failure, accident, correction or repair involving the hoist, hoisting rope, shaft conveyance or any other part of the hoisting, dumping or loading equipment;
- (c) a report of the action taken in respect of any matter reported by virtue of clause (a) and (b).

(2) Every report made in the Hoisting Machinery Record Book shall be signed by the person making the report and counter-signed by the employer.

22 Sep 78 SR 284/78 s440.00.

Electrical hoisting equipment record book

440.02(1) The mine employer shall keep at that mine a book for each electrical hoist called "Electrical Hoisting Equipment Record Book" in which shall be recorded,

- (a) a report of every examination referred to in section 432.36;
- (b) a report of any failure or accident involving the electrical equipment of the hoist or other parts of the hoisting system;
- (c) a report of the action taken in respect of any matter reported by virtue of clause (a) and (b).

(2) Every report made in the Electrical Hoisting Equipment Record Book shall be signed by the person making the report and counter-signed by the employer.

22 Sep 78 SR 284/78 s440.02.

Rope Record Book

440.04(1) The mine employer, where hoisting ropes are used, shall keep at that mine a book called "Rope Record Book" in which shall be recorded,

- (a) the information required under section 434.00;
- (b) a report of examinations and tests made under sections 438.02 and 438.08.

(2) Every report made in the Rope Record Book shall be signed by the person making the report and counter-signed by the employer.

22 Sep 78 SR 284/78 s440.04.

Shaft inspection record book

440.06(1) The mine employer shall keep at that mine a book for each shaft called "Shaft Inspection Record Book" in which shall be recorded,

- (a) a report of every examination referred to in section 426.00;
- (b) a report of any dangerous condition involving the shaft or shaft equipment;
- (c) a report of the action taken in respect to any matter reported by virtue of clauses (a) and (b).

(2) Every report shall be signed by the person making the report and counter-signed by the employer.

22 Sep 78 SR 284/78 s440.06.

Hoist Operator's Logbook

440.08(1) The mine employer shall keep at each shaft hoist a book called "Hoist Operator's Log Book" and the following shall be recorded in the book,

- (a) a report of the working conditions of the hoist, including the brakes, clutches, interlocking devices between the brake and the clutch as required by section 432.44 and depth indicators and all other devices and fittings pertaining to the safe operation of the hoist by the hoist operator on each working shift;
- (b) a report of the working condition of the signalling apparatus and a notation of any signals received by the hoist operator, the accuracy of which has been questioned by the hoist operator on each working shift;
- (c) any special instructions received involving the safety of persons and any such entry shall be signed by the hoist operator and by the person issuing the instructions;
- (d) a report of the test of the overwind and underwind devices required by section 432.44;
- (e) where the required tests of the overwind and underwind devices are conducted by a hoist operator operating on another shift, the hoist operator assuming duty shall acknowledge that the entry in the log book of the hoist operator who performed the tests has been examined by counter-signing the entry;

- (f) a report of all abnormal circumstances in connection with the operation of the hoist or attachments thereto and such abnormal conditions as have come to the hoist operator's knowledge in connection with the hoisting operations in the shaft;
 - (g) a report of all trial trips as required by sections 438.10 and 432.44;
 - (h) a notation to the hoist operator on a succeeding period of duty of any special circumstances or matters affecting the continued operation of the hoist or the safety of persons in the shaft and all such entries shall be counter-signed by the hoist operator assuming duty for the succeeding period.
 - (i) a report of any action taken by virtue of the reports made in this subsection.
- (2) All entries required under this section shall be made and signed by the hoist operator and the time and period of duty on the hoist shall be noted and the entries shall be read and counter-signed each working day by the employer.

22 Sep 78 SR 284/78 s440.08.

PART XXI QUALIFICATIONS OF HOIST OPERATORS

Age, Experience of hoist operators

442.00(1) The mine employer shall not permit any worker to operate any hoist used for the transportation of workers or material at a mine unless,

- (a) that worker holds a medical certificate issued by the mine appointed physician that shall be renewed annually to the effect that to the best of that physician's knowledge the worker is not subject to any infirmity to such a degree as to interfere with the safe discharge of that worker's duties;
 - (b) that worker holds a certificate issued by an inspector to the effect that the worker has been examined on knowledge of the regulations and safe procedures relevant to that worker's duties and found to have an adequate knowledge of such regulations and procedures;
 - (c) that worker has attained the age of nineteen years;
 - (d) the employer has given a written authorization to operate such a hoist to that worker and no employer shall give such an authorization unless satisfied that the worker has adequate experience in all phases of operations within that hoisting system, is of suitable character to fulfill the duties of hoist operator safely and complies with the requirements of clauses (a), (b) and (c).
- (2) A provisional authorization to operate a hoist may be made by the employer without the certificate from an inspector required by clause (b) of subsection (1) which shall be valid until such time as an inspector can examine the hoist operator concerned.
- (3) The mine appointed physician may at any time recall a worker for reexamination and may extend, cancel or renew the medical certificate in accordance with the findings of his examination.

22 Sep 78 SR 284/78 s442.00.

Hours of operator of hoist

442.02 The mine employer shall not permit any worker to operate either on the surface or underground a hoist by means of which workers or material are hoisted or lowered in a shaft for more than eight hours in any consecutive twenty-four hours except that,

- (a) where a regular hoist operator is absent from duty and no competent substitute is available any other hoist operator may work extra time not exceeding four hours in any consecutive twenty-four hours;
- (b) where the work at a mine or in a shaft at a mine is not carried out continuously on three shifts per day the hoist operator may work such extra time as may be necessary for hoisting or lowering the workers employed on the shift at the beginning and end of each shift;
- (c) in the event of an emergency or during repair work to the shaft the hoist operator may work extra time not exceeding four hours in any consecutive twenty-four hours.

22 Sep 78 SR 284/78 s442.02.

PART XXII
USE OF DIESEL ENGINES UNDERGROUND

Permission to use diesel engines underground

444.00(1) The mine employer shall not use or permit any internal combustion engine to be used underground at a mine other than a diesel engine approved by the chief inspector.

(2) The chief inspector may require the mine employer to provide all necessary specifications and performance data of the diesel engine including an analysis of the exhaust gases under relevant conditions.

22 Sep 78 SR 284/78 s444.00.

Accessories on diesel engines used underground

444.02 The mine employer shall ensure that,

- (a) every diesel engine used underground is equipped with an exhaust gas scrubber of a type and size approved by the chief inspector;
- (b) the starting mechanism of the engine is driven by an electric motor or other device approved by the chief inspector;
- (c) every diesel engine vehicle or equipment in use underground in a mine is equipped with a suitable and adequate fire extinguisher.

22 Sep 78 SR 284/78 s444.02.

Dilution of exhaust gases

444.04 Notwithstanding and in addition to the requirements of any other regulations under the Act, the mine employer shall not use or permit the use of any diesel engine underground at a mine unless the following conditions are maintained,

- (a) the ventilation of the mine is by mechanical means;

- (b) the concentration of gases does not exceed in the operator's position of the diesel engined equipment or at any point in the vicinity of the equipment where workers work or pass or in any work place or travelway in the mine,
 - (i) in the case of carbon monoxide twenty-five parts per million;
 - (ii) in the case of carbon dioxide five thousand parts per million;
 - (iii) in the case of nitrogen dioxide two parts per million;
- (c) the percentage of oxygen in the air shall not be less than nineteen by volume;
- (d) the concentration of carbon monoxide in the undiluted exhaust from any diesel engine used underground in a mine shall not exceed one thousand five hundred parts per million measured before the exhaust gases pass through any exhaust gas scrubber.

22 Sep 78 SR 284/78 s444.04.

Diesel engined equipment to be used only in adequate flow of air

- 444.06(1)** The mine employer shall not permit any worker to take any diesel engined vehicle into or operate any other diesel engined equipment in any part of the mine where there is not an adequate flow of air and for the purpose of this section a flow of 3.8 cubic metres per minute for each rated kilowatt of that equipment or vehicle, or each rated kilowatt in aggregate for all such operating equipment and vehicles in that air flow if more than one vehicle or item of equipment is operating in that air flow, shall be deemed to be adequate.
- (2) Where for any reason the flow of air is interrupted the employer at the mine shall require the operator of any diesel engined vehicle or other equipment to stop the vehicle or equipment immediately.
- (3) The employer at a mine shall take effective steps to ensure that all diesel engined equipment is adequately maintained and where any unsafe condition may occur on any equipment this equipment is withdrawn from use forthwith.

22 Sep 78 SR 284/78 s444.06.

Testing procedures

- 444.08(1)** Where diesel engines are used underground the mine employer shall institute an adequate program,
- (a) to determine the effect on the mine air of the exhaust gases and tests shall be made,
 - (i) at suitable places which will be representative of the exposure of workers to those gases;
 - (ii) at intervals of not more than one week at a time when the concentration of the exhaust gases is most likely to be highest;
 - (b) to test the undiluted exhaust gases of all diesel engines at regular intervals not exceeding one month and this test shall be made before the exhaust gases pass through any exhaust gas scrubber.
- (2) Every test required by this section shall be made by a competent person appointed by the mine employer and the method of testing shall be approved.

22 Sep 78 SR 284/78 s444.08.

Diesel engine record book

444.10 At every mine where diesel engines are used underground the mine employer shall provide a Diesel Engine Record Book in a form which may be prescribed by the division in which the person making the tests shall enter and sign,

- (a) the results of the test of the mine air required to be made by section 444.08;
- (b) the results of the test of exhaust gases required to be made by section 444.08.

22 Sep 78 SR 284/78 s444.10.

Engine not to be kept running

444.12 The employer at a mine shall not permit the operator of a diesel engined vehicle used underground to keep the engine running,

- (a) while the vehicle is unattended;
- (b) while the vehicle is stationary for other than a short period;
- (c) while the vehicle is being refuelled.

22 Sep 78 SR 284/78 s444.12.

Fuels

444.14(1) The employer at a mine shall ensure that the oil used as fuel in a diesel engine underground,

- (a) has a flash point of not less than fifty-two degrees Celcius (closed cup);
- (b) has a sulphur content not greater than one-half of one per cent by mass;
- (c) does not have a heavy asphalt base.

(2) The employer at a mine shall not permit any worker to refuel any diesel engined vehicle underground except at a filling station designated under section 416.22.

(3) The employer shall ensure that where any diesel engined equipment other than a vehicle is refuelled that effective steps are taken to reduce any spillage of fuel oil and prevent and control any fire.

22 Sep 78 SR 284/78 s444.14.

PART XXIII
HAULAGE SURFACE AND UNDERGROUND

Interpretation

446.00(1) In this Part,

- (a) “**motor vehicle**” means a truck, automobile or any other vehicle propelled by mechanical means and includes trackless haulage equipment;
- (b) “**locomotive**” is a vehicle used to propel a train of vehicles on a track;
- (c) “**mobile equipment**” means a power driven machine designed primarily for some purpose other than the conveyance of persons or material but which is mobile and includes bulldozer, backhoe, shovel, dragline, scraper, grader or self-propelled drill;

- (d) “**surface**” shall include any open pit mining operation.
- (2) In addition to the requirements hereunder, all applicable provisions of other regulations under the Act shall apply to all motor vehicles, locomotives or mobile equipment used at any mine.

22 Sep 78 SR 284/78 s446.00.

Equipment to be provided

446.02 The employer at a mine shall ensure that,

- (a) every motor vehicle or unit of mobile equipment used at a mine in such a way that the safety of a worker may be prejudiced by any unexpected reverse movements is equipped with a suitable warning device which will operate automatically when the motor vehicle or mobile equipment starts to move in reverse;
- (b) every motor vehicle and unit of mobile equipment used underground will be provided with suitable lights or reflectors that show in the direction of travel the width of the vehicle or mobile equipment;
- (c) where a locomotive is pulling a train a tail light is carried on the last vehicle of the train;
- (d) every motor vehicle or unit of mobile equipment in use in an open pit is provided with suitable and adequate fire fighting equipment.

22 Sep 78 SR 284/78 s446.02.

Locomotive brakes and controls

446.04 The employer at a mine shall ensure that,

- (a) every locomotive used at a mine is equipped with suitable and adequate service brakes and an effective parking brake; and
- (b) in the case of a storage battery or trolley locomotive the control lever is so arranged that the lever cannot accidentally be removed when the power is on.

22 Sep 78 SR 284/78 s446.04.

Vehicle and mobile equipment brakes

446.06 The employer at a mine shall ensure that,

- (a) every motor vehicle or unit of mobile equipment used at a mine is equipped with a service brake capable of safely stopping and holding that motor vehicle or unit of mobile equipment when loaded to the manufacturer’s recommended gross weight on any grade which it is capable of climbing under its own power when so loaded;
- (b) every vehicle or unit of mobile equipment is provided with an effective parking brake that is capable of holding the vehicle or mobile equipment under any operating condition;
- (c) where an inspector considers it necessary to ensure the safety of workers the inspector may require that,
- (i) an independent means of retardation shall be provided;
- (ii) an emergency braking system shall be provided in addition to the requirements of clause (a) and (b).

22 Sep 78 SR 284/78 s446.06.

Brakes on new heavy vehicles and mobile equipment

446.08(1) Without prejudice to the generality of section 446.06 the employer at a mine shall not permit the operation at the mine of any rubber tired vehicle used to transport material with a gross weight exceeding fifty thousand kilograms or any unit of mobile equipment exceeding twenty-five thousand kilograms gross weight put into service at that mine for the first time after January 1, 1979 unless the service braking system,

(a) has been physically tested at the maximum severity of any operating condition or a similar vehicle or item of mobile equipment has been so tested and found to bring the vehicle or equipment to rest in a satisfactory manner; and

(b) is physically tested at the maximum severity of normal operating conditions at intervals not exceeding twelve months and found to be satisfactory.

(2) The chief inspector may specify in writing the method of testing to be used in subsection (1) and the standard to be achieved by any vehicle or item of mobile equipment for any mine or class of mines.

(3) The employer at a mine shall ensure that every motor vehicle put into service at that mine for the first time after January 1, 1979 for the transport of ore or waste at an open pit mine in addition to the requirements of subsection (1) satisfies the following requirements,

(a) every such motor vehicle using air or air-over hydraulic brakes is,

(i) in addition to the normal operating air supply equipped with an adequate emergency source of energy capable of applying the service brakes so as to safely stop and hold the vehicle when loaded to the manufacturer's recommended gross weight on any grade over which it operates;

(ii) be equipped with a suitable device that will give adequate warning to the operator whenever the available air pressure drops to its lowest safe operating pressure;

(b) every such vehicle using hydraulically operated service brakes shall be equipped with the hydraulic system split into two or more separate and independently operated circuits each of which is capable of safely stopping and holding the vehicle under any operating condition of load, grade and speed and an alarm system shall be provided to warn the operator of a failure in the hydraulic circuit.

22 Sep 78 SR 284/78 s446.08.

Emergency steering on new heavy vehicles

446.10 Where any rubber-tired motor vehicle is put into use at any mine for the first time after January 1, 1979 that depends upon power for steering and where the loss of such power might prevent the vehicle from being steered manually, the employer at a mine shall cause an auxiliary device to be installed that will enable the operator to steer the vehicle for a sufficient time to bring it safely to a stop.

22 Sep 78 SR 284/78 s446.10.

Provisions of windshields

446.12 Where any motor vehicle, locomotive and unit of mobile equipment is in use on the surface of a mine and is equipped with a cab or windshield the employer at a mine shall ensure that,

- (a) all glass is safety glass or suitable equivalent;
- (b) any such glass is replaced if vision is obstructed;
- (c) a suitable defrosting device and windshield washer is provided.

22 Sep 78 SR 284/78 s446.12.

Provision of chocks

446.14(1) The employer at a mine shall ensure that every motor vehicle at a mine which may be operated on a slope is equipped with wheel chocks.

(2) Where any such vehicle is left unattended on a slope the employer shall require the operator to use such wheel chocks to block the wheels of the vehicle to prevent any inadvertent movement.

22 Sep 78 SR 284/78 s446.14.

Roll-over protection may be required

446.16(1) Roll-over protective structures shall not be required in underground mining operations except that an inspector may require the use of such structures when in the opinion of the inspector the operating conditions are such that the equipment may roll over.

(2) Where at a mine roll-over protective structures are required on any vehicle or unit of mobile equipment the employer at a mine shall provide suitable seat belts for all workers operating or riding in the vehicle or unit of mobile equipment and shall require the workers to use those seat belts.

22 Sep 78 SR 284/78 s446.16.

Log book required on vehicles and equipment

446.18(1) For each motor vehicle, locomotive or unit of mobile equipment the employer at a mine shall cause a log book to be maintained in which the employer shall require a record to be entered of all unsafe conditions and the repairs made and all notations shall be signed by the worker making the entry and the log book shall be available for examination by an inspector at all times; or

(2) The chief inspector may approve an alternative procedure for recording the condition of and repairs to each motor vehicle, locomotive or unit of mobile equipment.

22 Sep 78 SR 284/78 s446.18.

Worker to operate equipment safely

446.20(1) The employer at a mine shall require every worker operating any motor vehicle, locomotive or mobile equipment to operate that equipment with due care and attention and where applicable to drive at a reasonable speed under the conditions pertaining at the time.

(2) The employer at a mine shall require that a worker does not leave the controls of a locomotive unattended unless,

- (a) the controls have been placed in a safe position for parking;

- (b) the parking brakes have been set; and
 - (c) in the case of a storage battery locomotive the main switch has been placed in a non-operating position.
- (3) The employer at a mine shall require the worker operating any motor vehicle, locomotive or mobile equipment underground or in an enclosed building to sound the audible warning device,
- (a) before any such equipment commences to move;
 - (b) when approaching any manways, places where workers are working and any other place designated by the mine employer.
- (4) The employer at a mine shall require that a worker does not operate any locomotive unless that worker is properly seated at the controls of the locomotive.

22 Sep 78 SR 284/78 s446.20.

Provisions for working on tires

446.22 Wherever work is to be performed on the pneumatic tires of any equipment the employer at a mine,

- (a) shall provide suitable safety guards or other devices to prevent injury to workers should the tire and rim assembly spring under inflation; and
- (b) shall require that a worker working on any tire where the inflation of that tire could cause the rim assembly to spring uses such a safety device.

22 Sep 78 SR 284/78 s446.22.

Transport of workers in vehicles, etc.

446.24(1) The employer at a mine shall not permit any worker to ride on any motor vehicle, locomotive, train or mobile equipment unless that worker is using a suitable seat.

(2) The employer at a mine shall require that the worker operating any motor vehicle, locomotive, train or mobile equipment does not put it into motion if there is any worker on that vehicle or train or equipment that is not seated in a suitable seat.

(3) Where workers are being trained to operate any motor vehicle, locomotive or mobile equipment, the provisions of subsections (1) and (2) shall not apply provided adequate precautions are taken by the employer at a mine to ensure the safety of any workers taking part in the operation.

(4) The employer at a mine shall ensure that workers are only transported in a train where the locomotive is at the leading end of the train.

(5)(a) Wherever the face of a ramp or inclined drift has reached an elevation that is ninety metres or more below the top of the ramp or drift provision shall be made by the employer at a mine for the transportation of workers who travel that ramp or drift.

- (b) Any system of transportation provided under clause (a) shall be approved by an inspector.

22 Sep 78 SR 284/78 s446.24.

Traffic control scheme

446.26 If in the opinion of an inspector a hazard or potential hazard exists through inadequate traffic control, the inspector may require the mine employer to institute a traffic control scheme which shall prescribe where applicable,

- (a) the maximum allowable speed for any vehicle or class of motor vehicles or mobile equipment in use;
- (b) maximum operating grades;
- (c) the location and nature of control signs;
- (d) the route to be taken by any vehicle;
- (e) the priority to be established for any class of vehicle;
- (f) any other provision required by the inspector.

22 Sep 78 SR 284/78 s446.26.

Protection of persons from equipment with restricted vision

446.28 The employer at a mine shall not permit any worker to take any motor vehicle, other than a vehicle used for production into any open pit at any time unless the vehicle is equipped with adequate means to indicate the presence of that vehicle to the workers operating other vehicles or mobile equipment which have restricted vision.

22 Sep 78 SR 284/78 s446.28.

Provisions for dumping material

446.30(1) The employer at a mine shall ensure that material is not dumped from any vehicle over a bank more than three metres high unless,

- (a) there is an effective ridge of material or an anchored dump block to act as a backstop; or
- (b) the dumping procedures are adequately supervised by a worker authorized by the employer.

(2) The employer at a mine shall take effective measures to ensure that the dump is formed and maintained in a safe condition.

22 Sep 78 SR 284/78 s446.30.

Operation of conveyors

446.32(1) The employer at a mine shall not permit any worker to ride on a conveyor belt except where permission to do so has been granted by the chief inspector.

(2)(a) The mine employer shall not permit any conveyor belt to be installed underground unless it is of a fire-resistant type approved by the chief inspector.

(b) The mine employer shall ensure that suitable and adequate fire fighting equipment is provided in the vicinity of each conveyor belt drive unit.

(3) The employer at a mine shall,

- (a) where reasonably practicable provide on accessible sections of any electrically driven conveyor pull-cords to stop the conveyor in an emergency and such pull-cords shall reach from the head pulley to the tail pulley and all controls operated by these cords shall be of the manual re-set type;

- (b) where for any reason the use of pull-cords is not reasonably practicable over the full length of the conveyor an inspector may grant an exemption to clause (a) and such exemption shall provide for,
- (i) the installation of pull-cords to stop the conveyor at the drive unit, delivery end and return end;
 - (ii) the installation of horns at suitable intervals along the conveyor which will warn any worker that the conveyor is about to start;
 - (iii) any worker working on those sections of a conveyor not protected by such a pull-cord shall do so only after that worker has stopped the conveyor and locked out the controls;
 - (iv) notices shall be posted along the conveyor to inform the worker of the requirements of sub clause (iii) at intervals of not less than three hundred metres.
- (4) Where the entire length of a conveyor is not visible to the worker starting the conveyor or where the conveyor is started by remote control, approved warning devices shall be provided by the employer at a mine at the drive unit delivery end and return end which shall warn any worker that the conveyor is about to start.
- (5) Where a worker is required to cross over a conveyor suitable walkways shall be provided by the employer at a mine.
- (6) Where any conveyorway is used as a regular travelway or any conveyor passes over a travelway, suitable means shall be provided by the employer at a mine to protect any workers from material that may fall from the conveyor.
- (7) The employer at a mine shall ensure that adequate provision is made on every conveyor for access for maintenance purposes.
- (8) The employer at a mine shall cause every head, tail, drive and tension pulley to be guarded at the pinch point and the length of such guard shall extend at least one metre from the pinch point.

22 Sep 78 SR 284/78 s446.32.

Operation of tracked equipment

446.34 The mine employer shall ensure that every track in use at a mine is maintained in good working condition.

22 Sep 78 SR 284/78 s446.34.

Clearance for underground haulage

446.36(1) The employer at a mine shall ensure that,

- (a) where locomotive haulage is used underground at a mine a clearance of at least four hundred and fifty millimetres is maintained between the side of the haulageway or any obstruction and any car or locomotive or there is a clearance of at least six hundred millimetres on one side or safety stations are cut every thirty metres;
- (b) where motor vehicles are used underground at a mine a minimum total clearance of 1.5 metres is maintained between the sides of the haulageway or any obstruction and the motor vehicle;

- (c) where motor vehicles and pedestrians both use a travel way underground in a mine regularly and there is a minimum total clearance of less than two metres safety stations are cut at intervals not exceeding thirty metres;
 - (d) the position of any safety station required by this section shall be indicated by a conspicuous sign.
- (2) The employer at a mine shall ensure that in every underground roadway in a mine,
- (a) where a worker rides in the cab of any vehicle or mobile equipment there is a minimum of three hundred millimetres clearance between the roof of the roadway and the top of the cab;
 - (b) where a worker rides in a vehicle or mobile equipment not fitted with a cab there is a minimum clearance of 1.2 metres above the seat provided for that worker.
- (3) The mine employer shall ensure that every travelway in or about a mine is maintained in a clean condition and free from obstructions that may interfere with safe travel.

22 Sep 78 SR 284/78 s446.36.

Use of vehicles in sloping roadways

- 446.38** The employer at a mine shall ensure that where vehicles or mobile equipment are used in a sloping roadway underground at a mine,
- (a) the vehicle or mobile equipment is of suitable design and construction and is adequately maintained for the duty placed upon it.
 - (b) adequate provision is made for securing the safety in an emergency of the workers driving the vehicles and any workers walking in the roadway;
 - (c) that all workers operating vehicles are adequately instructed in their duties;
 - (d) that effective rules for the operation of vehicles shall be instituted and posted in a conspicuous place.

22 Sep 78 SR 284/78 s446.38.

**PART XXIV
LIGHTING**

Lighting

- 448.00(1)** Without prejudice to the generality of the requirements of any other regulations under the Act, the requirements of this section shall apply to every mine.
- (2) The employer at a mine shall make provision for securing and maintaining adequate and suitable lighting by artificial stationary or portable lights in every underground working place or travelway at the mine.
- (3) The employer at a mine shall provide every worker who goes underground at a mine with a suitable electric portable lamp and require the worker to retain that lamp in close personal possession at all times that worker remains underground.

- (4) The employer at a mine shall not permit any open type flame light to be used for lighting in any underground mine.
- (5) The employer at a mine shall provide suitable and adequate stationary lights in every underground part of a mine,
- (a) in the vicinity of every shaft station in regular use;
 - (b) in every permanent workshop in regular use;
 - (c) in every underground hoist room;
 - (d) at any other place an inspector so requires where such lighting is necessary because of the nature of the equipment or operation.
- (6) The employer at a mine shall provide suitable and adequate lights on each motor vehicle, locomotive or unit of mobile equipment as defined in section 446.00 in use underground at the mine.
- (7) The employer at a mine shall provide suitable and adequate lights at each open pit where operations are conducted during the hours of darkness,
- (a) in the vicinity of every place where material is regularly dumped from vehicles;
 - (b) on each motor vehicle, locomotive or unit of mobile equipment as defined in section 446.00;
 - (c) at any other place an inspector so requires where such lighting is necessary because of the nature of the equipment or operation.
- (8) Where the failure of any permanent lighting could endanger any worker the employer at a mine shall provide and maintain suitable alternative lights sufficient to prevent any such danger to a worker.

22 Sep 78 SR 284/78 s448.00.

PART XXV VENTILATION AND DUST CONTROL

Ventilation

450.00(1)(a) Without prejudice to the generality of the requirements of any other regulations under the Act, the mine employer shall ventilate any underground part of a mine in use by mechanical means and shall submit details of those means to the chief inspector.

(b)(i) Subject to subclause (ii) where the ventilation required by this subsection is stopped, the mine employer shall immediately withdraw all workers from any affected part of the mine and no worker shall enter or be permitted to enter that part of the mine until the ventilation has been restored and that part of the mine has been inspected by the employer and pronounced safe for work to proceed.

(ii) Where the mine employer has determined that no immediate danger exists, the workers may continue to work provided adequate precautions are taken, including the reduction of those activities producing noxious impurities and monitoring the quality of the mine air, to ensure that the workers are not exposed to any harmful condition.

- (2) The employer at a mine shall not permit any underground working place to be advanced more than eight metres from a ventilating circuit unless,
- (a) provision is made to supply an adequate quantity of air to that working place; or
 - (b) an inspector has granted in writing an exemption to this subsection which shall be subject to any condition that may be imposed by the inspector.
- (3) The mine employer shall make provision for every underground part of the mine not being a part ventilated under subsection (1) to be adequately barricaded and for signs to be posted stating the danger and restricting entry to that part of the mine; except that where the mine employer has determined that that part of the mine does not contain any harmful gas that part of the mine may be fenced off by a rope or similar means.
- (4) The mine employer shall institute a program for determining the quality and quantity of the air in all underground parts of a mine other than those fenced or barricaded under subsection (3) using approved measuring equipment at suitable places and intervals of time; and
- (a) every such program and the results of measurements undertaken as part of the program shall be recorded and kept by the employer;
 - (b) an inspector may require that changes be made to the program if the inspector has reason to believe such changes are necessary to safeguard the safety and health of the workers.
- (5) The mine employer shall submit the details of any system of heating the air ventilating an underground part of a mine to the chief inspector before the installation of the heating system.

22 Sep 78 SR 284/78 s450.00.

Control of airborne dust in mines

- 450.02(1)** The employer at a mine shall take all reasonably practicable steps to reduce the dissemination of dust into the working parts of an underground mine but in no case shall the concentration of airborne dust at any place where a worker is, or may be, present exceed a reasonable maximum concentration which may be specified in writing by the chief inspector.
- (2) Without prejudice to the generality of the preceding subsection or of any other regulations under the Act, every mine employer where mining is carried on underground in strata containing silica not chemically combined with any other element or compound (uncombined silica) shall institute a program for the sampling of airborne dust using approved sampling equipment at suitable places, times and intervals of time; and
- (a) every such program and the results of measurements undertaken as part of the program shall be recorded and kept by the employer;
 - (b) an inspector may require that changes shall be made to the program if the inspector has reason to believe such changes are necessary to safeguard the safety and health of the workers.

- (3) Every employer at a mine where underground mining is carried on in strata containing uncombined silica,
- (a) shall so far as is reasonably practicable construct and require every ore pass to be used in such a manner that the amount of dust that may escape is kept to a minimum;
 - (b) shall provide on every drift or raise within a suitable distance from the working face an effective means to discharge water in a spray to suppress any dust and shall require the use of the spray for a period of not less than fifteen minutes immediately after blasting unless an inspector has granted an exemption from this clause in writing;
 - (c) shall provide on every drill used underground a water jet, spray or other suitable appliance to prevent the escape of dust and shall require that it be used at all times during any drilling operation.
- (4) At every open pit mine the employer at a mine shall take all reasonably practicable steps to reduce the dissemination of airborne dust into any place where a worker is or may be present and in no case shall the concentration of airborne dust at any such place be permitted to exceed a reasonable maximum concentration which may be specified in writing by the chief inspector.
- (5)(a) Where in any open pit mine uncombined silica or coal is worked the chief inspector may require the employer at a mine to provide a suitable monitoring system for determining the exposure of any worker to any dust at that mine;
- (b) The results of measurements undertaken as part of the monitoring required by clause (a) shall be recorded and kept by the employer.

22 Sep 78 SR 284/78 s450.02.

Precautions when flammable gas is encountered in mine

- 450.04(1)** Where flammable gas is found to exist in any place at a mine the worker finding the gas shall immediately inform the mine employer and shall not carry out any further work or activity which may cause an ignition of the gas.
- (2) Where flammable gas in dangerous concentrations has been found to exist in any place in the mine, the mine employer shall,
- (a) designate that place or part of the mine to be a fire hazard area and shall cause suitable precautions to be taken while clearing the place or part of the mine or doing any work therein to prevent ignition of the gas and such precautions shall be continued as long as the hazard exists;
 - (b) inform the chief inspector forthwith and the chief inspector may specify precautions that the employer shall take to secure the safety of the workers.

22 Sep 78 SR 284/78 s450.04.

Tailings containing cyanide not to be used

- 450.06** The employer at a mine shall not use any tailings for filling worked-out areas underground in a mine that contain compounds of cyanide except with the permission of and under such conditions as may be imposed by the chief inspector.

22 Sep 78 SR 284/78 s450.06.

PART XXVI
PROVISIONS FOR WORKING IN A DUST EXPOSURE OCCUPATION

Interpretation

452.00 In this Part,

- (a) **“certificate of fitness”** means a certificate of fitness to work in a dust exposure occupation on a form prescribed by the Department and issued by the mine appointed physician;
- (b) **“dust exposure occupation”** means,
 - (i) regular employment underground at a mine; or
 - (ii) regular employment at any other part of a mine where ore or waste material is crushed, ground or screened other than by a wet process;
 - (iii) any other employment at a mine so designated by the chief inspector.

22 Sep 78 SR 284/78 s452.00.

Certificate of fitness for dust exposure occupations

452.02(1) The employer at a mine shall ensure that every worker engaged in a dust exposure occupation is the holder of a current certificate of fitness.

(2) A certificate of fitness shall remain current for a period of two years except that at a hardrock mine it shall be current for a period of one year in respect of a worker who,

- (a) has been engaged in a dust exposure occupation for more than ten years; or
- (b) is more than thirty-five years old.

(3) Every medical examination for the purpose of determining fitness to work in a dust exposure occupation shall include,

- (a) a review of the worker’s past medical and occupational histories; and
- (b) a clinical examination of the respiratory system; and
- (c) lung function tests of forced vital capacity and forced respiratory volume at one second.

(4) The mine appointed physician shall keep the medical record of every worker engaged in a dust exposure occupation during the worker’s employment at the mine and for five years thereafter.

(5) When the mine appointed physician is satisfied by his examination that a worker is fit to engage in a dust exposure occupation he shall issue a certificate of fitness on the form provided by the department and distribute copies as prescribed thereon and he may issue temporary or conditional certificates as he feels necessary to protect the health and safety of the worker.

(6) The employer shall keep at the mine to be readily available to an inspector a log recording the name of every worker referred to the appointed physician for medical examination.

(7) The appointed physician shall record against each name in the log the date and nature of the certificate of fitness he issues to that worker.

22 Sep 78 SR 284/78 s452.02.

PART XXVII
RADIATION PROTECTION IN THE MINING
AND MILLING OF RADIOACTIVE ORES

Interpretation

454.00 In this part,

- (a) **“competent person”** means a person having the knowledge and training required to give advice on protective measures and operating procedures which will ensure effective radiation protection to workers exposed to ionizing radiations;
- (b) **“radiation”** means electromagnetic radiation or corpuscular radiation capable of producing ionization in passing through matter;
- (c) **“radiation area”** means an area designated by the chief inspector of mines as an area where he believes workers may receive significant amounts of radiation;
- (d) **“radiation worker”** means a worker who is regularly employed underground at a uranium mine or by his employment at a uranium mine is liable to be exposed to radiation dosage in a consecutive twelve month period greater than four tenths of one working level month or as otherwise defined under the Atomic Energy Control Regulations under The Atomic Energy Control Act as may be amended or substituted from time to time;
- (e) **“radon daughters”** means the following short-lived radioactive decay products of radon-222: polonium-218 (radium A), lead-214 (radium B), bismuth-214 (radium C) and polonium-214 (radium C);
- (f) **“uranium”** means the mixture of uranium-238, uranium-235, as they occur in nature;
- (g) **“working level”** or **“WL”** means the amount of any combination of radon daughters in one litre of air that will release 1.3×10^5 mega electron volts of alpha particle energy during their radioactive decay to lead-210 (radium D);
- (h) **“working level month”** or **“WLM”** means the exposure resulting from the inhalation of air containing one working level of radon daughters for one working month, where one working month equals 170 working hours.

22 Sep 78 SR 284/78 s454.00.

Application

454.02(1) The provisions of this Part apply to any mine engaged in the removal or processing of radioactive ores and specifically to such operations as excavation, removal and storage of ores, crushing, grinding, sorting, flotation and other physical concentration process as well as to the production of concentrates by chemical means.

(2) The provisions of this Part do not apply to operations which do not involve ores or concentrates or material containing more than five hundred parts per million by mass of the elements uranium or thorium or to operations which do not involve more than one kilogram of the contained natural elements uranium and thorium in any calendar year.

22 Sep 78 SR 284/78 s454.02.

Radiation exposure – General limitations

454.04(1) The mine employer shall ensure that at every working position at a mine to which this Part applies, the airborne concentrations of radon and any other source of radiation are kept as low as is reasonably practicable.

(2) Wherever the working level exceeds one, the employer shall take corrective action forthwith and wherever the working level exceeds two, clear every worker from that area until the working level is less than one.

22 Sep 78 SR 284/78 s454.04.

Appointment of a competent person

454.06(1) The mine employer at a mine to which this Part applies shall appoint a competent person to supervise the application of this Part of the regulations.

(2) The employer shall consult the competent person on all relevant aspects of radiation safety.

22 Sep 78 SR 284/78 s454.06.

Radiation monitoring

454.08(1) At least one month before the commencement of operations at a mine to which this Part will apply, the mine employer shall submit to the chief inspector a plan of his intentions for the regular radiation monitoring of radiation areas.

(2) The mine employer shall ensure that the regular monitoring of radiation areas is conducted by the competent person in accordance with the plan approved in writing by the chief inspector as amended by him from time to time.

(3) All radiation measurements shall be made by a method approved by the chief inspector.

(4) The mine employer shall provide the competent person with adequate means to carry out his duties.

(5) The competent person shall keep a record of all radiation measurements made and the mine employer shall send each month to the chief inspector such information as the chief inspector may require.

(6) The mine employer shall ensure that a copy of the information sent to the chief inspector each month is posted at the mine in a covered place where it can be conveniently read by any worker and shall be dated and signed by the competent person.

22 Sep 78 SR 284/78 s454.08.

Limitation on classification of radiation workers

454.10 The mine employer shall not permit any worker or class of workers to be designated as radiation workers unless the chief inspector has agreed in writing that it is not reasonably practicable to limit the likely exposure of that worker or class of workers to less than one tenth of the maximum exposure permitted for radiation workers.

22 Sep 78 SR 284/78 s454.10.

Personal exposures

454.12(1) The radiation dose to every radiation worker within each period of thirteen weeks shall be calculated either from,

- (a) the measured radiation levels and the estimated length of time each worker has spent in each radiation area; or
- (b) the personal radiation dosimeter worn by the worker for a known period of time within that period.

(2) The mine employer shall limit the doses of radiation of a worker at a mine to which this Part applies to a level as far below the maximum permissible doses as is reasonably practicable.

(3) The mine employer shall ensure that a worker is not exposed to more working level months in any consecutive thirteen week period and in any consecutive fifty-two week period than is reasonably practicable and in any event to no more than two working level months in any such consecutive thirteen week period and no more than four working level months in any such consecutive fifty-two week period.

(4) In any case in which the personal cumulative exposure in terms of working level months reaches one hundred and twenty the mine employer shall inform forthwith the worker and the chief occupational medical officer.

(5)(a) The mine employer shall ensure so far as is reasonably practicable that a worker does not enter an area which has not been monitored in which there is reason to believe the working level may exceed two except to do corrective work.

- (b) Where a worker enters an area where the working level may exceed two the mine employer shall provide and ensure the worker wears suitable respiratory protective equipment and where practicable personal monitoring devices.

(6) The mine employer shall not permit any worker to exceed the permissible dose of any radiation as specified in the Atomic Energy Control Regulations of the Atomic Energy Control Act, Schedule II as may be amended or substituted from time to time.

(7) Where a worker is exposed to two or more significant and different forms of radiation the total exposure shall be such that,

$$\frac{E_1}{P_1} + \frac{E_2}{P_2} \dots \frac{E_x}{P_x} \text{ does not exceed } 1$$

Where $E_1, E_2 \dots E_x$ are the actual exposures of each form of ionizing radiation and $P_1, P_2 \dots P_x$ are the maximum permissible doses of that form of radiation.

(8) Except in the case of any worker who to the satisfaction of the chief inspector is not likely to receive more than four tenths of one working level month per annum, the mine employer shall ensure that a personal record is compiled and kept by the competent person showing the monthly, quarterly, annual and total cumulative exposures in working level months or other suitable units which shall be made available at reasonable notice for inspection by that worker. On leaving the employer the mine employer shall give the worker his personal record card and the worker shall sign for receipt of this record in a register thereby acknowledging the total cumulative exposure shown therein.

(9) Any worker applying for work as a radiation worker shall give a full and accurate history of past employment and shall present any document in his possession relating to his previous radiation exposure.

(10) The mine employer shall make all reasonable enquiries to ascertain the past radiation exposure of any worker before that worker is employed at a mine to which this Part applies and where the employer is not satisfied that he has obtained accurate information he shall promptly inform the chief inspector of mines.

(11) The mine employer shall send to the chief inspector each month a return showing the monthly, quarterly and annual and total cumulative dose of every radiation worker at that mine.

22 Sep 78 SR 284/78 s454.12.

Preservation of records

454.14(1) Except as provided by section 454.20(4) all records required to be kept at a mine by virtue of this Part shall be preserved during the full operating life of that mine and where such a mine is closed the records shall be forwarded to the chief inspector by the mine employer.

(2) All such records required to be kept at a mine shall be available for examination at any time by an inspector or the chief occupational medical officer.

22 Sep 78 SR 284/78 s454.14.

General provisions

454.16(1) The mine employer shall instruct every worker at a uranium mine in,

- (a) the health hazards associated with his duties, in particular the health effects of radiation exposure and the added risk to a radiation worker of smoking;
- (b) the safe working methods and techniques to be used;
- (c) the precautions to be taken and the reasons therefor, and
- (d) the requirements for medical surveillance contained in this Part and the importance of complying with these requirements.

(2) The mine employer shall cause every radiation worker,

- (a) to be instructed in the safe and proper use of any protective equipment he may be required to use;
- (b) to use such equipment only for such purposes and by such methods as he has been instructed.

(3) The mine employer shall ensure,

- (a) that all protective equipment is suitable and adequately maintained for the efficient performance of its intended purpose;
- (b) that areas in which there is danger of ingesting radioactive or other toxic substances by contamination of food, cigarettes or hands shall be designated and posted as areas in which smoking, eating and drinking is prohibited.

22 Sep 78 SR 284/78 s454.16.

Design of the mine

454.18(1) The mine employer shall ensure that a mine to which this Part applies is designed, developed and operated so that the exposure to radiation of persons in that mine is as low as is reasonably practicable.

(2) Without prejudice to the generality of subsection (1) the method of work, ventilating system and haulage system shall be arranged to provide a minimum amount of contamination of the intake air to any working place by radon or other source of radiation.

22 Sep 78 SR 284/78 s454.18.

Certificate of fitness for radiation workers

454.20(1) The employer at a mine shall ensure that every worker employed as a radiation worker is the holder of a current certificate of fitness to be a radiation worker.

(2) A certificate of fitness to be a radiation worker shall remain current for a period of one year.

(3) Every medical examination for the purpose of determining fitness to be a radiation worker shall include,

- (a) a review of the worker's past medical and occupational histories;
- (b) a general physical examination;
- (c) lung function tests of forced vital capacity and forced respiratory volume at one second.

(4) The mine appointed physician shall keep the medical record of every radiation worker during the worker's employment at the mine and for five years thereafter.

(5) When the mine appointed physician is satisfied by his examination that a worker is fit to be a radiation worker he shall issue a certificate of fitness on the form provided by the department and distribute copies as prescribed thereon and he may issue temporary or conditional certificates as he feels necessary to protect the health and safety of the worker.

(6) The employer shall keep at the mine to be readily available to an inspector a log recording the name of every worker referred to the appointed physician for medical examination.

(7) The appointed physician shall record against each name in the log the date and nature of the certificate of fitness he issues to that worker.

(8) Where a worker is to be engaged in a dust exposure occupation and be a radiation worker, a single medical examination may permit the appointed physician to issue both certificates of fitness.

22 Sep 78 SR 284/78 s454.20.

