



Province of Alberta

OCCUPATIONAL HEALTH AND SAFETY ACT

OCCUPATIONAL HEALTH AND SAFETY CODE

Alberta Regulation 191/2021

With amendments up to and including Alberta Regulation 242/2022

Current as of March 31, 2023

Office Consolidation

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For the purpose of retaining the section numbers of this Code, those sections which are no longer required and which have been removed are indicated as "repealed".

(Consolidated up to 242/2022)

ALBERTA REGULATION 191/2021
Occupational Health and Safety Act
OCCUPATIONAL HEALTH AND SAFETY CODE

Table of Contents

**Core Requirements Applicable
to All Industries**

Part 1
Definitions and General Application

- 1 Definitions
- 1.1 Farming and ranching operations
- 1.2 Domestic workers
- 2.2 Designated person to prepare plan
- 3.1 Previous editions of referenced standards
- 3.2 Equipment
- 3.3 Performance of duty by worker
- 6 Coming into force

Part 2
Hazard Assessment, Elimination and Control

- 7 Hazard assessment
- 8 Worker participation
- 9 Hazard elimination and control
- 10 Emergency control of hazard

Part 3
Specifications and Certifications

- 12 Following specifications
- 13 Manufacturer's and professional engineer's specifications
- 14 Certification by a professional engineer
- 15 Approved equipment
- 15.1 Specification and certifications

Requirements Applicable to All Industries

Part 4 Chemical Hazards, Biological Hazards and Harmful Substances

General Requirements

- 16 Worker exposure to harmful substances
- 17 Exposure to multiple substances
- 18 Exposure during shifts longer than 8 hours
- 19 Review of exposure limits
- 20 Airborne concentration measurements
- 21 Potential worker exposure
- 22 Worker overexposure
- 23 Worker decontamination
- 24 Emergency baths, showers, eye wash equipment
- 25 Prohibited activities
- 26 Codes of practice
- 27 Storage of harmful substances
- 28 General provisions for asbestos, silica, coal dust and lead
- 29 Restricted area
- 30 Protective clothing used in restricted areas containing asbestos or lead
- 31 Release of asbestos
- 32 Prohibitions related to asbestos
- 33 Asbestos in air distribution systems
- 34 Asbestos in a building to be demolished
- 35 Encapsulation, enclosure or removal of asbestos
- 36 Notification of a project
- 37 Asbestos worker course
- 38 Containment and labelling of asbestos waste
- 39 Use of crystalline silica in abrasive blasting
- 40 Health assessments for workers exposed to asbestos, silica or coal dust
- 41 Lead exposure control plan
- 42 Lead — air monitoring
- 43 Medical monitoring for lead
- 43.1 Controlling mould exposure

Part 5 Confined Spaces

- 44 Code of practice
- 45 Hazard assessment
- 46 Training
- 47 Entry permit system

- 48 Safety and protection — generally
- 49 Protection — hazardous substances and energy
- 50 Unauthorized entry
- 51 Traffic hazards
- 52 Testing the atmosphere
- 53 Ventilation and purging
- 54 Inerting
- 55 Emergency response
- 56 Tending worker
- 57 Entry and exit
- 58 Retaining records

Part 6

Cranes, Hoists and Lifting Devices

General Requirements

- 59 Application
- 60 Not commercially manufactured
- 61 Identification of components
- 62 Rated load capacity
- 63 Load charts
- 64 Operator requirements
- 65 Log books
- 66 Preventing an unsafe lift
- 67 Preventing collisions
- 68 Load weight
- 68.1 Lift calculation
- 69 Loads over work areas
- 70 Tag and hoisting lines
- 71 Hand signals
- 72 Controls
- 73 Repairs and modifications
- 74 Containers for hoisting
- 75 A-Frames and gin poles
- 75.1 Suspended personnel baskets

Cantilever Hoists

- 76 Installation and use

Chimney Hoists

- 77 Equipment requirements
- 78 Operator responsibilities
- 79 Worker in lifting device

Hand-Operated Hoists

- 80 Holding suspended load

Material Hoists

- 81 Safety code for material hoists
- 82 Rider restriction
- 83 Gate interlocks
- 84 Operator responsibilities
- 85 Signal systems
- 86 Hoist brakes
- 87 Location protected

Mobile Cranes and Boom Trucks

- 88 Safety code for mobile cranes
- 88.1 Personnel baskets
- 89 Non-destructive testing
- 90 Counterweights and outriggers
- 91 Warning device
- 92 Preventing damage
- 92.1 Load blocks
- 92.2 Outriggers

Overhead Cranes

- 93 Electrical components and functions
- 94 Maintenance and inspection
- 95 Safe movement
- 95.1 Controls

Personnel Hoists

- 96 Safety code for personnel hoists

Rofer's Hoists

- 97 Safe use and design

Tower and Building Shaft Hoists

- 98 Protective enclosure
- 99 Design

Tower Cranes

- 100 Safety code for tower cranes
- 101 Limit devices
- 102 Operation
- 103 Changing components
- 104 Test weights

- 105 Structural testing and examination
- 106 Wind and temperature limitations
- 107 Multiple cranes

Underground Shaft Hoists

- 108 Safety requirements
- 109 Operator responsibilities
- 110 Hoist cage
- 111 Unguided suspended cage

Vehicle Hoists

- 112 Safety standards
- 113 Safe use

Winching Operations

- 114 Safe practices

Part 7

Emergency Preparedness and Response

- 115 Emergency response plan
- 116 Contents of plan
- 117 Rescue and evacuation workers
- 118 Equipment

Part 8

Entrances, Walkways, Stairways and Ladders

Entrances, Walkways, Stairways

- 119 Safe entry and exit
- 120 Doors
- 121 Walkways, runways and ramps
- 122 Stairways
- 123 Handrails on stairways

Ladders — General

- 124 Restriction on use
- 125 Prohibition on single rail
- 126 Prohibition on painting
- 127 Use near energized electrical equipment
- 128 Ladders on extending booms

Crawl Board or Roof Ladder

- 129 Safe use

Fixed Ladders

- 130 Design criteria
- 131 Fixed ladders in manholes
- 132 Rest platform exemption

Portable Ladders

- 133 Prohibition
- 134 Constructed portable ladder
- 135 Manufactured portable ladder
- 136 Securing and positioning
- 137 Fall protection

Part 9**Fall Protection**

- 138 Rescue personnel exemption
- 139 General protection
- 140 Fall protection plan
- 141 Instruction of workers
- 142 Full body harness
 - 142.1 Body belt
 - 142.2 Lanyard
 - 142.3 Shock absorber
- 143 Connectors, carabiners and snap hooks
- 144 Fall arresters
- 145 Self retracting device
- 146 Descent control device
- 147 Life safety rope
- 148 Adjustable lanyard for work positioning
 - 148.1 Rope adjustment device for work positioning
- 149 Wood pole climbing
- 150 Equipment compatibility
 - 150.1 Inspection and maintenance
 - 150.2 Removal from service
 - 150.3 Prusik and similar knots
- 151 Clearance, maximum arresting force and swing

Anchors

- 152 Anchor strength — permanent
 - 152.1 Anchor strength — temporary
 - 152.2 Duty to use anchors
 - 152.3 Independence of anchors
 - 152.4 Wire rope sling as anchor
- 153 Flexible and rigid horizontal lifeline systems
 - 153.1 Installation of horizontal lifeline systems

- 154 Fixed ladders and climbable structures
- 155 Fall protection on vehicles and loads
- 156 Boom supported work platforms and aerial devices
- 157 Water danger
- 158 Leading edge fall protection system
- 159 Procedures in place of fall protection equipment
- 160 Work positioning
- 161 Control zones

Part 10

Fire and Explosion Hazards

- 161.1 Flammable or explosive atmospheres a hazard

General Protection and Prevention

- 162 Prohibitions
- 162.1 Classification of work sites
- 163 Procedures and precautions
- 164 Contaminated clothing and skin
- 165 Protective procedures and precautions in hazardous locations
- 166 Internal combustion engines
- 167 Flare stacks, flare pits and flares
- 168 Industrial furnaces and fired heaters
- 169 Hot work
- 170 Hot taps
- 170.1 Spray operations
- 171 Compressed and liquefied gas
- 171.1 Welding — general
- 171.2 Gas welding or allied process

Welding Services From Vehicles

- 172 Storage compartments
- 173 Horizontal cylinder storage
- 174 Handling cylinders
- 175 Isolating methods
- 176 Pigging

Part 11

First Aid

- 177 Training standards
- 178 Providing services, supplies, equipment
- 179 Location of first aid
- 180 Emergency transportation
- 181 First aid providers
- 182 Duty to report illness or injury

- 183 Record of illness or injury
- 184 First aid records access

Part 12

General Safety Precautions

- 185 Housekeeping
- 186 Lighting
- 187 Pallets and storage racks
- 187.1 Placement of roofing materials
- 188 Restraining hoses and piping
- 189 Securing equipment and materials
- 190 Skeleton structures
- 191 Signallers
- 192 Stabilizing masonry walls
- 193 Tire servicing
- 194 Vehicle traffic control
- 195 Working on ice

Part 13

Joint Health and Safety Committees and Health and Safety Representatives

- 196 Application of this Part
- 196.1 Worker membership selection
- 196.2 Co-chairs of committee
- 197 Terms of reference
- 198 Special meetings of committees
- 199 Quorum
- 199.1 Posting names of committee members or health and safety representatives
- 199.2 Special meetings of representatives
- 199.3 Time away for committee or representative work and entitlement to pay
- 201 Training

Part 14

Lifting and Handling Loads

- 208 Equipment
- 209 Adapting heavy or awkward loads
- 209.1 Work site design — health care facilities
- 209.2 Patient/client/resident handling
- 210 Assessing manual handling hazards
- 211 Musculoskeletal injuries
- 211.1 Training to prevent musculoskeletal injury

Part 15

Managing the Control of Hazardous Energy

Machinery, Equipment or Powered Mobile Equipment

- 212** Isolation re machinery, equipment or powered mobile equipment
- 213** Verifying isolation

Securing Isolation

- 214** Assigning personal locks
- 214.1** Securing by individual workers
- 215** Securing by group control procedures
- 215.1** Securing by complex group control procedures
- 215.2** Securing remotely controlled systems
- 215.3** Returning to operation

Piping or Pipelines

- 215.4** Isolation re piping or pipelines
- 215.5** Isolation requirements for piping or a pipeline
- 215.6** Pigging and testing of piping or pipelines

Part 16

Noise

- 216** Duty to reduce
- 217** Noise control design
- 218** Worker exposure to noise
- 219** Noise exposure assessment
- 220** Record of noise exposure assessment
- 221** Noise management program
- 222** Hearing protection
- 223** Audiometric testing
- 224** Deemed work time

Part 17

Overhead Power Lines

- 225** Safe limit of approach distance
- 226** Transported loads, equipment and buildings
- 227** Utility worker exemption

Part 18

Personal Protective Equipment

- 228** Duty to use personal protective equipment

Eye Protection

- 229 Eye and face protectors
- 230 Contact lenses
- 231 Electric arc welding

Flame Resistant Clothing

- 232 Use of flame resistant clothing

Foot Protection

- 233 Footwear

Head Protection

- 234 Protective headwear
- 235 Bicycles and skates
- 236 All-terrain vehicles, snow vehicles, motorcycles
- 237 Firefighters
- 238 Bump hat
- 239 Exemption from wearing headwear

Life Jackets and Personal Flotation Devices

- 240 Compliance with standards
- 241 Use of jackets and flotation devices

Limb and Body Protection

- 242 Limb and body protection
- 243 Skin protection

Respiratory Protective Equipment

- 244 Respiratory dangers
- 245 Code of practice
- 246 Approval of equipment
- 247 Selection of equipment
- 248 Storage and use
- 249 Quality of breathing air
- 250 Effective facial seal
- 251 Equipment for immediate danger
- 252 Equipment — no immediate danger
- 253 Air purifying equipment
- 254 Emergency escape equipment
- 255 Abrasive blasting operations

Part 19**Powered Mobile Equipment**

- 256 Operator responsibilities

- 257 Visual inspection
- 258 Dangerous movement
- 259 Pedestrian traffic
- 260 Inspection and maintenance
- 261 Maintenance on elevated parts
- 262 Starting engines
- 263 Unattended equipment
- 264 Lights
- 265 Windows and windshields
- 266 Other safety equipment
- 267 Warning signal
- 268 Bulkheads
- 269 Guards and screens
- 270 Rollover protective structures
- 271 Equipment with rollover protection
- 272 Falling objects protective structures
- 273 Recertification after modification
- 274 Fuel tank in cab
- 275 Worker transportation
- 276 Riding on loads
- 277 Hazardous loads
- 278 Tank trucks
- 279 Refuelling

All-Terrain Vehicles and Snow Vehicles

- 280 Three-wheeled all-terrain vehicles
- 281 Operator's manual
- 282 Load and slope limitations

Forklift Trucks

- 283 Load chart
- 284 Seat belt

Pile Driving Equipment and Practices

- 285 Chocking
- 286 Pile hoisting
- 287 Restraining hoses and connections
- 288 Brake bands and clutches
- 289 Timber piles
- 290 Crane boom inspection

Personal Vehicle for Work Purposes

- 290.1 Licensing and mechanical inspection

Concrete Pump Trucks**290.2** Safety requirements**Part 20
Radiation Exposure**

- 291** Prevention and protection
- 291.1** Shielding
- 291.2** X-ray equipment
- 291.3** Lasers
- 291.4** Radiation exposure limits
- 291.5** Monitoring worker exposure to ionizing radiation (dosimetry)
- 291.6** Additional protections for pregnant and young workers
- 291.7** Designated radiation equipment — registration certificate required

**Part 21
Rigging**

- 292** Breaking strength
- 292.1** Safety factors
- 293** Load ratings
- 294** Inspection
- 295** Prohibition
- 296** Rigging protection
- 297** Standards
- 298** Slings
- 299** Rope wound on drum
- 300** Cable clips
- 301** Ferrules
- 302** Matching components
- 303** Safety latches
- 304** Makeshift rigging and welding

Rejection Criteria

- 305** Synthetic fibre slings
- 306** Wire rope
- 307** Metal mesh slings
- 308** Electric arc damage
- 309** Damaged hooks

**Part 22
Safeguards**

- 310** Safeguards
- 311** Tampering with safeguards
- 312** No safeguards

- 313 Building shafts
- 314 Covering openings
- 315 Guardrails
- 316 Hoppers, bins and chutes
- 317 Machine failure
- 318 Protection from falling objects
- 319 Push stick or block
- 320 Safety nets
- 321 Toe boards
- 322 Wire mesh

Part 23

Scaffolds and Temporary Work Platforms

Scaffolds

- 323 CSA Standard applies
- 324 Design
- 325 Load
- 326 Tagging requirements
- 327 Vertical ladder on scaffold
- 328 Working from a ladder
- 329 Scaffold planks
- 330 Scaffold platform
- 331 Metal scaffolding
- 332 Bracket scaffolds
- 333 Double-pole scaffolds
- 334 Free-standing or rolling scaffolds
- 335 Half-horse scaffolds
- 336 Ladderjack scaffolds
- 337 Needle-beam scaffolds
- 338 Outrigger scaffolds
- 339 Roofing brackets
- 340 Single-pole scaffolds
- 341 Suspended scaffolds
- 342 Swingstage scaffolds
- 343 Requirements for swingstage scaffold
- 344 Safety on swingstage scaffolds
- 345 Workers on swingstage scaffolds

Elevating Platforms and Aerial Devices

- 346 Worker safety
- 347 Standards
- 348 Permanent suspension powered work platforms
- 349 Fork-mounted work platforms
- 350 Suspended man baskets

- 351 Boatswain's chairs
- 352 Temporary supporting structures
- 353 Fly form deck panels

Part 24

Toilets and Washing Facilities

- 354 Restrictions by employer
- 355 Drinking fluids
- 356 Exception
- 357 Toilet facilities
- 358 Water and drainage
- 359 Hand cleaning facilities
- 360 Supplies and waste receptacle
- 361 Condition of facilities

Part 25

Tools, Equipment and Machinery

- 362 Contact by clothing, etc.
- 363 Machines close together
- 364 Moving workers
- 365 Starting machinery
- 366 Preventing machine activation
- 367 Operator responsibilities
- 368 Controls
- 369 Immobilizing machinery
- 370 Drive belts
- 371 Continuous-feed machinery
- 372 Elevated conveyor belts
- 373 Crossing conveyor belts
- 374 Actuated fastening tools
- 375 Grinders
- 376 Chainsaws
- 377 Circular saw blades
- 378 Band saw blades
- 379 Band saw wheels
- 380 Power-fed circular saws
- 381 Cut-off saws
- 382 Sawmill head rig
- 383 Sawmill log carriage
- 384 Robots
- 385 Teaching a robot

Part 26

Ventilation Systems

- 386 Application
- 387 Design
- 388 Safety

Part 27

Violence and Harassment

- 389 Hazard assessment
- 390 Violence prevention plan
- 390.1 Violence prevention policy
- 390.2 Violence prevention procedures
- 390.3 Domestic violence
- 390.4 Harassment prevention plan
- 390.5 Harassment prevention policy
- 390.6 Harassment prevention procedures
- 390.7 Review of plans
- 391 Training of workers
- 391.1 Investigation and reporting of incidents
- 391.2 Treatment or referral
- 392 Entitlement to pay
- 392.1 Retail fuel and convenience store worker safety application
- 392.2 Additional requirements for violence prevention plan
- 392.3 Additional training required
- 392.4 Review of violence prevention plan and worker training
- 392.5 Personal emergency transmitter
- 392.6 Mandatory fuel prepayment

Part 28

Working Alone

- 393 Application
- 394 Precautions required

Part 29

Workplace Hazardous Materials Information System (WHMIS)

- 394.1 Definitions
- 395 Application
- 396 Hazardous waste
- 397 Training
- 398 Label required
- 399 Production or manufacture
- 400 Decanted products
- 401 Placards

- 402 Transfer of hazardous products
- 403 Laboratory samples
- 404 Safety data sheet — supplier
- 405 Safety data sheet — employer
- 406 Information current
- 407 Availability of safety data sheet
- 408 Claim for disclosure exemption
- 409 Interim non-disclosure
- 410 Exemption from disclosure
- 411 Duty to disclose information
- 412 Information — confidential
- 413 Information to medical professional
- 414 Limits on disclosure

Requirements Applicable to Specific Industries and Activities

Part 30

Demolition

- 415 Worker in charge
- 416 Location of equipment
- 417 Hazardous substances
- 418 Use of explosives
- 419 Disconnecting services
- 420 Materials chute
- 421 Dismantling buildings
- 422 Building shaft demolitions

Part 31

Diving Operations

- 423 Application
- 424 Employer responsibilities
- 437 Intakes, pipes and tunnels

Part 32

Excavating and Tunnelling

- 441 Disturbing the ground
- 442 Classification of soil type
- 443 Soil stabilization
- 444 Marking an excavation
- 445 Water hazard
- 446 Worker access
- 447 Locating buried or concrete-embedded facilities
- 448 Exposing buried facilities
- 449 Exemption

- 450 Methods of protection
- 451 Cutting back walls
- 452 Loose materials
- 453 Spoil piles
- 454 Power pole support
- 455 Safe entry and exit
- 456 Temporary protective structures
- 457 Alternatives to temporary protective structures
- 458 Installation of shoring, stringers or bracing
- 459 Access for powered mobile equipment
- 460 Dumping block
- 461 Underground shafts
- 462 Drilled or bored underground shaft
- 463 Prohibition
- 464 Tunnel

Part 33

Explosives

- 466 Burning material
- 468 Blasters
- 468.1 Certification of blasters
- 468.3 Suspension and cancellation
- 468.5 Employer report of blaster certificates
- 468.51 Blaster's report
- 468.52 Loss or theft of explosives

Storage and Handling of Explosives

- 470 Canadian guidelines
- 470.1 Magazines
- 470.2 Storage and disposal of explosives, fuse assemblies and detonators
- 470.3 Access to explosives
- 470.4 Removal from magazine
- 473 Transporting explosives
- 473.1 Vehicle requirements
- 473.2 Vehicle breakdown
- 474 Oldest explosives used first
- 475 Deteriorated, damaged or unsafe explosives
- 477 Appropriate explosive strength and quantities
- 479 Cartridge explosives
- 480 Tools
- 481 Priming
- 483 Detonators
- 484 Adverse weather conditions

Drilling

- 485 Excavating and drilling
- 486 Bootleg
- 486.1 Water damage
- 487 Size of bore hole
- 488 Safe positioning

Loading

- 488.1 Quantity of explosives
- 489 Unwinding leg wires
- 490 Electrical energy
- 491 Tamping explosives
- 492 Sequential detonation
- 494 Stemming and leg wires
- 495 Testing detonators, circuits and blasting machines
- 497 Connecting down lines to trunk cords
- 497.1 Ignition precautions

Firing

- 498 Community protection
- 498.1 Signs
- 499 Blast protection
- 499.1 Burning explosives
- 501 Electromagnetic radiation
- 502 Above-ground explosive
- 503 Radiofrequency transmitters
- 504 Length of fuse assembly
- 505 Blasting machine
- 506 Shunting the blasting cable

Destroying Explosives

- 509 Waiting period
- 510 Withdrawing a misfire
- 510.1 Working around a misfire
- 511 Undetonated explosives and misfires
- 513 Removal of waste

Specific Blasting Activities

- 515 Avalanche control
- 516 Oil well blasting and oil well perforating
- 517 Seismic blasting
- 517.1 Display fireworks and pyrotechnic special effects operations
- 517.2 Secondary blasting

Explosives at Mines and Mine Sites

- 517.3 Application
- 517.4 Removal from magazine
- 517.5 Circuit requirements for blasting machines
- 517.6 Electrical cables and wires
- 517.7 Detonating cord
- 517.8 Blast holes
- 517.9 Blasting warnings
- 517.91 Unattended blast holes

Explosives at Underground Mines

- 517.92 Application
- 517.93 Drilling distances
- 517.94 Storage
- 517.95 Electric conveyance
- 517.96 Handling explosives underground
- 517.97 Mine shaft conveyance
- 517.98 Priming explosives
- 517.99 Explosive atmospheres
- 517.991 Blasting cable
- 517.992 Use of detonators
- 517.993 Series connection
- 517.994 Firing in the same round
- 517.995 Misfires
- 517.996 Misfire detonation and deactivation
- 517.997 Shock blasting
- 517.998 Explosives detonated from the surface
- 517.999 Permanent underground firing station
- 517.9991 Secondary blasting in underground mines

Part 34**Forestry**

- 518 Felling and bucking
- 519 Hand felling
- 520 Mechanized feller or limber
- 521 Operator protective structures
- 522 Road warnings
- 523 Partially cut trees
- 524 Logging trucks
- 525 Traffic safety

Part 35**Health Care and Industries with Biological Hazards**

- 525.1 Exposure control

- 525.2 Medical sharps
 - 526 Sharps containers
 - 527 Recapping needles
 - 528 Policies and procedures
 - 529 Limited exposure
 - 530 Post exposure management

Part 36

Mining

Division 1

General

- 531 Application
- 532 Building safety
- 533 Mine plan
- 533.1 Specifications or procedures
- 534 Reports
- 535 Excavation
- 536 Mine material and discards
- 537 Dust from drilling
- 539 Haul roads
- 541 Mine walls
- 542 Dumping block
- 544 Reporting dangerous occurrences

Fire Prevention and Emergency Response

- 546 Emergency response
- 547 Firefighting training

Electrical Systems

- 560 Electrical standards
- 572 Hand-held electrical drills

Rubber-Tired, Self-Propelled Equipment

- 574 Rubber-tired, self-propelled equipment
- 574.1 Autonomous equipment
- 577 Emergency energy
- 578 Hydraulic brakes
- 579 Dual-brake systems
- 585 Periodic service brake testing
- 588 Auxiliary steering
- 589 Auxiliary pump
- 590 Auxiliary steering standards
- 591 Design safety factors

- 592 Clearance lights
- 593 Line of sight
- 594 Lights

Conveyors

- 598 Fire resistance
- 599 Stopping
- 600 Distance surrounding conveyor belts
- 601 Combustible dust
- 603 Riding conveyor belts prohibited
- 604 Inspecting conveyor

Division 3 Underground Mines

- 680 Application
- 681 Annual plan

Mine Workers

- 683 Supervision
- 685 Underground mine manager
- 686 Combined operations
- 687 Working alone where coal is mined
- 689 Unsafe areas
- 690 Work shift report and inspection

Fire Prevention

- 693 Ignition source restricted
- 693.1 Light metal alloys
- 693.2 Monitoring of flammability hazards
- 693.3 Fire precautions
- 693.4 Fireproofing
- 693.5 Protection around conveyors
- 693.6 Fire detection and suppression systems
- 693.7 Firefighting equipment
- 693.8 Water supply system for extinguishing fires
- 693.9 Carbon monoxide monitors
- 694 Marking ignition hazards

Mine Equipment

- 695 Propane installations
- 696 Bulk fuel storage
- 697 Voice communication
- 697.1 Batteries
- 697.2 Switchgear

- 697.3 Clearances underground for rubber-tired, self-propelled equipment
- 697.4 Diesel-powered equipment
- 700 Portal

Evacuation and Emergencies

- 701 Outlets
- 702 Escape ways
- 702.1 Refuge stations
- 703 Protection from contact with moving equipment
- 703.1 Emergency warning system
- 703.2 Evacuation
- 703.3 Emergency response station
- 703.4 Respiratory protective equipment for emergency escape

Vehicles

- 704 Underground fuel stations
- 705 Diesel fuel
- 706 Control of equipment

Roof and Side Support

- 707 Support system
- 708 Pillar extractions

Ventilation System

- 711 Ventilation system
- 712 Air velocity
- 713 Return airway
- 714 Airlock doors
- 715 Stoppings
- 716 Seals
- 717 Chutes
- 718 Splits
- 719 Main fans
- 720 Reverse flows
- 721 Surface fans
- 722 Booster fans
- 723 Auxiliary fans
- 724 Brattice, vent tubes
- 725 Ventilation fans
- 729 Operating in split

Gas and Dust Control

- 730 Gas inspections
- 731 Flammable gas levels
- 732 Diesel vehicle roads

- 733 Degassing procedures
- 738 Detection equipment for flammable and combustible gases
- 741 Roof bolting
- 742 Airborne dust control
- 743 Incombustible dust

Explosion Control

- 745 Explosion barriers
- 747 Spacing between adjoining mining operations
- 748 Drill holes
- 749 Water or gas
- 749.1 Shaft access and hoisting equipment

Mining Operations and Mining Certificates

- 749.4 Certification of underground mine managers and underground mine foremen
- 749.8 Suspension and cancellation

Part 37 Oil and Gas Wells

- 750 Application
- 751.1 Health and safety orientation
- 752.1 Work site organization
- 752.2 Purging lines
- 752.3 Firefighting equipment
- 753 Operating load of derrick or mast
- 754 Derricks and masts
- 755 Reports for equipment inspections and repairs
- 755.1 Reports for rented or leased equipment inspections and repairs
- 756 Sliding prohibited
- 758 Inspections and safety check
- 761 Exits from enclosures
- 762 Emergency escape
- 763 Guy lines and anchors
- 765 Tubular storage
- 766 Drawworks
- 767 Brakes
- 768 Weight indicators
- 769 Travelling blocks
- 770 Worker lifting and rescue
- 771 Catheads
- 773 Rotary table danger zone
- 774 Tong safety
- 775 Counterweights
- 776 Fluid pumping and piping systems
- 776.1 Controlling pressure hazards

- 777 Rig tank or pit enclosures
- 779 Drill stem testing
- 780 Well swabbing
- 781 Well servicing
- 782 Well stimulation
- 784 Gas sample containers

Part 38 — Expired

Part 39 Tree Care Operations

- 792 Application
- 793 Safe work practices
- 794 Fall protection and work positioning
- 795 Harness standards
- 796 Knot exemption

Part 40 Utility Workers — Electrical

- 797 Application
- 799 Protective devices or equipment
- 800 Safe work practices for electric utilities and rural electrification associations
- 801 Safe work practices for industrial power producers
- 802 Coordinated work
- 803 Communication lines, cables
- 804 Work on energized electrical equipment or lines (above 750 volts)

Part 41 Work Requiring Rope Access

General Requirements

- 805–807 Exemptions
- 808–810 Rope access safe work plan
 - 811 Safe work practices
 - 812 Instruction of workers
 - 813 Tools and equipment
 - 814 Equipment compatibility
 - 815 Inspection and maintenance
- 816–818 Low stretch (static) and high stretch (dynamic) rope
 - 819 Cow's tail
 - 820 Removal from service
- 821–822 Worker rescue

Industrial Rope Access Work

- 823–825** Safe work practices
- 826** Worker competency
- 827** Worker's personal logbook
- 828–829** Maximum arrest force, clearance, anchor strength
- 830** Safety line
- 831–833** Head protection
- 834** Full body harness
- 835–836** Connecting components
- 837** Ascenders
- 838** Back-up devices
- 839** Descenders

Non-industrial Rope Access Work

- 840** Safe work practices
- 841** Worker competency
- 842–843** Fall factor, clearance, anchorage strength
- 844–846** Head protection
- 847** Sit harness
- 848** Full body harness
- 849** Connecting components

Schedules**Schedule 1 Chemical Substances**

- Table 1 Substances and processes requiring a code of practice
- Table 2 Occupational exposure limits for chemical substances

Schedule 2 First Aid

- Table 1 Low hazard work
- Table 2 Medium hazard work
- Table 3 High hazard work
- Table 4 First aid room requirements
- Table 5 First aid requirements for low hazard work
- Table 6 First aid requirements for medium hazard work
- Table 7 First aid requirements for high hazard work

Schedule 3 Noise

- Table 1 Noise exposure limits

Schedule 4 Safe Limit of Approach Distances

- Table 1 Safe limit of approach distances from overhead power lines for persons and equipment

Schedule 5 Cable Clips on Wire Rope

- Table 1 Cable clip requirement for wire rope

Schedule 6 Dimensions of Scaffold Members

- Table 1 Light duty double pole scaffolds less than 6 metres in height

- Table 2 Light duty double pole scaffolds 6 metres or more in height
- Table 3 Heavy duty double pole scaffolds less than 6 metres in height
- Table 4 Heavy duty double pole scaffolds 6 metres or more in height
- Table 5 Half-horse scaffolds less than 3 metres in height
- Table 6 Half-horse scaffolds 3 metres to 5 metres in height
- Table 7 Single-pole scaffolds less than 6 metres in height
- Table 8 Single-pole scaffolds 6 metres to 9 metres in height

Schedule 7 Toilets at a Work Site

- Table 1 Number of toilets required at a work site

Schedule 8 Saw Blade Crack Limits

- Table 1 Circular saw blade crack limits
- Table 2 Band saw blade crack limits

Schedule 9 Shoring Component Dimensions

- Table 1 Shoring components used in excavation, trenches, tunnels and underground shafts

Schedule 10 Minimum Separation Distances

- Table 1 Minimum separation distances between explosives and fixed radiofrequency transmitters
- Table 2 Minimum separation distances between explosives and mobile radiofrequency transmitters and cellular telephones

Schedule 12 Radiation Exposure

- Table 1 Maximum effective dose limits for ionizing radiation
- Table 2 Maximum equivalent dose limits for ionizing radiation
- Table 3 Maximum exposure limits for laser radiation for any persons
- Table 4 Maximum exposure limits for radiofrequency electromagnetic fields for any persons

Index

Core Requirements Applicable to All Industries

Part 1 Definitions and General Application

Definitions

1 In this Code,

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

“abnormal audiogram” repealed AR 242/2022 s2;

“abnormal shift” repealed AR 242/2022 s2;

“acceptance” means an acceptance issued under section 20 of the Act;

“Act” means the *Occupational Health and Safety Act, SA 2020 cO-2.2*;

“actively transmitting” with respect to radiofrequency transmitters includes being set to “on” or “standby” mode;

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

“acute illness or injury” repealed AR 242/2022 s2;

“advanced care paramedic” means an advanced care paramedic registered under the *Paramedics Profession Regulation (AR 151/2016)*;

“advanced first aider” means an emergency medical responder, primary care paramedic or a person who holds a certificate in advanced first aid from an approved training agency;

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

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

“anchor” in Parts 9 and 41 means an engineered component for coupling a fall arrest or travel restraint system to an anchorage;

“anchorage” in Part 41 means a structure, or part of a structure, that is capable of safely withstanding any potential forces applied by a fall protection system;

“ANSI” means the American National Standards Institute;

“API” means the American Petroleum Institute;

“approved by a Director” means an approval issued under section 22 of the Act;

“approved to” means that the product bears the approval or certification mark of a nationally accredited third party testing organization, certifying that the product complies with the referenced standard;

“approved training agency” means a person or organization approved by a Director of Medical Services or a Director under section 177 to provide training in first aid;

“asbestos” includes all forms of asbestos;

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

“ASME” means the American Society of Mechanical Engineers;

“ASSE” means the American Society of Safety Engineers;

“ASTM” means the American Society for Testing and Materials;

“audiometer” means a device meeting the specifications of an audiometer described in ANSI/ASA S3.6-2018, *Specification for Audiometers*;

“audiometric technician” means a person

(a) who has

(i) successfully completed a training course in audiometric testing approved by a Director of Medical Services or a Director, or

(ii) been approved by a Director of Medical Services or a Director as having successfully completed the equivalent of a training course referred to in subclause (i),

and

(b) who has passed a requalification examination when requested to do so by a Director of Medical Services or Director;

“authorized radiation health registration agency” means a person designated under section 58 of the Act as an authorized radiation health registration agency;

“authorized radiation protection inspection agency” means a person designated under section 58 of the Act as an authorized radiation protection inspection agency;

“authorized worker” repealed AR 242/2022 s2;

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

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

“biohazardous material” means a pathogenic organism, including a bloodborne pathogen, that, because of its known or reasonably believed ability to cause disease in humans, would be classified as Risk Group 2, 3 or 4 as defined in the *Human Pathogens and Toxins Act* (Canada), or any material contaminated with such an organism;

“blast hole” means a hole loaded with an explosive;

“blaster” means a worker who holds a blaster’s certificate issued under section 468.1 or a blaster’s permit issued under this Code or deemed to have been issued under the Act by virtue of section 69(2) of the Act;

“blasting area” means the location at which explosives are being prepared, loaded, detonated or destroyed that extends at least 50 metres in all directions from that location;

“blasting circuit” means a circuit consisting of blasting wire used to initiate one or more electric detonators;

“blasting machine” means equipment used to initiate detonation;

“blasting mat” means a heavy mat made of woven rope, steel wire, chain or other similar interconnected material, placed over explosives to prevent earth, rock and debris from being thrown in the air by the detonated explosive;

“boatswain’s chair” means a seat that is suspended from ropes from which one person works on the side of a building;

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

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

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

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

“bootleg” means that portion of a blast hole that

- (a) is not destroyed after an explosive is detonated in it, and
- (b) may or may not contain explosives;

“bore hole” means a drilled hole that does not contain explosives;

“BSI” means the British Standards Institute;

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

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

“Canadian Electrical Code” means CSA Standard C22.1-06, *Canadian Electrical Code, Part 1, Safety Standard for Electrical Installations*;

“CANMET” repealed AR 242/2022 s2;

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

“carabiner” means a connecting component that

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

(b) has an ultimate tensile strength of at least 22.2 kilonewtons;

“cathead” means a clutched spool connected to a drawworks power system used to create tension on chains, cables and ropes;

“CEN” means the European Committee for Standardization;

“certified by a professional engineer” means stamped and signed by a professional engineer as described in section 14;

“CGSB” means the Canadian General Standards Board;

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

“climbable structure” means an engineered or architectural work where the primary method of accessing the structure is by climbing the structure with the principle means of support being the climber’s hands and feet;

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

“coal dust” means dust that

- (i) results from the mining, transporting or processing of coal,
- (ii) is of a pure or mixed carboniferous, mineralogical composition, and
- (iii) contains 10 percent or less of free silica calculated by weight;

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

“combustible liquid” means a liquid that has a flash point at or above 37.8°C, as determined by using the methods described in the *Alberta Fire Code* (1997);

“combined operation” repealed AR 242/2022 s2;

“concrete pump truck” in Part 19 means powered mobile equipment that is comprised of a concrete pump, a distribution boom or mast, delivery pipes and the equipment on which they are mounted;

“confined space” means a restricted space which may become hazardous to a worker entering it because of

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

“container” in Part 33 means a fully enclosed storage receptacle made of a material that will protect explosives from damage or being detonated;

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

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

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

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

“control zone” means the area within 2 metres of an unguarded edge of a level, elevated work surface that has a slope of no more than 4 degrees;

“controlled blasting” means a technique of blasting which is used to reduce the amount of over break, fractures, ground vibrations and other unintended damage;

“conveyor” means horizontal, inclined or vertical equipment for moving or transporting bulk material, packages or any other thing in a path or direction predetermined by the design of the equipment;

“cow’s tail” in Part 41 means a short strap, lanyard or sling connected to the main attachment point of a harness;

“CPSC” means the Consumer Product Safety Commission;

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

“CSA” means the Canadian Standards Association;

“day box” means a box made of non-sparking material, lined with non-conductive material, that is capable of being locked, is weatherproof and is used only for temporary storage of explosives intended for a specific blasting activity;

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

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

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

“designated radiation equipment” means the following equipment unless it is in transit, in storage or incapable of being energized:

- (a) diagnostic or therapeutic x-ray equipment;
- (b) particle accelerators not governed by the *Nuclear Safety and Control Act* (Canada) and the regulations under that Act;
- (c) baggage inspection x-ray equipment;
- (d) security x-ray equipment;
- (e) cabinet x-ray equipment;
- (f) analytical x-ray equipment;
- (g) industrial x-ray equipment;
- (h) irradiation x-ray equipment;

- (i) class 3b or 4 lasers that are not enclosed within a laser system with a lower classification, as described in ANSI Standard Z136.1-2014, *American National Standard for the Safe Use of Lasers*, published by the American National Standards Institute;

“designated signaller” means a person designated to give signals in accordance with section 191;

“detonating cord” means a cord containing explosives of sufficient strength to detonate other explosives;

“detonator” means any equipment used to detonate explosives but does not include a blasting machine;

“direct supervision” means that a competent worker

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

“discard” means solid or liquid material that is removed or rejected during mining or processing operations because it has no current use, but that may be of future use;

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

“drill stem test” means a procedure for isolating and testing the pressure, permeability and productive capacity of a geological formation during the drilling of a well by permitting the flow of formation fluids through the drill pipe;

“effective dose” means the sum for all irradiated tissues and organs, of the equivalent dose, in millisieverts, for each tissue or organ multiplied by the appropriate tissue weighting factor, as determined in accordance with the *2007 Recommendations of the International Commission on Radiological Protection*. ICRP Publication 103. Ann. ICRP 2007; 37 (2-4);

“electric detonator” means a shell containing a charge of detonating compound designed to be fired by an electric current;

“electric utility” has the meaning assigned to it by the *Electric Utilities Act*;

“electrician” means a person who holds a trade certificate, as defined in the *Skilled Trades and Apprenticeship Education Act*, in the designated trade of electrician;

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

- (a) broadcasting,
(b) mobile communications systems,
(c) remote control signal stations,
(d) industrial radiofrequency heaters,
(e) equipment used for geophysical surveys,
(f) radar,
(g) overhead power lines, and
(h) any other source of electromagnetic radiation;

“emergency first aider” repealed AR 242/2022 s2;

“emergency medical responder” means an emergency medical responder registered under the *Paramedics Profession Regulation* (AR 151/2016);

“emergency response plan” means the emergency response plan required under Part 7;

“equivalent dose” means the amount of energy of ionizing radiation, in millisieverts, absorbed in a unit of mass of irradiated tissue or organ multiplied by the appropriate radiation weighting factor, as determined in accordance with the 2007 *Recommendations of the International Commission on Radiological Protection*. ICRP Publication 103. Ann. ICRP 2007; 37 (2-4);

“excavation” in Part 32 means a dug out area of ground but does not include a tunnel, underground shaft or pit;

“excess noise” means noise that exceeds the limits specified in section 218;

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

“explosive atmosphere” means an atmosphere that

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

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

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

“fall protection system” means

- (a) a personal fall arrest system,
- (b) a travel restraint system,
- (c) fabric or netting panels intended for leading edge protection,
- (d) a safety net,
- (e) a control zone, or
- (f) use of procedures in place of fall protection equipment;

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

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

“fibre” means a particulate material with

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

“first aid” means emergency care provided to an ill or injured worker at a work site;

“first aider” means a basic first aider, intermediate first aider, advanced first aider, emergency medical responder, advanced care paramedic or primary care paramedic designated by a prime contractor or an employer to provide first aid to workers at a work site;

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

“flammable liquid” means a liquid with

- (a) a flash point below 37.8°C, and
- (b) a vapour pressure of not more than 275.8 kilopascals (absolute), as determined by ASTM Standard D323-06, *Standard Test Method for Vapour Pressure of Petroleum Products (Reid Method)*;

“flammable substance” means

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

“flash point” means the minimum temperature at which a liquid in a container gives off vapour in sufficient concentration to form an ignitable mixture with air near the surface of the liquid, as determined by using the methods described in the *Alberta Fire Code* (1997);

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

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

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

“gob” means an area of a mine from which coal has been extracted and the roof allowed to cave in;

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

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

“hand expose zone” means the strip of land

(a) 1 metre wide on each side of the locate marks for a buried facility other than a high pressure pipeline, or

(b) 5 metres wide on each side of the locate marks for a high pressure pipeline;

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

“handling” with respect to explosives includes preparing, loading, firing, burning or destroying explosives or detonators;

“hazard assessment” means an assessment made in accordance with section 7 or 21;

“hazardous energy” means electrical, mechanical, hydraulic, pneumatic, chemical, nuclear, thermal, gravitational or any other form of energy that could cause injury due to the unintended motion, energizing, start up or release of such stored or residual energy in machinery, equipment, powered mobile equipment, piping or pipelines;

“hazardous location” in Part 10 means a place where fire or explosion hazards may exist due to flammable gases or vapours, flammable or combustible liquids, combustible dust or ignitable fibres or flyings, as described in the *Canadian Electrical Code*;

“health care facility” means a hospital, medical clinic or physician’s office that can dispense emergency medical treatment if a worker becomes ill or injured at a work site;

“hearing protection device” means personal protective equipment worn to protect the wearer from damage to hearing due to exposure to noise;

“heavy duty scaffold” means a scaffold that

(a) is designed to support the equivalent of an evenly distributed load of more than 122 kilograms per square metre but not more than 367 kilograms per square metre, and

(b) has planks with a span of not more than 2.3 metres;

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

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

“high visibility safety apparel” means personal protective equipment that is occupational apparel capable of signalling the user’s presence visually and intended to provide the user with conspicuity in hazardous situations under any light conditions and under illumination by vehicle headlights;

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

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

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

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

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

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

“IEC” means the International Electrotechnical Commission;

“illness or injury” in Part 11 means a sudden occurrence of an illness or injury that results in the need for first aid;

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

- (a) is an immediate threat to life,
- (b) may affect health irreversibly,
- (c) may have future adverse effects on health, or
- (d) may interfere with a worker’s ability to escape from a dangerous atmosphere;

“incombustible dust” means a pulverized inert mine material of light colour,

- (a) 100 percent of which passes through a 20 mesh sieve,
- (b) not less than 70 percent by weight of which passes, when dry, through a 200 mesh sieve, and
- (c) that does not contain more than 5 percent combustible matter or 4 percent free and combined silica;

“industrial power producer” in Part 40 means an employer authorized in Alberta to generate electrical energy as an independent power producer or solely for its own use in manufacturing or in the handling of material;

“industrial rope access work” in Part 41 means work activities at height which incorporate a working line, safety line and full body harness in combination with other devices that allow a worker to ascend, descend and traverse to and from a work area under the worker’s own control;

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

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

“ionizing radiation” means electromagnetic energy, atomic particles or nuclear particles that are capable of ionizing atoms;

“ionizing radiation equipment” means

- (a) diagnostic or therapeutic x-ray equipment,
- (b) particle accelerators,

- (c) industrial x-ray equipment,
- (d) irradiation x-ray equipment, or
- (e) any other ionizing radiation equipment for which the registration certificate requires monitoring of the personal exposure of workers who use or are directly involved in the use of ionizing radiation equipment or an ionizing radiation source;

“ISO” means the International Organization for Standardization;

“isolated” means to have separated, disconnected, de-energized or depressurized;

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

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

“ L_{ex} ” means the level of a worker’s total exposure to noise in dBA, averaged over the entire workday and adjusted to an equivalent 8-hour exposure measured in accordance with section 219 and based on a 3 decibel exchange rate;

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

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

“laser” means any device that can be made to produce or amplify radiation in the wavelength range from 180 nanometres to 1 millimetre primarily by the process of controlled stimulated emission;

“lead” includes inorganic and organic compounds of lead;

“lead wire” means an electric wire connecting a power source or blasting machine to a blasting circuit;

“leading edge” means the edge of a floor, roof or formwork for a floor or other walking/working surface that changes location as additional floor, roof, decking or formwork sections are placed, formed or constructed;

“leg wire” means an electric wire attached to a detonator;

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

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

“light duty scaffold” means a scaffold that

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

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

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

“lumber” means wood that is spruce pine fir (S-P-F) or better, of Number 2 grade or better and, if referred to by dimensions, meets the requirements of CSA Standard CAN/CSA O141-05, *Softwood Lumber*, or the requirements of the NLGA Standard, *Standard Grading Rules for Canadian Lumber (2003)*;

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

“magazine” means a building, storehouse, structure or place in which an explosive is stored, but does not include

- (a) a vehicle in which an explosive is kept for the purpose of transporting the explosive,
- (b) a day box, or
- (c) a container;

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

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

“medical sharp” in Part 35 means a needle device, scalpel, lancet or any other medical device that can reasonably be expected to penetrate the skin or other part of the body;

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

“meets the requirements of” repealed AR 242/2022 s2;

“millisievert” (“mSv”) means a derived unit of effective dose and equivalent dose for ionizing radiation;

“mine” means a working, other than a drill hole made while exploring for a mineral, from which coal, precious or semi-precious minerals, sand, gravel, industrial minerals or oil sands is being extracted, and includes a quarry and a pit;

“mine blaster” repealed AR 242/2022 s2;

“mine entrance” repealed AR 242/2022 s2;

“mine level” in Part 36 means a horizontal excavation in the ground or in strata of an underground mine that is usable

- (a) for drainage or ventilation, or
- (b) as an entrance or exit for workers or mine materials to or from a mine or part of a mine;

“mine material” means material that may be taken into or out of a mine, including naturally occurring materials;

“mine official” repealed AR 242/2022 s2;

“mine plan” means a map, including a profile or section, of a mine or part of a mine, certified as correct by a surveyor;

“mine shaft” means an excavation at an angle of 45 degrees or greater from the horizontal that is usable

- (a) for drainage or ventilation, or
- (b) as an entrance or exit for workers or mine materials to or from a mine or part of a mine;

“mine site” means a location at which a facility for extracting a mineral by underground, strip, pit or quarry operations exists or is to be developed, and includes

- (i) a mineral processing plant, storage facility or discard disposal facility that exists or is to be developed in connection with a mine, and
- (ii) all connected access roads;

“mine tunnel” in Part 36 means an excavation at an angle of less than 45 degrees from the horizontal, including inclines and declines, that is usable

- (a) for drainage or ventilation, or
- (b) as an entrance or exit for workers or mine materials to or from a mine or part of a mine;

“mine wall” means the exposed face of an excavation in a surface mine from ground level to the working level;

“mining certificate” means a certificate issued under Part 36;

“misfire” means an explosive or part of an explosive that did not explode when detonation was attempted;

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

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

“mobile equipment” repealed AR 242/2022 s2;

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

“National Dose Registry” means the centralized record-keeping system containing the dose information of workers who use or are directly involved in the use of ionizing radiation equipment or an ionizing radiation source in Canada that is maintained by Health Canada;

“NFPA” means the National Fire Protection Association;

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

“NLGA” means the National Lumber Grades Authority;

“noise” means sound energy at a work site;

“non-industrial rope access work” in Part 41 means work activities performed within a recreational or sport context that incorporate a working line and a sit harness or full body harness in combination with other devices during

- (a) mountaineering, caving and canyoning activities requiring the use of rope access techniques, or
- (b) climbing on artificial structures designed and built for the purpose of sport climbing;

“non-ionizing radiation” means electromagnetic energy that is not capable of ionizing atoms, but that may cause photochemical, heating or other effects;

“nurse” means a registered nurse who is a member of the College and Association of Registered Nurses of Alberta established under the *Health Professions Act*;

“occupational exposure limit” or “OEL” with respect to a substance, means the occupational exposure limit established in Schedule 1, Table 2 for that substance;

“occupational rope access” in Part 41 includes both industrial and non-industrial rope access work;

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

“OSHA” means the Occupational Safety and Health Administration;

“outlet” in Part 36 means a shaft, slope, incline, decline, adit, tunnel, level or other means of entry to or exit from an underground mine;

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

“parenteral contact” means piercing mucous membranes or the skin;

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

“perforating” means the use of explosives to perforate well casing to allow the flow of oil or gas into the wellbore;

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

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

“permitted explosive” means an explosive that is listed pursuant to section 41 of the *Explosives Regulations, 2013* (SOR/2013-211) made under the *Explosives Act* (Canada);

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

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

“pig” means a device inserted into piping or a pipeline to perform maintenance, cleaning, testing or other functions within the piping or pipeline without stopping the flow of substance within the piping or pipeline;

“pigcatcher” means a device designed to safely receive a pig from piping or a pipeline;

“pigging” means the process of inserting a pig into piping or a pipeline under pressure to perform maintenance, cleaning, testing or other functions;

“PIP” means Process Industry Practices;

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

“pit” in Parts 32 and 36 means an operation on or excavation from the surface of land, including by stripping off the overburden, for the purposes of removing, opening up or proving sand, gravel, clay or marl, and includes any associated infrastructure;

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

“portable power cables” in Part 36 means portable trailing cables as specified in the applicable sections of CSA Standard CAN/CSA M421-00 (R2007), *Use of Electricity in Mines*;

“portal” means a structure at the entrance to an underground mine, including any at the surface and any for a distance underground of 30 metres,

(a) that is used to support the ground and protect workers, or

(b) where outlets, other than vertical shafts, reach the surface;

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

“primary care paramedic” means a primary care paramedic registered under the *Paramedics Profession Regulation* (AR 151/2016);

“prime” with respect to explosives means to attach a safety fuse assembly or detonator;

“processing plant” in section 532 means a facility where coal, minerals or other products of a mine are cleaned, sized or prepared for sale or use;

“professional engineer” means a professional engineer under the *Engineering and Geoscience Professions Act*;

“protective headwear” means personal protective equipment that protects the head;

“pulmonary function technician” means a person who

(a) has passed, or has been approved by a Director of Medical Services as having done the equivalent of passing, a pulmonary function technician course approved by a Director of Medical Services, and

(b) if so required by a Director of Medical Services, has passed a requalification examination approved by such a Director;

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

“quarry” means any opening in, excavation in or working of the surface of land or subsurface for the purposes of working, recovering, opening up or proving

(a) any mineral other than coal, a coal-bearing substance, oil sands or an oil sands bearing substance, or

(b) ammonite shell,

and includes any associated infrastructure;

“radiation” means ionizing or non-ionizing radiation;

“radiation equipment” means equipment or machinery associated with the use or operation of a radiation source, and includes the radiation source itself and any structure used to support or shield the equipment, machinery or radiation source;

“radiation facility” means any premises or part of premises in which radiation equipment or a radiation source is installed;

“radiation source” means a device or substance that emits radiation;

“radiofrequency transmitters” means transmitters that include radio towers, television towers, portable two-way radio base stations and repeaters, portable two-way radios and cellular telephones;

“registration certificate” means a certificate issued by an authorized radiation health registration agency or by a Director authorizing the operation of designated radiation equipment;

“remote monitoring station” means equipment that is electronically connected to a confined space for the purposes of monitoring the health and safety of and communicating with workers inside a confined space;

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

“respiratory protective equipment” means personal protective equipment intended to protect the wearer from oxygen-deficient atmospheres or inhaling airborne harmful substances and includes self-contained breathing apparatus;

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

“restricted space” means an enclosed or partially enclosed space not designed or intended for continuous human occupancy that has a restricted, limited or impeded means of entry or exit because of its construction;

“rotary table” means the part of a drilling rig designed to apply torque to the drill string;

“rural electrification association” in Parts 17 and 40 means an association under the *Rural Utilities Act* whose purpose is to supply electricity to its members;

“SAE” means the Society of Automotive Engineers;

“safe patient/client/resident handling” in Part 14 means lifting, transferring or repositioning by the use of engineering controls, lifting and transfer aids or assistive devices, by lift teams or other trained staff rather than by sole use of worker body strength;

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

“safety engineered medical sharp” in Part 35 means a medical sharp that is designed to, or has a built in safety feature or mechanism that will, eliminate or minimize the risk of accidental parenteral contact while or after the sharp is used;

“safety fuse” means a train of black powder that

- (a) is tightly wrapped and enclosed in a series of textiles and waterproof materials,
- (b) can be connected to a detonator, and
- (c) burns internally at a continuous and uniform rate when ignited;

“safety fuse assembly” means a safety fuse to which a detonator is attached;

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

“secondary blasting” means the use of explosives to reduce the size of material that remains after an explosive is detonated;

“secure” in Part 15 means ensuring that an energy isolating device cannot be released or activated;

“seismic blasting” means a blasting activity used to collect geophysical data for the purposes of imaging the subsurface;

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

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

“shunt” means the act of connecting a piece of conductive material to the end of a leg wire of an electric detonator to prevent unintended detonation;

“significant threshold shift” means a change in hearing threshold relative to a reference audiometric test that indicates

- (a) an average shift of equal to or greater than 10 dB in either ear, or 30 dB or more in both ears combined, at 2000, 3000 and 4000 Hz, or
- (b) a shift of equal to or greater than 15 dB in either ear at 3000 or 4000 Hz;

“silica” means crystalline silicon dioxide, including quartz and cristobalite;

“small utility vehicle” in Part 18 means a small vehicle designated for off-road use, equipped with a bench type seat and a steering wheel and designed to transport more than one person;

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

“snubbing” means the act of moving tubulars into or out of a well bore when pressure is contained in the well;

“snubbing unit” means equipment used for snubbing;

“specifications”, other than manufacturer specifications, includes the written instructions, procedures, drawings or other documents of a professional engineer or other person designated in the regulations under the Act;

“split” in Part 36 means a separate fresh air ventilation circuit in which the intake air comes directly from the main intake airway and the return air goes directly to the main return airway;

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

“stemming” means the act of placing a non-combustible material in the portion between the top of the explosive column and the collar of a blast hole;

“surface mine” means a mine worked by strip mining, pit mining or other surface method, including auger mining;

“surveyor” means a person who holds a certificate of registration and an annual certificate to engage in the practice of surveying under the *Land Surveyors Act*;

“suspended scaffold” means a work platform suspended from above by wires or ropes;

“swabbing unit” means equipment used for well swabbing;

“swing drop distance” means, in a fall-arresting action, the vertical drop from the onset of the swinging motion to the point of initial contact with a structure;

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

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

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

“tending worker” means a worker designated by an employer under section 56(1);

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

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

“tower crane” means a crane that

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

“tower hoist” means a hoist

- (a) with a tower that is an integral part of it or supports it,

(b) that travels between fixed guides, and

(c) that is not used to lift people;

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

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

“tunnel” in Part 36 means an underground passage with an incline of less than 45 degrees from the horizontal;

“UIAA” means the Union Internationale des Associations d’Alpinisme;

“ULC” means the Underwriters Laboratories of Canada;

“underground coal mine electrical superintendent” repealed AR 242/2022 s2;

“underground coal mine foreman” repealed AR 242/2022 s2;

“underground coal mine manager” repealed AR 242/2022 s2;

“underground mine” means a mine other than a surface mine;

“underground mine foreman” means a person who holds an underground mine foreman’s certificate issued under section 749.4 or an underground coal mine foreman’s certificate issued under this Code or deemed to have been issued under the Act by virtue of section 69(2) of the Act;

“underground mine manager” means a person who holds an underground mine manager’s certificate issued under section 749.4 or an underground coal mine manager’s certificate issued under this Code or deemed to have been issued under the Act by virtue of section 69(2) of the Act;

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

“underground shaft hoist” means a hoist used in an underground shaft to gain entry to and exit from a tunnel or underground space and includes a device for conveying mine material;

“utility employee” in Part 40 means a worker engaged in the work of an electric utility, industrial power producer or rural electrification association;

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

“ventilation stopping” in Part 36 means a structure that directs air flow or separates intake and return air systems;

“welding or allied process” in Part 10 means any specific type of electric or oxy fuel gas welding or cutting process, including those processes referred to in Appendix A of CSA Standard W117.2-06, *Safety in Welding, Cutting and Allied Processes*;

“well servicing” means maintenance work performed on an oil, gas or geothermal energy well to bring the well into initial production, after completion of initial production, during extraction activities, during decommissioning of the well and during any ancillary activities associated with these operations;

“well stimulation” means an activity performed to restore or enhance the productivity of a well;

“well swabbing” means a process to remove fluids from an oil or gas well to increase well productivity;

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

“work positioning system” means a system of personal protective equipment components attached to a vertical safety line and includes a full body harness, descent controllers and positioning lanyards used to support or suspend a worker in tension at a work position;

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

“workings” means the area where excavation is occurring in a mine;

“x-ray equipment” means a device or class of devices that is capable of producing x-rays artificially.

AR 191/2021 s1;242/2022

Farming and ranching operations

1.1(1) Subject to subsection (2) and except as expressly provided for in this Code, this Code does not apply to the following farming and ranching operations:

- (a) the production of crops, including fruits and vegetables, through the cultivation of land;
- (b) the raising and maintenance of animals or birds;
- (c) the keeping of bees.

1.1(2) For greater certainty, the following are not farming and ranching operations:

- (a) the processing of food or other products from the operations referred to in subsection (1);
- (b) the operation of greenhouses, mushroom farms, nurseries or sod farms;
- (c) landscaping;
- (d) the raising or boarding of pets.

1.1(3) The farming and ranching operations referred to in subsection (1) are specified for the purpose of section 1(cc)(i) and (tt)(ii) of the Act, but for greater certainty, the operations referred to in subsection (2) are not farming and ranching operations for the purpose of section 1(cc)(i) and (tt)(ii) of the Act.

1.1(4) Subject to subsection (5), Part 13 applies to farming and ranching operations.

1.1(5) Section 201 applies only to the training of co-chairs of joint health and safety committees and health and safety representatives of farming and ranching operations.

Domestic workers

1.2(1) In this section,

- (a) “domestic work” means the normal household work, tasks or chores that are the type routinely performed by members of a household;
- (b) “domestic worker” means a person employed to perform domestic work within a private dwelling by or on behalf of an occupant or owner who lives in the private dwelling.

1.2(2) Subject to subsection (3), this Code does not apply to domestic workers.

1.2(3) Sections 3.2, 12(a) and (b), 15.1, 21(1)(b), 21(2)(a), (c) and (d), and section 21(3) apply to domestic workers.

2 and **2.1** Repealed.

Designated person to prepare plan

2.2 If a requirement of this Code imposes a duty on an employer with respect to the development or preparation of a plan, the employer must ensure that the plan is developed or prepared by a designated person who is competent in the principles and practices of the work described in the plan.

3 Repealed AR 242/2022 s3.

Previous editions of referenced standards

3.1 If a standard referenced in this Code applies to equipment manufactured or installed or personal protective equipment manufactured on or after a specified effective date, an employer must ensure that equipment manufactured or installed or personal protective equipment manufactured prior to that date was approved to or, as applicable, met the requirements of the edition of the referenced standard that was in effect at the time the equipment was manufactured or installed or the personal protective equipment was manufactured.

Equipment

3.2 If a worker is required under the Act, the regulations or this Code to use or wear specific equipment or personal protective equipment, the employer and supervisor must ensure that the worker uses or wears the equipment or personal protective equipment at the work site.

Performance of duty by worker

3.3 If this Code imposes a duty on a worker, the worker’s employer must ensure that the worker performs that duty.

Transitional

4 Repealed.

Repeal

5 Repealed.

Coming into force

6 This Code comes into force on the coming into force of section 61 of the *Occupational Health and Safety Act*, SA 2020 cO-2.2.

Part 2

Hazard Assessment, Elimination and Control

Hazard assessment

- 7(1)** An employer must assess a work site and identify existing and potential hazards before work begins at the work site or prior to the construction of a new work site.
- 7(2)** An employer must prepare a report of the results of a hazard assessment and the methods used to control or eliminate the hazards identified.
- 7(3)** An employer must ensure that the date on which the hazard assessment is prepared or revised is recorded on it.
- 7(4)** An employer must ensure that the hazard assessment is repeated
- (a) at reasonably practicable intervals to prevent the development of unsafe and unhealthy working conditions,
 - (b) when a new work process is introduced,
 - (c) when a work process or operation changes, or
 - (d) before the construction of significant additions or alterations to a work site.
- 7(5)** Repealed.

Worker participation

- 8(1)** An employer must involve affected workers in the hazard assessment and in the control or elimination of the hazards identified.
- 8(2)** Repealed.

Hazard elimination and control

- 9(1)** If an existing or potential hazard to workers is identified during a hazard assessment, an employer must take measures in accordance with this section to
- (a) eliminate the hazard, or
 - (b) if elimination is not reasonably practicable, control the hazard.
- 9(2)** If reasonably practicable, an employer must eliminate or control a hazard through the use of engineering controls.
- 9(3)** If a hazard cannot be eliminated or controlled under subsection (2), the employer must use administrative controls that control the hazard to a level as low as reasonably achievable.
- 9(4)** If the hazard cannot be eliminated or controlled under subsection (2) or (3), the employer must ensure that the appropriate personal protective equipment is used by workers affected by the hazard.
- 9(5)** If the hazard cannot be eliminated or controlled under subsection (2), (3) or (4), the employer may use a combination of engineering controls, administrative controls or personal protective equipment if there is a greater level of worker safety because a combination is used.

Emergency control of hazard

10(1) If emergency action is required to control or eliminate a hazard that is dangerous to the safety or health of workers,

- (a) only those workers competent in correcting the condition, and the minimum number necessary to correct the condition, may be exposed to the hazard, and
- (b) every reasonable effort must be made to control the hazard while the condition is being corrected.

10(2) Section 7(2) and (3) do not apply to an emergency response during the period that emergency action is required.

11 Repealed.

Part 3

Specifications and Certifications

Following specifications

12 An employer must ensure that

- (a) equipment and personal protective equipment is of sufficient size, strength and design and made of suitable materials to withstand the stresses imposed on it during its operation and to perform the function for which it is intended or was designed,
- (b) equipment and personal protective equipment used or worn and any explosive used or to be used at a work site
 - (i) is maintained in a condition that will not compromise the health or safety of workers using or transporting it,
 - (ii) will safely perform the function for which it is intended or was designed, and
 - (iii) is free from obvious defects,
- (c) the rated capacity or other limitations on the operation of the equipment or personal protective equipment, or any part of it, or on explosives as described in the manufacturer's specifications or specifications certified by a professional engineer, are not exceeded,
- (d) modifications to equipment, personal protective equipment or an explosive that may affect its structural integrity or stability are performed in accordance with the manufacturer's specifications or specifications certified by a professional engineer, and
- (e) equipment, personal protective equipment and explosives are used, erected, installed, assembled, started, operated, handled, stored, serviced, tested, adjusted, calibrated, maintained, repaired, destroyed, dismantled and subjected to any other work in accordance with the manufacturer's specifications or the specifications certified by a professional engineer.

AR 191/2021 s12;242/2022

12.1 Repealed.

Manufacturer's and professional engineer's specifications

13(1) If this Code requires anything to be done in accordance with a manufacturer's specifications, an employer may, instead of complying strictly with the manufacturer's specifications, comply with modified specifications certified by a professional engineer.

13(2) If this Code requires anything to be done in accordance with manufacturer's specifications and they are not available or do not exist, an employer must

- (a) develop and comply with procedures that are certified by a professional engineer as designed to ensure the thing is done in a safe manner, or
- (b) have the equipment certified as safe to operate by a professional engineer at least every 12 calendar months.

13(3) Repealed.

Certification by a professional engineer

14(1) If this Code requires that procedures or specifications be certified by a professional engineer, the certification must

- (a) be in writing, and
- (b) be stamped and signed by the professional engineer.

14(2) Unless the document states otherwise, certification by a professional engineer implies that the procedures or specifications certified are fit and safe for the workers affected by them.

Approved equipment

15 If this Code requires equipment or personal protective equipment to be approved by a named organization, an employer must use best efforts to ensure that the seal, stamp, logo or similar identifying mark of that organization is on the equipment or personal protective equipment and legible.

Specifications and certifications

15.1 If the Act, the regulations or this Code requires work to be done in accordance with a manufacturer's specifications or specifications certified by a professional engineer, an employer must ensure that the specifications are readily available to the workers, supervisors and other persons at the work site.

Requirements Applicable to All Industries

Part 4

Chemical Hazards, Biological Hazards and Harmful Substances

General Requirements

Worker exposure to harmful substances

16(1) An employer must ensure that a worker's exposure to any substance listed in Schedule 1, Table 2 is kept as low as reasonably achievable.

16(2) An employer must ensure that a worker's exposure to any substance listed in Schedule 1, Table 2 does not exceed its occupational exposure limits listed in Schedule 1, Table 2.

16(2.1) The amended occupational exposure limit for coal dust as shown in Schedule 1, Table 2 comes into effect on July 1, 2010.

16(3) If no occupational exposure limit is established for a harmful substance present at a work site, an employer must ensure that a worker's exposure to that substance is kept as low as reasonably achievable.

16(3.1) A worker may not be exposed to a substance listed in Schedule 1, Table 2 at a concentration exceeding its ceiling limit at any time.

16(4) If no 15-minute occupational exposure limit or ceiling occupational exposure limit is listed for a substance in Schedule 1, Table 2, the employer must

- (a) comply with the 8-hour occupational exposure limit, and
- (b) ensure that a worker's exposure to that substance does not exceed
 - (i) 3 times the 8-hour occupational exposure limit for more than a total of 30 minutes during a continuous 24-hour period, and 5 times the 8-hour occupational exposure limit, or
 - (ii) the concentration that is immediately dangerous to life and health, whichever is lower.

Exposure to multiple substances

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

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

does not exceed 1, where C_1, C_2, \dots, C_n refer to the airborne concentrations during exposure to contaminants 1, 2, ..., n, and T_1, T_2, \dots, T_n are their respective occupational exposure limit values expressed in the same units as C_n .

Exposure during shifts longer than 8 hours

18(1) Subject to subsection (3), if a worker is exposed to a substance listed in Schedule 1, Table 2 during a single work shift that is longer than 8 hours, the employer must ensure that equivalent protection from adverse health effects is achieved by adjusting the 8-hour exposure limit using the following formulas:

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

where the daily reduction factor = $\left\{ \frac{8}{h} \times \left(\frac{24-h}{16} \right) \right\}$, and

h = hours worked per day.

18(2) Subsection (1) does not apply to a substance for which the number “3” appears in the “Substance Interaction” column of Schedule 1, Table 2.

18(3) An employer may adjust the 8-hour exposure limit by another method that uses recognized scientific principles and that is approved by a Director.

Review of exposure limits

19(1) A person may apply to a Director to request a review of the occupational exposure limit of a substance.

19(2) An application must be in writing and must include reasons for the review, proposed changes and information that supports the request.

19(3) On receipt of a request for a review of an occupational exposure limit, a Director may review the occupational exposure limit.

Airborne concentration measurements

20(1) If a person measures the airborne concentration of a harmful substance for the purposes of complying with the occupational exposure limits as required by this Code, the person must make the measurement in accordance with any one of

- (a) the NIOSH Manual of Analytical Methods, 4th Edition (August 1994), published by the United States Department of Health and Human Services, as amended up to and including the 2nd supplement (January 15, 1998),
- (b) Sampling and Analytical Methods published by the U.S. Occupational Safety and Health Administration,
- (c) Methods for the Determination of Hazardous Substances guidance published by the Health and Safety Executive of the United Kingdom,
- (d) EPA Test Methods published by the U.S. Environmental Protection Agency (EPA),
- (e) Workplace Air Contamination Sampling Guide published by the Institut de recherche Robert Sauvé en santé et en sécurité du travail (IRSST),
- (f) ISO Standards and Guides of Air Quality published by ISO Technical Committee TC146, or

(g) Analyses of hazardous substances in air/DFG Deutsche Forschungsgemeinschaft — Commission for the Investigation of Health Hazards of Chemical Compounds in the Work Area.

(h) repealed.

20(2) If there is no analytical method or procedure that complies with subsection (1), an employer may use a continuous reading direct-reading instrument to measure airborne concentrations of a harmful substance for the purposes of complying with the occupational exposure limits as required by this Code provided that the instrument is used, calibrated and maintained according to the manufacturer's specifications.

20(2.1) An employer must ensure that the person undertaking airborne measurements is competent to do so.

20(3) If the person is counting fibres, the person must apply NIOSH Method 7400, and only to particles that meet the size criteria for fibres.

20(4) An employer must record the results of the measurements and keep them for 3 years from the date on which the measurements were taken.

Potential worker exposure

21(1) If a worker may be exposed to a harmful substance at a work site, an employer must

- (a) identify the health hazards associated with the exposure and assess the worker's exposure, and
- (b) establish procedures that minimize the worker's exposure to the harmful substance.

21(2) The employer must ensure that a worker who may be exposed to a harmful substance at a work site

- (a) is informed of the health hazards associated with exposure to that substance,
- (b) is informed of measurements made of airborne concentrations of harmful substances at the work site,
- (c) is trained in procedures established by the employer under subsection (1)(b), and
- (d) uses the procedures appropriately.

21(3) A worker who is provided with training under subsection (2) must use the procedures appropriately and apply the training.

Worker overexposure

22(1) If a worker may be exposed to an airborne concentration that is more than the occupational exposure limit of a substance, the employer must conduct measurements of the concentrations of that substance at the work site.

22(2) If a worker is exposed to more than the occupational exposure limit of a substance, the employer must immediately

- (a) identify the cause of the overexposure,
- (b) protect the worker from any further exposure,

- (c) control the situation so that no other workers are exposed to the substance at airborne concentrations that are more than the occupational exposure limit, and
- (d) explain to the worker the nature and extent of the overexposure.

22(3) As soon as reasonably practicable, an employer must inform the joint health and safety committee or health and safety representative, if there is one, in writing that a worker has been exposed to more than the occupational exposure limit of a substance and of the steps taken to control the overexposure.

Worker decontamination

- 23** If a worker may be contaminated by a harmful substance at a work site, the employer must
- (a) provide the facilities, including showers, the worker needs to remove the contamination before the worker leaves the work site, and
 - (b) ensure that only those articles and clothing that have been properly decontaminated or cleaned are taken from the work site by the worker.

Emergency baths, showers, eye wash equipment

24 If a worker is present at a work site where chemicals harmful to the eyes or skin are used, the employer must ensure that the worker has immediate access at the work site to emergency baths, showers, eye wash equipment or other equipment appropriate for the potential level of exposure.

Prohibited activities

- 25(1)** An employer must ensure that workers do not eat, drink or smoke tobacco in a part of a work site contaminated by a harmful substance.
- 25(2)** A worker must not eat, drink or smoke tobacco in a part of a work site contaminated by a harmful substance.

Codes of practice

- 26(1)** An employer must have a code of practice governing the storage, handling, use and disposal of a substance listed in Schedule 1, Table 1 that is present at a work site
- (a) as pure substance in an amount exceeding 10 kilograms, or
 - (b) in a mixture in which the amount of the substance is more than 10 kilograms and at a concentration of 0.1 percent by weight or more.
- 26(2)** The code of practice must include measures to be used to prevent the uncontrolled release of the substance and the procedures to be followed if there is an uncontrolled release.

Storage of harmful substances

- 27** An employer must ensure that a harmful substance used or stored at a work site
- (a) is clearly identified, or its container is clearly identified, and

- (b) is used and stored in such a way that the use or storage is not a hazard to workers.

General provisions for asbestos, silica, coal dust and lead

28 An employer must

- (a) minimize the release of asbestos, silica, coal dust and lead into the air as far as is reasonably practicable,
- (b) keep the work site clear of unnecessary accumulations of asbestos, silica, coal dust and lead and waste materials containing any of these substances, and
- (c) ensure that the methods used to decontaminate the work area, workers, equipment and protective clothing prevent, as much as is reasonably practicable, the generation of airborne asbestos, silica, coal dust or lead.

Restricted area

29(1) An employer must ensure that only a person authorized by the employer or by law to do so enters a restricted area.

29(2) An employer must post signs that clearly indicate that

- (a) asbestos, silica, coal dust or lead are present in the area,
- (b) only authorized persons may enter the area, and
- (c) eating, drinking and smoking are prohibited in the area.

29(3) Signs posted under subsection (2) must

- (a) be in a conspicuous location at the entrances to and on the periphery of each restricted area, as appropriate, and
- (b) remain posted until the area is no longer a restricted area.

29(4) An employer must

- (a) provide workers in a restricted area with personal protective equipment used as protective clothing that protects other clothing worn by the worker from contamination by asbestos, silica, coal dust or lead,
- (b) ensure that workers' street clothing is not contaminated by asbestos, silica, coal dust or lead, and
- (c) ensure that a worker does not leave a restricted area until the worker has been decontaminated.

29(5) Subsection (4) does not apply in an emergency if the health or safety of a worker requires the worker to leave a restricted area without being decontaminated.

Protective clothing used in restricted areas containing asbestos or lead

30(1) If personal protective equipment used as protective clothing in a restricted area containing asbestos or lead is reused and not discarded, the employer must have the clothing laundered in the appropriate manner and at appropriate intervals to ensure

- (a) the clothing is decontaminated, and

(b) there is no cross-contamination of other clothing by asbestos or lead.

30(2) The employer must ensure that personal protective equipment used as protective clothing contaminated with asbestos or lead that is to be laundered before being reused is stored and transported in sealed containers.

30(3) Containers used in subsection (2) must be clearly labelled

- (a) to identify the contents,
- (b) to indicate that the contents are a hazard, and
- (c) to warn workers that dust from the contents should not be inhaled.

Release of asbestos

31(1) If it is determined that asbestos fibres may be released in a building, the building is in an unsafe condition.

31(2) The employer must take all necessary steps to correct the unsafe condition.

Prohibitions related to asbestos

32(1) A person must not use materials containing crocidolite asbestos in an existing or a new building.

32(2) A person must not apply materials containing asbestos by spraying them.

Asbestos in air distribution systems

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

Asbestos in a building to be demolished

34 If a building is to be demolished, the employer must ensure that materials with the potential to release asbestos fibres are removed first.

Encapsulation, enclosure or removal of asbestos

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

Notification of a project

36(1) An employer who is responsible for removing or abating asbestos or for demolishing or renovating a building or equipment containing asbestos must notify a Director of the activity at least 72 hours before beginning the activities that may release asbestos fibres.

36(2) A person must not remove or abate asbestos or demolish or renovate a building or equipment containing asbestos if a Director has not been notified in accordance with subsection (1).

Asbestos worker course

37(1) An employer must ensure that a worker who works with asbestos receives the training necessary for the worker to perform the work safely.

37(2) An employer must ensure that a worker who enters a restricted area that is designated as a restricted area due to the presence of asbestos

- (a) has successfully completed a course of instruction approved by a Director, and
- (b) has in the worker's possession the original valid certificate of completion of the course issued to the worker.

Containment and labelling of asbestos waste

38(1) An employer must ensure that asbestos waste is stored, transported and disposed of in sealed containers that are impervious to asbestos and asbestos waste.

38(2) An employer must ensure that a container of an asbestos product and asbestos waste is clearly labelled

- (a) to identify the contents as an asbestos product and carcinogenic, and
- (b) to warn handlers that dust from the contents should not be inhaled.

Use of crystalline silica in abrasive blasting

39(1) If conducting abrasive blasting, an employer must, where reasonably practicable, ensure that crystalline silica is replaced with a less harmful substance.

39(2) Repealed

Health assessments for workers exposed to asbestos, silica or coal dust

40(1) This section applies to an exposed worker who may be exposed to asbestos, silica or coal dust.

40(2) A health assessment of the worker must include the following:

- (a) the identity of the worker and the employer;
- (b) the date of the medical examination, chest x-ray and spirogram;
- (c) a 35 centimetres by 43 centimetres postero anterior view chest x-ray, including a radiologist's report;
- (d) a spirogram, conducted by a pulmonary function technician, including determinations of forced expiratory volume in the first, second and forced vital capacity;
- (e) a history covering
 - (i) occupational exposures to asbestos, silica, coal dust or other industrial dusts and carcinogens,
 - (ii) significant exposures to asbestos, silica, coal dust, other dust and carcinogens during non-work-related activities,
 - (iii) significant symptoms that may indicate silicosis, pneumoconiosis, asbestosis or cancer,

- (iv) past and current medical diagnoses of respiratory disease, and
 - (v) the worker's smoking history;
 - (f) a written interpretation and explanation of the results of the assessment by a physician, with particular reference to the worker's exposure to airborne substances.
- 40(3)** The physician must give the written interpretation and explanation of the results of the health assessment to the worker not more than 60 days after the tests are completed.
- 40(4)** The physician must ensure that the records of the health assessment are kept for not less than 30 years.
- 40(5)** The person with custody of the health assessment record must ensure that no person, other than the worker or health professional who conducts the health assessment, the staff supervised by the health professional or another person authorized by law to have access, has access to the exposed worker's health assessment unless
- (a) the record is in a form that does not identify the worker, or
 - (b) the worker gives written permission for access by another person.
- 40(6)** An employer must ensure that a worker undergoes a health assessment
- (a) not more than 30 calendar days after the worker becomes an exposed worker, and
 - (b) every 2 years after the first health assessment.
- 40(7)** If an exposed worker received a health assessment from a previous employer within the immediately preceding 2 years, the worker must inform the present employer of the date or approximate date of that health assessment at the earliest possible time.
- 40(8)** An employer must ensure that an exposed worker has received a health assessment within the immediately preceding 2 years.
- 40(9)** Despite subsections (7) and (8), exposed workers may refuse to undergo part or all of a health assessment by giving the employer a written statement refusing it.
- 40(10)** An employer must not coerce, threaten or force a worker into refusing part or all of a health assessment.
- 40(11)** An employer must pay the cost of the health assessment, medical interpretation and explanation required by this section.
- 40(12)** An employer must ensure that, if it is reasonably practicable, a health assessment is performed during normal hours of work.
- 40(13)** An employer must not make a deduction from the worker's wages, salary or other remuneration or benefits for the time during which an exposed worker
- (a) undergoes a health assessment, or
 - (b) travels to or from a health assessment.

Lead exposure control plan

- 41(1)** An employer must develop an exposure control plan for lead if

- (a) a worker at the work site may be exposed to airborne lead in excess of its occupational exposure limit for more than 30 days in a year, or
- (b) a worker's exposure to lead at the work site could result in an elevated body burden of lead through any route of entry.

41(2) The exposure control plan must include at least the following:

- (a) a statement of purpose and of the responsibilities of individuals;
- (b) methods of hazard identification, assessment and control;
- (c) worker education and training;
- (d) safe work practices if these are required by the hazard assessment under this Code;
- (e) descriptions of personal and work site hygiene practices and decontamination practices;
- (f) processes of health monitoring, including biological testing;
- (g) methods of documentation and record keeping;
- (h) procedures for maintenance of the plan, including annual reviews and updating.

41(3) A worker must follow the exposure control plan and practice the personal and work site hygiene practices established by the employer to minimize lead exposure at the work site.

Lead — air monitoring

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

Medical monitoring for lead

43(1) An employer must ensure blood lead level testing is available to a worker if the worker at a work site could reasonably be expected to have an elevated body burden of lead.

43(2) An employer must ensure that a worker exposed to lead is informed of the availability of the blood lead test.

43(3) The employer must pay the cost of a blood level test.

43(4) An exposed worker may refuse to undergo a blood level test by giving the employer a written statement refusing it.

43(5) An employer must not coerce, threaten or force a worker into refusing part or all of the test.

43(6) Where the worker has a blood level that indicates lead poisoning, an occupational health and safety officer, under the direction of a Director of Medical Services, may require the employer to remove the worker from further lead exposure.

Controlling mould exposure

43.1 Where mould exists or may exist, an employer must ensure that a worker's exposure to the mould is controlled in accordance with section 9.

Part 5 Confined Spaces

Code of practice

44(1) An employer must have a written code of practice governing the practices and procedures to be followed when workers enter and work in a confined space.

44(2) The code of practice must

- (a) take into account and apply the requirements of this Part and of section 169,
- (b) be maintained and periodically reviewed, and
- (c) identify all existing and potential confined space work locations at a work site.

44(3) A worker involved in any aspect of a confined space entry must comply with the requirements and procedures in the code of practice.

Hazard assessment

45 If a worker will enter a confined space or a restricted space to work, an employer must appoint a competent person to

- (a) identify and assess the hazards the worker is likely to be exposed to while in the confined space or restricted space,
- (b) specify the type and frequency of inspections and tests necessary to determine the likelihood of worker exposure to any of the identified hazards,
- (c) perform the inspections and tests specified,
- (d) specify the safety and personal protective equipment required to perform the work, and
- (e) identify the personal protective equipment and emergency equipment to be used by a worker who undertakes rescue operations in the event of an accident or other emergency.

Training

46(1) An employer must ensure that a worker assigned duties related to confined space or restricted space entry is trained by a competent person in

- (a) recognizing hazards associated with working in confined spaces or restricted spaces, and
- (b) performing the worker's duties in a safe and healthy manner.

46(2) An employer must keep records of the training given under subsection (1).

46(3) An employer must ensure that competence in the following is represented in the workers responding to a confined space or restricted space emergency:

- (a) first aid;
- (b) the use of appropriate emergency response equipment;
- (c) procedures appropriate to the confined space or restricted space.

Entry permit system

- 47(1)** A person must not enter a confined space at a work site without a valid entry permit.
- 47(2)** An employer must establish an entry permit system for a confined space that
- (a) lists the name of each worker who enters the confined space and the reason for the worker's entry,
 - (b) gives the location of the confined space,
 - (c) specifies the time during which an entry permit is valid,
 - (d) takes into account the work being done in the confined space, and
 - (e) takes into account the code of practice requirements for entering, being in and leaving a confined space.
- 47(3)** An employer must ensure that, before a worker enters a confined space, an entry permit is properly completed, signed by a competent person and a copy kept readily available.
- 47(4)** Based on a review of similar confined spaces, an employer may issue an entry permit that can be used for a number of similar confined spaces.

Safety and protection — generally

- 48(1)** An employer must ensure that
- (a) if a lifeline is required in a confined space or a restricted space, it is used in a manner that does not create an additional hazard,
 - (b) the safety and personal protective equipment required under this Code is available to workers entering a confined space or a restricted space,
 - (c) a worker who enters, occupies or leaves a confined space or restricted space uses the safety and personal protective equipment,
 - (d) the personal protective equipment and emergency equipment required under this Code is available to workers undertaking rescue operations in a confined space or restricted space,
 - (e) equipment appropriate to the confined space or restricted space, including personal protective equipment, is available to perform a timely rescue, and
 - (f) a communication system is established that is readily available to workers in a confined space or a restricted space and is appropriate to the hazards.
- 48(2)** An employer must ensure that all personal protective equipment and emergency equipment required for use in a confined space or a restricted space is inspected by a competent person to ensure the equipment is in good working order before workers enter the confined space or the restricted space.
- 48(3)** An employer must ensure that written records of the inspections required by subsection (2) are retained as required by section 58.

Protection — hazardous substances and energy

- 49(1)** An employer must ensure that workers within a confined space are protected against the release of hazardous substances or energy that could harm them.

49(2) An employer must ensure that a worker does not enter a confined space unless adequate precautions are in place to protect a worker from drowning, engulfment or entrapment.

49(3) An employer must ensure that any hazardous energy in a restricted space is controlled in accordance with Part 15.

Unauthorized entry

50 An employer must ensure that persons who are not authorized by the employer to enter a confined space or a restricted space are prevented from entering.

Traffic hazards

51 An employer must ensure that workers in a confined space or a restricted space are protected from hazards created by traffic in the vicinity of the confined space or restricted space.

Testing the atmosphere

52(1) Before a worker enters a confined space, an employer must ensure that the atmosphere in the confined space is tested by a competent worker to

- (a) verify that the oxygen content is between 19.5 percent and 23.0 percent by volume, and
- (b) identify the amount of toxic, flammable or explosive substance that may be present.

52(2) The employer must ensure that the testing required by subsection (1) is performed using calibrated test instruments appropriate for the atmosphere being tested and the instruments are used in accordance with the manufacturer's specifications.

52(3) The employer must ensure that as often as necessary after the first time a worker enters the confined space, a competent worker

- (a) performs the tests specified in subsection (1), and
- (b) identifies and records any additional hazards.

52(3.1) The employer must ensure that if there is a potential for the atmosphere to change unpredictably after a worker enters the confined space, the atmosphere is continuously monitored in accordance with subsection (2).

52(4) If tests identify additional hazards, the employer must deal with the identified hazards in accordance with this Code.

52(5) The employer must ensure that the procedures and practices put in place under subsection (4) are included in the code of practice.

52(6) The employer must ensure that the results of tests required by this section are recorded.

AR 191/2021 s52;242/2022

Ventilation and purging

53(1) If the atmospheric testing under section 52 identifies that a hazardous atmosphere exists or is likely to exist in a confined space, an employer must ensure that the confined space is ventilated, purged or both before a worker enters the confined space.

53(2) If ventilating or purging a confined space is impractical or ineffective in eliminating a hazardous atmosphere, the employer must ensure that a worker who enters the confined space uses personal protective equipment appropriate for the conditions within the confined space.

53(3) If mechanical ventilation is needed to maintain a safe atmosphere in a confined space during the work process, an employer must ensure it is provided and operated as needed.

53(4) If mechanical ventilation is required to maintain a safe atmosphere in the confined space, the employer must ensure that

- (a) the ventilation system incorporates a method of alerting workers to a failure of the system so that workers have sufficient time to safely leave the confined space, and
- (b) all workers within the confined space have received training in the evacuation procedures to be used in the event of a ventilation system failure.

53(5) All workers must evacuate a confined space or use an alternative means of protection if a ventilation system fails.

Inerting

54(1) An employer must ensure that a confined space is inerted if it is not reasonably practicable to eliminate an explosive or flammable atmosphere within the confined space through another means.

54(2) If a confined space is inerted, an employer must ensure that

- (a) every worker entering the confined space is equipped with supplied air respiratory protective equipment that complies with Part 18,
- (b) all ignition sources are controlled, and
- (c) the atmosphere within the confined space stays inerted while workers are inside.

Emergency response

55(1) An employer must ensure that a worker does not enter or remain in a confined space or a restricted space unless an effective rescue can be carried out.

55(2) A worker must not enter or stay in a confined space or restricted space unless an effective rescue can be carried out.

55(3) An employer must develop and implement emergency procedures to be followed if there is an emergency, including procedures to evacuate the confined space or restricted space immediately if the atmosphere inside the confined space or restricted space becomes or is becoming a hazard to workers.

AR 191/2021 s55;242/2022

Tending worker

56(1) For every confined space or restricted space entry, an employer must designate a competent worker as a tending worker to be in communication with a worker in the confined space or restricted space.

56(2) An employer must ensure that a tending worker

- (a) has a suitable system for summoning assistance, and

- (b) is trained in the evacuation procedures referred to in section 55(3) and the emergency response plan referred to in section 115(1).

56(3) An employer must ensure that, when a worker is present in a confined space, a tending worker is present outside the confined space at or near the entrance to the confined space, or at a remote monitoring station, if any of the following conditions are present or may be present in the confined space:

- (a) the oxygen content of the atmosphere is less than 19.5 percent by volume;
- (b) the oxygen content of the atmosphere is greater than 23.0 percent by volume;
- (c) the concentration of a substance listed in Schedule 1, Table 2 is greater than 50 percent of its occupational exposure limit;
- (d) a hazard other than one listed in clause (a), (b) or (c) is identified and the hazard cannot be eliminated or effectively controlled.

56(4) An employer must ensure that the tending worker under subsection (3)

- (a) keeps track at all times of the number of workers inside the confined space, and
- (b) is in constant communication with each worker inside the confined space.

56(5) The tending worker under subsection (3) must not leave the area outside the confined space or the remote monitoring station until all workers have left the confined space or another tending worker is in place.

56(6) If a remote monitoring station is used, an employer must ensure that the remote monitoring station

- (a) is physically located at the same work site as the confined space being monitored,
- (b) has a live visual display that allows the tending worker to have a clear, continuous and simultaneous view of
 - (i) the outside entrance area to the confined space, and
 - (ii) the inside of the confined space where a worker is or may be,
- (c) has a two-way continuous communication system that enables a tending worker to communicate with each worker inside the confined space,
- (d) has an emergency back-up power source in case of power loss, and
- (e) has a system for summoning assistance in the case of an emergency.

56(7) If a remote monitoring station is used, an employer must ensure that

- (a) a worker other than the tending worker is located outside of the confined space who
 - (i) can physically examine areas around the confined space,
 - (ii) has two-way continuous communication with the tending worker, and
 - (iii) assists the tending worker,

and

- (b) the monitoring equipment inside the confined space is not energized if a flammable substance or combustible substance is present in excess of 10 percent of the lower explosive limit for those substances, unless the equipment will not ignite a flammable substance or combustible substance.

AR 191/2021 s56;242/2022

Entry and exit

57 An employer must ensure that a safe means of entry and exit is available to all workers required to work in a confined space or a restricted space and to all rescue personnel attending to the workers.

Retaining records

58 An employer must ensure that all records respecting entry and work in a confined space, including entry permits and testing under this Part, are retained for not less than

- (a) one year if no incident or unplanned event occurred during the entry, or
- (b) 2 years if an incident or unplanned event occurred during the entry.

Part 6

Cranes, Hoists and Lifting Devices

General Requirements

Application

59(1) This Part applies to lifting devices, including cranes and hoists, with a rated load capacity of 2000 kilograms or more.

59(1.1) This Part does not apply to drawworks on equipment that is subject to Part 37.

59(2) Sections 60 to 74 apply to roofer's hoists regardless of their rated load capacity.

59(2.1) A hoist may only be used for vertical lifting or lowering if it complies with this Part and is designed and manufactured for vertical lifting or lowering.

59(3) Despite subsection (2), sections 63, 64(4) and 65 do not apply to roofer's hoists.

59(4) Despite subsection (1), an employer must ensure that a lifting device with a rated load capacity of less than 2000 kilograms has the rated load capacity of the equipment shown on the equipment.

Not commercially manufactured

60 If a lifting device is not commercially manufactured, an employer must ensure that it is fit and safe for use as a lifting device and that it is certified by a professional engineer.

Identification of components

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

Rated load capacity

62(1) An employer must ensure that a lifting device has a plate or weatherproof label permanently secured to it that legibly shows

- (a) the manufacturer's rated load capacity,
- (b) the manufacturer's name, and
- (c) the model, serial number and year of manufacture or shipment date.

62(1.1) Repealed.

62(2) If a lifting device is not commercially manufactured, an employer must ensure that it has a plate or weatherproof label permanently secured to it that legibly shows the rated load capacity according to the professional engineer's certification.

62(3) Subsections (1) and (2) do not apply to A-frames and gin poles.

Load charts

- 63(1)** An employer must ensure that a mobile crane or boom truck is equipped at all times with load charts showing the rated load capacity of the mobile crane or boom truck at all permitted boom angles and boom radii.
- 63(2)** An employer must ensure that a tower crane has a load chart
- (a) conspicuously and permanently secured to the cab, and
 - (b) showing the manufacturer's rated capacity loads at various radii of a 2-part line and a 4-part line separately.

Operator requirements

- 64(1)** An employer must ensure that a lifting device is only operated by a competent worker authorized by the employer to operate the equipment.
- 64(2)** At the employer's request, an operator, before operating a lifting device, must be able to demonstrate that the worker is competent in the equipment's operation and knowledgeable about load charts and the code of signals for hoisting operations.
- 64(3)** No worker other than the competent worker authorized by the employer may operate a lifting device.
- 64(4)** Before operating a particular lifting device, the operator must be familiar with all recent entries in its log book.

Log books

- 65(1)** An employer must set up a paper or electronic log book for each lifting device at a work site.
- 65(1.1)** Despite subsection (1), the log book requirement does not apply to manually operated hoists.
- 65(2)** The employer must ensure that
- (a) the log book is readily available for inspection by an officer at any time,
 - (b) the most current log book of a mobile crane accompanies it or is available to the operator at all times, and
 - (c) if ownership of a lifting device is transferred, the log book is transferred with the equipment.
- 65(3)** The employer must ensure that the following details are entered into the log book:
- (a) the date and time when any work was performed on the lifting device;
 - (b) the length of time in lifting service
 - (i) recorded as hours of service if the lifting device is equipped by the manufacturer with an hour meter, or
 - (ii) if required by the manufacturer's specifications;
 - (c) all defects or deficiencies and when they were detected;
 - (d) inspections, including examinations, checks and tests, that are performed, including those specified in the manufacturer's specifications;

- (e) repairs or modifications performed;
- (f) a record of a certification under section 73;
- (g) any matter or incident that may affect the safe operation of the lifting device;
- (h) any other operational information specifically identified by the employer;
- (i) in the case of a tower crane, whether or not the weight testing device was lifted for that working day, before the work of lifting loads began.

65(4) The employer must ensure that each entry in a paper log book is signed by the person doing the work.

65(5) The employer must ensure that each entry in an electronic log book identifies the person doing the work.

65(6) In the case of a tower crane, the employer must ensure that a senior representative of the employer at the work site confirms that the entries in the log book are correct every day that the tower crane is in operation.

Preventing an unsafe lift

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

Preventing collisions

67 An employer must ensure that procedures are developed to prevent collisions if 2 or more lifting devices are in use and there is the potential for a collision between them, their loads or component parts.

Load weight

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

Lift calculation

68.1 An employer must ensure that a lift calculation is completed for any lift exceeding 75 percent of a crane's rated capacity.

Loads over work areas

69(1) An employer must ensure that work is arranged, if it is reasonably practicable, so that a load does not pass over workers.

69(2) An operator of a lifting device must not pass the load on the device over workers unless

- (a) no other practical alternative exists in the circumstances, and

(b) the workers are effectively warned of the danger.

69(3) A worker must not stand or pass under a suspended load unless the worker has been effectively warned of the danger and the operator of the lifting device knows the worker is under the suspended load.

69(4) The operator of a lifting device that is travelling with a load must ensure that the load is positioned as close to the ground or grade as possible.

Tag and hoisting lines

70(1) If workers are in danger because of the movement of a load being lifted, lowered or moved by a lifting device, an employer must ensure that

- (a) a worker uses a tag line of sufficient length to control the load,
- (b) the tag line is used in a way that prevents the load from striking the worker controlling the tag line, and
- (c) a tag line is used when it allows worker separation from the load.

70(2) An employer must ensure that tag lines of non-conductive synthetic rope are used when there is a danger of contact with energized electrical equipment.

70(3) An employer must ensure that tag lines are not used in situations where their use could increase the danger to workers.

Hand signals

71 An employer must ensure that hand signals necessary to ensure a safe hoisting operation are given in accordance with section 191 by a competent signaller designated by the employer.

Controls

72(1) Moved to section 95.1

72(2) Repealed.

72(3) The employer must ensure that an operator who uses a remote control to operate a lifting device is visually distinguishable from other workers at the work site.

Repairs and modifications

73(1) An employer must ensure that structural repairs or modifications to components of a lifting device are

- (a) made only under the direction and control of a professional engineer, and
- (b) certified by the professional engineer to confirm that the workmanship and quality of materials used has restored the components to not less than their original capacity.

73(2) If structural repairs or modifications are made, the employer must ensure that

- (a) the repaired or modified components are individually and uniquely identified in the log book and on the component, and

- (b) the professional engineer's certification makes reference to those components and their identification.

Containers for hoisting

74(1) An employer must ensure that a container used for a load being lifted by a hoist is designed for that particular purpose and bears a marking to indicate its maximum load rating.

74(2) A person must not use an oil drum or similar container as a container for a load being lifted by a hoist unless the drum or container is hoisted in a cage designed for that purpose.

A-Frames and gin poles

75 An employer must ensure that an A-frame or gin pole

- (a) is not inclined more than 45 degrees from the vertical,
- (b) is equipped with a boom stop, and
- (c) has the sheave and cap of its rigging attached securely enough to the gin pole to withstand any loads to which the assembly may be subjected.

Suspended personnel baskets

75.1(1) An employer must ensure that

- (a) a commercially manufactured suspended personnel basket is erected, used, operated and maintained in accordance with the manufacturer's specifications or specifications certified by a professional engineer, or
- (b) a suspended personnel basket that is not commercially manufactured is designed and certified by a professional engineer.

75.1(2) Despite section 147, if it is not practicable to provide a separate personal fall arrest system using a vertical lifeline for each worker in the man basket, an employer must ensure that

- (a) a separate support is attached between the suspended personnel basket and the hoist line above the hook assembly that is capable of withstanding the weight of the personnel basket, materials, equipment and workers should the hook assembly fail, and
- (b) each worker within the personnel basket is wearing a separate personal fall arrest system attached to the personnel basket.

Cantilever Hoists

Installation and use

76 An employer must ensure that a cantilever hoist

- (a) is anchored to a building or structure at distance intervals that meet the manufacturer's specifications or specifications certified by a professional engineer,
- (b) has a foundation that is solid, level and of a size and strength capable of supporting the weight of the hoist and its loads under all working conditions, and

- (c) carries loads that do not project beyond the edges of the material landing platform or the skip of the hoist.

Chimney Hoists

Equipment requirements

- 77** An employer must ensure that a chimney hoist
- (a) is equipped with positive drives,
 - (b) does not have a clutch between the transmission and the hoist drums,
 - (c) is equipped with a speed indicating device if the hoist is capable of operating at speeds of more than 0.6 metres per second,
 - (d) is equipped with at least 2 independent braking systems, each capable of stopping 150 percent of the manufacturer's rated capacity load at the manufacturer's rated capacity maximum speed,
 - (e) has a roller or ball bearing swivel installed between the bucket and the rope on the hoist,
 - (f) is equipped with a communication system that informs the operator when the hoist is to be used to lift or lower workers, and
 - (g) has a separate safety line attached between the bucket or man basket yoke and the hoist rope above the ball or hook.

Operator responsibilities

- 78(1)** An operator of a chimney hoist must not
- (a) lift or lower a worker at a speed of more than 0.6 metres per second,
 - (b) use the brake alone to control the speed of the chimney hoist when a worker is being lowered,
 - (c) lift or lower more than 2 workers at the same time, or
 - (d) lift or lower materials or equipment at the same time as a worker.
- 78(2)** An operator of a chimney hoist must use safety latch hooks or shackles equipped with safety pins.

Worker in lifting device

- 79** An employer must ensure that a worker who is lifted or lowered by a chimney hoist uses a personnel basket.

Hand-Operated Hoists

Holding suspended load

- 80** An employer must ensure that a hand-operated hoist is provided with a device capable of holding the total load suspended safely under all operating conditions.

Material Hoists

Safety code for material hoists

81 A material hoist must meet the requirements of CSA Standard CAN/CSA Z256-M87 (R2006), *Safety Code for Material Hoists*.

Rider restriction

82(1) A person must not ride on a material hoist.

82(2) An employer must ensure that a worker does not ride on a material hoist.

Gate interlocks

83 An employer must ensure that a material hoist is equipped at each floor or level with devices that prevent

- (a) a landing gate from being opened unless the hoist platform is positioned at that landing, or
- (b) movement of the hoist platform when a landing gate is open.

Operator responsibilities

84 A material hoist operator must not

- (a) leave the hoist controls unattended while the skip, platform or load is in the lifted position, or
- (b) move the skip, platform or cage until the operator is informed by a designated signaller that it is safe to do so.

Signal systems

85(1) An employer must ensure that

- (a) if a signal system is used to control the movement of a material hoist, the signal descriptions are posted at each floor or level and at the operator's station,
- (b) the operator of a material hoist, and a designated signaller at the floor or level where loading and unloading is being performed, maintain visual or auditory communication with each other at all times during loading and unloading, and
- (c) if an electrical or mechanical signal system has been installed to coordinate the movement of the hoist's skip, platform or cage, the system is arranged so that the hoist operator knows from which floor or level a signal originates.

85(2) An employer must ensure that a material hoist erected at a building that is more than 20 metres high has a signal system that

- (a) is installed at each floor or level and at the operator's station,
- (b) is designed to allow voice communication between a worker at any floor or level and the operator, and
- (c) informs the operator from which floor or level the signal originates.

Hoist brakes

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

Location protected

87 An employer must ensure that

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

Mobile Cranes and Boom Trucks

Safety code for mobile cranes

88 A mobile crane must meet the requirements of CSA Standard CAN/CSA Z150-98 (R2004), *Safety Code on Mobile Cranes* with the exception of clauses 1.6 and 1.7.

Personnel baskets

88.1 Despite section 88, an employer must ensure that

- (a) a personnel basket used with a mobile crane is designed, constructed, maintained and used in accordance with CSA Standard CAN/CSA Z150-98 (R2004), *Safety Code on Mobile Cranes*, clause 5.4.7, or
- (b) a personnel basket that is not commercially manufactured is designed and certified by a professional engineer.

Non-destructive testing

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

Counterweights and outriggers

90 If outriggers are installed on a mobile crane or boom truck, the employer must ensure the outriggers are extended and supported by solid footings before being used.

Warning device

91 An employer must ensure that a mobile crane is equipped with an effective warning device in addition to the one required by section 267, that

- (a) is readily accessible to the operator,
- (b) is sufficient to warn workers of the impending movement of the crane, and
- (c) if it is an auditory warning device, has a distinct sound that is distinguishable from all other sounds at the work site.

Preventing damage

92(1) If a boom is fitted on a mobile crane or boom truck and the crane or truck may overturn or flip backwards because of the return movement of the boom, an employer must ensure that

- (a) positive boom stops are installed in the crane or truck in accordance with the manufacturer's specifications, and
- (b) a boom stop limit device is installed to prevent the boom from being drawn back beyond a predetermined safe boom angle.

92(2) If a jib is attached to the boom of a mobile crane or boom truck, an employer must ensure that a jib stop device is installed in the crane or truck to prevent the jib from being drawn back over the boom.

92(3) An employer must ensure that blocking procedures are developed to prevent the collapse or upset of any part of a derrick, mast or boom during the installation, removal or replacement of a derrick or the mast or boom section of a mobile crane or boom truck.

Load blocks

92.1 Despite section 88, an employer must ensure that the load blocks of a mobile crane are maintained and repaired in accordance with the manufacturer's specifications or, if there are no manufacturer's specifications, in accordance with CSA Standard CAN/CSA Z150-98 (R2004), *Safety Code on Mobile Cranes*, clause 4.3.5.2.

Outriggers

92.2 Despite section 88, an employer must ensure that a mobile crane equipped with outriggers is set up with the outriggers on load bearing floats or pads that are of adequate size, strength and rigidity.

Overhead Cranes

Electrical components and functions

93 A bridge, jib, monorail, gantry or overhead travelling crane must meet the design requirements for electrical components and functions of

- (a) CSA Standard C22.1-06, *Canadian Electrical Code*, Part 1, Section 40, and
- (b) CSA Standard C22.2 No. 33-M1984 (R2004), *Construction and Test of Electric Cranes and Hoists*.

Maintenance and inspection

94 A bridge, jib, monorail, gantry or overhead travelling crane must meet the safety requirements of CSA Standard CAN/CSA B167-96 (R2007), *Safety Standard for Maintenance and Inspection of Overhead Cranes, Gantry Cranes, Monorails, Hoists and Trolleys*.

Safe movement

- 95** An employer must ensure that a crane operating on rails, tracks or trolleys
- (a) has a positive stop or limiting device on the crane or on the rails, tracks or trolleys to prevent it from overrunning safe limits or contacting other equipment that is on the same rail, track or trolley,
 - (b) is equipped with an overspeed limiting device,
 - (c) has positive means of ensuring that the rails, tracks or trolleys cannot be spread or misalign,
 - (d) has sweep guards installed to prevent material on the rail, track or trolley from dislodging the crane, and
 - (e) has a bed designed to carry all anticipated loads.

Controls

95.1 An employer must ensure that the controls of an overhead crane are of a constant manual pressure type.

Personnel Hoists

Safety code for personnel hoists

96 Except for a personnel hoist used in a mine, a personnel hoist must meet the requirements of CSA Standard CAN/CSA Z185-M87 (R2006), *Safety Code for Personnel Hoists*.

Roofer's Hoists

Safe use and design

- 97(1)** An employer must ensure that a roofer's hoist has counterweights
- (a) designed as a component part of the hoist to remain securely attached to the hoist until all lifting is completed, and
 - (b) heavy enough to counterbalance 4 times the maximum weight of the load being lifted.
- 97(2)** A person must not use roofing materials as a counterweight.
- 97(3)** An employer must ensure that a roofer's hoist is inspected at reasonably practicable intervals by a competent worker designated by the employer.
- 97(4)** An employer must ensure that bolts and pins used to interconnect component parts of a roofer's hoist are equipped with safety pins that prevent them from being dislodged.
- 97(5)** A worker must
- (a) use a roofer's hoist only for vertical lifting, and

(b) not exceed the design load limits of the roofer's hoist.

97(6) An employer must ensure that a gallows frame roofer's hoist is constructed of lumber sized as follows, or of material that has the same or greater properties as the lumber used for the same function:

- (a) thrustout — 38 millimetres by 184 millimetres lumber;
- (b) uprights — 90 millimetres by 90 millimetres lumber;
- (c) braces and base plates — 38 millimetres by 140 millimetres.

97(7) An employer must ensure that a gallows frame roofer's hoist

- (a) has a hoisting line with a breaking strength of not less than 25 kilonewtons,
- (b) has thrustouts placed on their edge that do not overhang more than 1/4 of their length, and
- (c) has sheaves securely attached to the thrustouts without using single-strand wire or nails.

AR 191/2021 s97;242/2022

Tower and Building Shaft Hoists

Protective enclosure

98 An employer must ensure that

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

Design

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

Tower Cranes

Safety code for tower cranes

100 A tower crane manufactured on or after July 1, 2009 must meet the requirements of CSA Standard Z248-04, *Code for Tower Cranes*.

Limit devices

101(1) An employer must ensure that a tower crane is equipped with

- (a) an overload device consisting of a hoist overload switch that automatically restricts the weight of the load,
- (b) a travel limit device consisting of a moment overload switch that automatically restricts the radius within which the load can travel,
- (c) a height limit switch that prevents the load from being overwound, and
- (d) trolley travel limit devices consisting of a “trolley in” limit switch and a “trolley out” limit switch that prevent the trolley from running to the end of its track and falling off.

101(2) An employer must ensure that the devices described in subsection (1) are adjusted and set in accordance with the manufacturer’s specifications and have their limit switches sealed.

Operation

102 An operator of a tower crane must

- (a) ensure the safe movement of the crane and its load at all times,
- (b) verify at the beginning of each work shift that the mast is plumb, and
- (c) verify at least once in each 24-hour period that the limit devices described in section 101 are operational.

Changing components

103(1) An employer must ensure that the major structural, mechanical and electrical components of a tower crane are not interchanged with those of other tower cranes unless

- (a) the components are from the same make or model of tower crane,
- (b) the components are approved by the manufacturer as suitable for their intended application, or
- (c) the components are certified by a professional engineer as suitable for their intended application.

103(2) An employer must ensure that if an operator’s cab is attached to the boom of a tower crane, the design of the cab, its position, method of attachment and any structural changes, including changes to the counterweight, capacity and operation of the crane, are in accordance with the manufacturer’s specifications or are certified by a professional engineer.

Test weights

104(1) An employer must ensure that if weights are used as a weight-testing device on a tower crane,

- (a) the true weight of the test weight is determined and legibly recorded on the weight, and
- (b) when not in use, the test weights rest on supports to prevent the weights from freezing to the ground or creating a vacuum when lifted.

104(2) The employer must ensure that the lifting attachment on a test weight is made of mild steel and of sufficient size and strength to support the weight.

Structural testing and examination

105(1) An employer must ensure that all structural and rigging components of a tower crane undergo non-destructive testing under the direction and control of a professional engineer in accordance with the manufacturer's specifications

- (a) as close as reasonably practicable to the project site,
- (b) before the crane is used for the first time in a project in Alberta, and
- (c) if the crane is moved from project to project, before it is used after the move.

105(2) If a tower crane is in operation on a project for more than one year from the date on which the crane starts operating, the employer must ensure its structural components are examined under the direction and control of a professional engineer after each period of 2000 operating hours or 12 months after the date on which it starts operating, whichever occurs first.

105(3) The employer must ensure that the results of the testing or examination required by subsections (1) and (2) are certified by a professional engineer in a report that clearly identifies the crane and the components to which the information relates.

Wind and temperature limitations

106(1) An employer must ensure that operation of a tower crane is stopped when the wind velocity at the elevation of the crane exceeds the limit recommended in the manufacturer's specifications or, if there are none, in specifications certified by a professional engineer.

106(2) An employer must ensure that operation of a tower crane is stopped when the temperature in the vicinity of the crane is below the limit recommended in the manufacturer's specifications or, if there are none, in specifications certified by a professional engineer.

Multiple cranes

107 If 2 or more tower cranes are erected in such a manner that the radii of operations overlap,

- (a) the employer must ensure that operators are provided with a visual or auditory means of communicating with each other,
- (b) the operators must be able to communicate with each other when both cranes are in operation, and
- (c) the operators must operate the cranes in such a manner that there are no collisions between the cranes or their loads.

Underground Shaft Hoists

Safety requirements

108(1) An employer must ensure that an underground shaft hoist complies with the following:

- (a) all supporting parts of the hoist machinery are set on and secured to a substantial foundation;
- (b) it is equipped with positive drives for lifting and lowering the hoist cage;
- (c) it does not have a clutch between the transmission and the hoist drums;

- (d) it has a hoist drum with a spring-activated drum friction brake capable of stopping and holding the total suspended load in a safe manner under all operating conditions;
- (e) it has a hoist drum equipped with a positive spring activated pawl or similar device to lock the drum.

108(2) An employer must ensure that an underground shaft hoist

- (a) has a communication system available and working at all times between the hoist operator and workers at landings in the shaft leading to a tunnel or an underground space, and
- (b) the controls of the communication system can be operated at all times at every landing in the shaft, on the hoist platform and at the operator's position.

108(3) An employer must ensure that in an emergency an additional means of communication is available and working at all times between the operator of a shaft hoist and workers at the face of the tunnelling operations.

108(4) An employer must ensure that, if a code is used in a communication system in an underground shaft hoist, the code is prominently posted at all times at every landing in the shaft and at the operator's controls.

Operator responsibilities

109(1) The operator of an underground hoist must

- (a) ensure that the brake remains on at all times until it is released manually,
- (b) hold the hoist drum brake in the "OFF" position when lifting or lowering the hoist cage, and
- (c) not lock out or otherwise disable the hoist drum brake when lifting or lowering the hoist cage.

109(2) The operator of an underground hoist must not allow the hoist to travel at more than 1.2 metres per second when a worker is lifted or lowered in the hoist cage.

Hoist cage

110(1) An employer must ensure that

- (a) a hoist cage platform is equipped with a car-locking device, and
- (b) the shaft on which an underground shaft hoist is installed is equipped with guide rails.

110(2) An employer must ensure that a hoist cage has a plate that

- (a) states the maximum number of workers and the maximum load for which the hoist cage is designed,
- (b) is secured to the hoist cage, and
- (c) is clearly visible to the workers in the cage and the operator.

110(3) A person must not use an open hook to attach a hoist cage to the hoisting line.

Unguided suspended cage

111(1) Despite sections 108 to 110, an employer may use a suspended cage that does not have guide rails in an underground shaft if

- (a) the movement of the cage is controlled by a crane,
- (b) all sides and the top of the cage are enclosed by a screen of sufficient strength to protect any workers being transported in it, and
- (c) a designated signaller at the surface has constant effective communication between the cage occupants and the crane operator.

111(2) If a cage referred to in subsection (1) is used in an underground shaft that is more than 30 metres deep, the employer must ensure that the cage is designed and certified by a professional engineer.

111(3) Section 347 does not apply to a cage referred to in subsection (1) or (2) when the cage is transporting workers.

Vehicle Hoists

Safety standards

112 An employer must ensure that a vehicle hoist installed on or after July 1, 2009 meets the requirements of the following:

- (a) ANSI Standard ANSI/ALI ALCTV-2006, *American National Standard for Automotive Lifts — Safety Requirements for Construction, Testing, and Validation*; or
- (b) ANSI Standard ANSI/ALI ALOIM-2000, *Automotive Lifts — Safety Requirements for Operation, Inspection and Maintenance*.

Safe use

113(1) An employer must ensure that a pneumatic or hydraulic vehicle hoist has controls operated by constant manual pressure.

113(2) An employer must ensure that the operator of a vehicle hoist

- (a) remains at the controls while the vehicle hoist is in motion, and
- (b) does not block the controls during raising and lowering.

113(3) A worker must not be under a suspended load unless the load is supported by

- (a) a vehicle hoist designed for that purpose, or
- (b) stands or blocks, other than jacks, that are designed, constructed and maintained to support the load and placed on firm foundations.

Winching Operations

Safe practices

114 An operator of a winch must ensure that, before vehicle-mounted winch lines are hooked or unhooked from an object, the vehicle is prevented from moving.

Part 7

Emergency Preparedness and Response

Emergency response plan

115(1) An employer must establish an emergency response plan for responding to an emergency that may require rescue or evacuation.

115(2) An employer must involve affected workers in establishing the emergency response plan.

115(3) An employer must ensure that an emergency response plan is current.

Contents of plan

116 An emergency response plan must include the following:

- (a) the identification of potential emergencies;
- (b) procedures for dealing with the identified emergencies;
- (c) the identification of, location of and operational procedures for emergency equipment and personal protective equipment;
- (d) the emergency response training requirements;
- (e) the location and use of emergency facilities;
- (f) the fire protection requirements;
- (g) the alarm and emergency communication requirements;
- (h) the first aid services required;
- (i) procedures for rescue and evacuation;
- (j) the designated rescue and evacuation workers.

Rescue and evacuation workers

117(1) An employer must designate the workers who will provide rescue services and supervise evacuation procedures in an emergency.

117(2) An employer must ensure that designated rescue and emergency workers are trained in emergency response appropriate to the work site and the potential emergencies identified in the emergency response plan.

117(3) The training under subsection (2) must include exercises appropriate to the work site that simulate the potential emergencies identified in the emergency response plan.

117(4) The training exercises referred to in subsection (3) must be repeated at the intervals required to ensure that the designated rescue and evacuation workers are competent to carry out their duties.

Equipment

118(1) An employer must provide workers designated under section 117 with equipment and personal protective equipment appropriate to the work site and the potential emergencies identified in the emergency response plan.

118(2) Workers who respond to an emergency must wear and use equipment and personal protective equipment appropriate to the work site and the emergency.

Part 8 Entrances, Walkways, Stairways and Ladders

Entrances, Walkways, Stairways

Safe entry and exit

119(1) An employer must ensure that every worker can enter a work area safely and leave a work area safely at all times.

119(2) An employer must ensure that a work area's entrances and exits are in good working order.

119(3) An employer must ensure that a work area's entrances and exits are free from materials, equipment, accumulations of waste or other obstructions that might endanger workers or restrict their movement.

119(4) An employer must ensure that, if a worker could be isolated from a primary escape route,

- (a) there is a ready, convenient and safe secondary means of escape from the work area, and
- (b) the secondary escape route is readily useable at all times.

119(5) An employer must ensure that all workers are familiar with escape routes from the work area.

Doors

120(1) An employer must ensure that doors to and from a work area can be opened without substantial effort and are not obstructed.

120(2) An employer must ensure that a door used to enter or leave an enclosed area that poses a hazard to workers entering the area

- (a) is kept in good working order, and
- (b) has a means of opening it from the inside at all times.

Walkways, runways and ramps

121(1) An employer must ensure that a walkway, runway or ramp

- (a) is strong enough to support the equipment and workers who may use it,
- (b) is at least 600 millimetres wide,
- (c) is wide enough to ensure the safe movement of equipment and workers, and
- (d) has the appropriate toe boards and guardrails required by Part 22.

121(2) An employer must ensure that the surface of a walkway, runway or ramp has sufficient traction to allow workers to move on it safely.

121(3) Repealed.

Stairways

122(1) An employer must ensure that

- (a) the width of the treads and the height of the rise of a stairway are uniform throughout its length, and
- (b) the treads of a stairway are level.

122(2) An employer must ensure that

- (a) a stairway with 5 or more risers has the appropriate handrail required by this Code, and
- (b) a stairway with open sides has a handrail and an intermediate rail or equivalent safeguard on each open side.

122(3) An employer must ensure that temporary stairs are at least 600 millimetres wide.

122(4) Repealed.

Handrails on stairways

123(1) This section applies to stairways with 5 or more risers.

123(2) An employer must ensure that a stairway is equipped with a handrail that

- (a) extends the entire length of the stairway,
- (b) is secured and cannot be dislodged,
- (c) is between 800 millimetres and 920 millimetres above the front edge of the treads, and
- (d) is substantial and constructed of lumber that is not less than 38 millimetres by 89 millimetres or material with properties the same as or better than those of lumber.

123(3) An employer must ensure that posts supporting a handrail

- (a) are spaced not more than 3 metres apart at their vertical centres, and
- (b) are constructed of lumber that is not less than 38 millimetres by 89 millimetres or materials with properties the same as or better than those of lumber.

123(4) Repealed.

Ladders — General

Restriction on use

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

Prohibition on single rail

125 A person must not make a ladder by fastening cleats across a single rail or post.

Prohibition on painting

126(1) Subject to subsection (2), a person must not paint a wooden ladder.

126(2) A wooden ladder may be preserved with a transparent protective coating.

Use near energized electrical equipment

127 An employer must ensure that a ladder used during the servicing of energized or potentially energized electrical equipment is made of non-conductive material.

Ladders on extending booms

128(1) An employer must ensure that

- (a) if a ladder is a permanent part of an extending boom on powered mobile equipment, no worker is on the ladder during the articulation, extension or retraction of the boom, and
- (b) if outriggers are incorporated in the equipment to provide stability, no worker climbs the ladder until the outriggers are deployed.

128(2) Subsection (1)(a) does not apply to professional firefighters working on fire-fighting equipment.

Crawl Board or Roof Ladder

Safe use

129 An employer must ensure that a crawl board or roof ladder used for roof work

- (a) is securely fastened by hooking the board or ladder over the ridge of the roof or by another equally effective means, and
- (b) is not supported by an eavestrough.

Fixed Ladders

Design criteria

130(1) An employer must ensure that a fixed ladder installed on or after April 30, 2004 meets the requirements of PIP Standard STF05501 (February 2002), *Fixed Ladders and Cages*, published by the Construction Industry Institute.

130(2) Despite the standards referenced in PIP Standard STF05501, an employer may

- (a) use applicable Canadian material and process standards if the employer ensures that the fixed ladder is designed and installed in accordance with established engineering principles, and
- (b) allow the inside diameter of a cage hoop to be as great as 760 millimetres.

130(3) If a fixed ladder is made of a material other than steel, the employer must ensure that the design is certified by a professional engineer as being as strong as or stronger than that required by PIP Standard STF05501.

130(4) The employer must ensure that a self-closing double bar safety gate, or equally effective barrier, is provided at ladderway floor openings and platforms of fixed ladders installed on or after April 30, 2004.

130(5) Subsection (4) does not apply at landings.

130(6) Section 327 applies to an access ladder attached to a scaffold.

130(7) Repealed.

Fixed ladders in manholes

131 Despite section 130, fixed ladders used in pre-cast reinforced concrete manhole sections installed on or after July 1, 2009 must meet the requirements of ASTM Standard C478-07, *Standard Specification for Reinforced Concrete Manhole Sections*.

Rest platform exemption

132 If each worker working on a drilling rig or service rig on a fixed ladder is equipped with and wears a climb assist device that complies with the manufacturer's specifications or specifications certified by a professional engineer, an employer is not required to

- (a) provide the ladder with rest platforms, or
- (b) have the side rails extend not less than 1050 millimetres above the point at which the workers get on or off.

Portable Ladders

Prohibition

133(1) A worker must not perform work from either of the top 2 rungs, steps or cleats of a portable ladder unless the manufacturer's specifications allow the worker to do so.

133(2) Despite subsection (1), a worker may work from either of the top 2 rungs, steps or treads of a stepladder,

- (a) if the stepladder has a railed platform at the top, or
- (b) if the manufacturer's specifications for the stepladder permit it.

Constructed portable ladder

134(1) An employer must ensure that a constructed portable ladder

- (a) is constructed of lumber that is free of loose knots or knot holes,
- (b) with a length of 5 metres or less has side rails constructed of lumber measuring not less than 38 millimetres by 89 millimetres,
- (c) more than 5 metres long has side rails constructed of lumber measuring not less than 38 millimetres by 140 millimetres,
- (d) has side rails that are not notched, dapped, tapered or spliced,
- (e) has side rails at least 500 millimetres apart at the bottom, and
- (f) has rungs that are
 - (i) constructed of lumber measuring not less than 21 millimetres by 89 millimetres,
 - (ii) held by filler blocks or secured by a single continuous wire, and
 - (iii) uniformly spaced at a centre-to-centre distance of 250 millimetres to 300 millimetres.

134(2) An employer must ensure that a two-way constructed portable ladder that is wide enough to permit traffic in both directions at the same time,

- (a) has a centre structural rail along the length of the ladder,
- (b) is at least 1 metre wide, and
- (c) is constructed of materials that are substantial enough in size to accommodate the maximum intended load.

Manufactured portable ladder

135 An employer must ensure that a portable ladder manufactured on or after July 1, 2009 meets the requirements of

- (a) CSA Standard CAN3 Z11-M81 (R2005), *Portable Ladders*,
- (b) ANSI Standard A14.1-2007, *American National Standard for Ladders — Wood Safety Requirements*,
- (c) ANSI Standard A14.2-2007, *American National Standard for Ladders — Portable Metal — Safety Requirements*, or
- (d) ANSI Standard A14.5-2007, *American National Standard for Ladders — Portable Reinforced Plastic — Safety Requirements*.

Securing and positioning

136 A worker must ensure that

- (a) a portable ladder is secured against movement and placed on a base that is stable,
- (b) the base of an inclined portable ladder is no further from the base of the wall or structure than 1/4 of the distance between the base of the ladder and the place where the ladder contacts the wall, and
- (c) the side rails of a portable ladder extend at least 1 metre above a platform, landing or parapet if the ladder is used as a means of access to the platform, landing or parapet.

Fall protection

137(1) An employer must ensure that a worker working from a portable ladder from which the worker may fall 3 metres or more uses a personal fall arrest system.

137(2) Subsection (1) does not apply while the worker is moving up or down the portable ladder.

137(3) Despite subsection (1), if it is not reasonably practical to use a personal fall arrest system, a worker may work from a portable ladder without fall protection if

- (a) the work is a light duty task of short duration at each location,
- (b) the worker's centre of balance is at the centre of the ladder at all times even with an arm extended beyond the side rails of the ladder, and
- (c) the worker maintains 3-point contact whenever the worker extends an arm beyond a side rail.

Part 9

Fall Protection

Rescue personnel exemption

138 Rescue personnel involved in training or in providing emergency rescue services may use equipment, personal protective equipment and practices other than those specified in this Part.

General protection

139(1) An employer and a supervisor must ensure that a worker is protected from falling if a worker may fall,

- (a) at a temporary or permanent work area, a vertical distance of 3 metres or more,
- (b) at a temporary or permanent work area, a vertical distance of less than 3 metres if there is an unusual possibility of injury,
- (c) at a temporary or permanent work area, into or onto a hazardous substance or object, or through an opening in a work surface, or
- (d) at a permanent work area, a vertical distance of more than 1.2 metres and less than 3 metres.

139(2) For the purposes of this section, there is an unusual possibility of injury if the injury may be worse than an injury from landing on a solid, flat surface.

139(3) Subject to subsection (5), an employer must install a guardrail.

139(4) Repealed.

139(5) Subject to subsection (6), if the use of a guardrail is not reasonably practicable, an employer and a supervisor must ensure that a worker uses a travel restraint system that meets the requirements of this Part.

139(6) Subject to subsection (7), if the use of a travel restraint system is not reasonably practicable, an employer and a supervisor must ensure that a worker uses a personal fall arrest system that meets the requirements of this Part.

139(7) If the use of a personal fall arrest system is not reasonably practicable, an employer and a supervisor must ensure that a worker uses equally effective controls.

139(8) A worker must use a fall protection system as required by this section.

Fall protection plan

140(1) An employer must develop procedures that comply with this Part in a fall protection plan for a work site if a worker at the work site may fall 3 metres or more and the worker is not protected by guardrails.

140(2) A fall protection plan must specify

- (a) the fall hazards at the work site,
- (b) the fall protection system to be used at the work site,
- (c) the anchors to be used during the work,

- (d) that clearance distances below the work area, if applicable, have been confirmed as sufficient to prevent a worker from striking the ground or an object or level below the work area,
- (e) the procedures used to assemble, maintain, inspect, use and disassemble the fall protection system, where applicable, and
- (f) the rescue procedures to be used if a worker falls and is suspended by a personal fall arrest system or safety net and needs to be rescued.

140(3) The employer must ensure that the fall protection plan is available at the work site and is reviewed with workers before work with a risk of falling begins.

140(4) The employer must ensure that the plan is updated when conditions affecting fall protection change.

Instruction of workers

141(1) An employer must ensure that a worker is trained in the safe use of the fall protection system before allowing the worker to work in an area where a fall protection system must be used.

141(2) The training referred to in subsection (1) must include the following:

- (a) a review of current Alberta legislation pertaining to fall protection;
- (b) an understanding of what a fall protection plan is;
- (c) fall protection methods a worker is required to use at a work site;
- (d) identification of fall hazards;
- (e) assessment and selection of specific anchors that the worker may use;
- (f) instructions for the correct use of connecting hardware;
- (g) information about the effect of a fall on the human body, including
 - (i) maximum arresting force,
 - (ii) the purpose of shock and energy absorbers,
 - (iii) swing fall, and
 - (iv) free fall;
- (h) pre-use inspection;
- (i) emergency response procedures to be used at the work site, if necessary;
- (j) practice in
 - (i) inspecting, fitting, adjusting and connecting fall protection systems and components, and
 - (ii) emergency response procedures.

141(3) In addition to the training described in subsection (2), an employer must ensure that a worker is made aware of the fall hazards particular to that work site and the steps being taken to eliminate or control those hazards.

Full body harness

142(1) An employer must ensure that

- (a) a full body harness manufactured on or after March 31, 2023 is approved to
 - (i) CSA Standard Z259.10-18, *Full body harnesses*,
 - (ii) ANSI/ASSE Standard Z359.1-2007, *Safety requirements for personal fall arrest systems, subsystems and components*, or
 - (iii) CEN Standard EN 361:2007, *Personal protective equipment against falls from a height — Full body harnesses*,

and

- (b) a worker using a personal fall arrest system wears and uses a full body harness.

142(2) A worker using a personal fall arrest system must wear and use a full body harness.

AR 191/2021 s142;242/2022

Body belt

142.1 An employer must ensure that

- (a) a body belt manufactured on or after July 1, 2009 is approved to
 - (i) CSA Standard Z259.1-05, *Body belts and saddles for work positioning and travel restraint*,
 - (ii) ANSI/ASSE Standard A10.32-2004, *Fall Protection Systems — American National Standard for Construction and Demolition Operations*, or
 - (iii) CEN Standard EN 358: 2000, *Personal protective equipment for work positioning and prevention of falls from a height — Belts for work positioning and restraint and work positioning lanyards*, and
- (b) a worker uses a body belt only as part of a travel restraint system or as part of a fall restrict system.

Lanyard

142.2(1) An employer must ensure that a lanyard manufactured on or after March 31, 2023 is approved to

- (a) CSA Standard Z259.11-17, *Personal energy absorbers and lanyards*,
- (b) ANSI/ASSE Standard Z359.1-2007, *Safety requirements for personal fall arrest systems, subsystems and components*, or
- (c) CEN Standard EN 354:2002, *Personal protective equipment against falls from a height — Lanyards*.

142.2(2) An employer must ensure that a lanyard used by a worker is made of wire rope or other material appropriate to the hazard if a tool or corrosive agent that could sever, abrade or burn a lanyard is used in the work area.

142.2(3) Despite subsection (2), if a worker works near an energized conductor or in a work area where a lanyard made of conductive material cannot be used safely, the employer must ensure that the worker uses another effective means of fall protection.

AR 191/2021 s142.2;242/2022

Shock absorber

142.3(1) An employer must ensure that if a shock absorber or shock absorbing lanyard is used as part of a personal fall arrest system, it is approved to one of the following standards if manufactured on or after March 31, 2023:

- (a) CSA Standard Z259.11-17, *Personal energy absorbers and lanyards*;
- (b) ANSI/ASSE Standard Z359.1-2007, *Safety requirements for personal fall arrest systems, subsystems and components*;
- (c) CEN Standard EN 355:2002, *Personal protective equipment against falls from a height — Energy absorbers*.

142.3(2) An employer must ensure that a personal fall arrest system consists of a full body harness and a lanyard equipped with a shock absorber or similar device.

142.3(3) Despite subsection (2), a shock absorber or similar device is not required if the personal fall arrest system is used in accordance with section 151.

142.3(4) Despite subsection (2), a shock absorber is required with a fixed ladder fall arrest system only if it is required by the manufacturer of the system.

AR 191/2021 s142.3;242/2022

Connectors, carabiners and snap hooks

143(1) An employer must ensure that connecting components of a fall arrest system consisting of carabiners, D-rings, O-rings, oval rings, self-locking connectors and snap hooks manufactured on or after March 31, 2023 are approved, as applicable, to

- (a) CSA Standard Z259.2.5-17, *Fall arresters and vertical lifelines*,
- (b) ANSI/ASSE Standard Z359.1-2007, *Safety requirements for personal fall arrest systems, subsystems and components*,
- (c) CEN Standard EN 362:2004, *Personal protective equipment against falls from a height — Connectors*, or
- (d) CEN Standard 12275:1998, *Mountaineering equipment — Connectors — Safety requirements and test methods*.

143(2) An employer must ensure that a carabiner or snap hook

- (a) is self-closing and self-locking,
- (b) may only be opened by at least 2 consecutive deliberate manual actions, and
- (c) is marked with
 - (i) its breaking strength in the major axis, and

- (ii) the name or trademark of the manufacturer.

AR 191/2021 s143;242/2022

Fall arresters

144 An employer must ensure that a fall arrestor manufactured on or after March 31, 2023 is approved to

- (a) CSA Standard Z259.2.4-15, *Fall arresters and vertical rigid rails*,
- (a.1) CSA Standard Z259.2.5-17, *Fall arresters and vertical lifelines*,
- (b) ANSI/ASSE Standard Z359.1-2007, *Safety requirements for personal fall arrest systems, subsystems and components*, or
- (c) CEN Standard EN 353-2:2002, *Personal protective equipment against falls from a height — Part 2: Guided type fall arrestors including a flexible anchor line*.

AR 191/2021 s144;242/2022

Self-retracting device

145 An employer must ensure that a self-retracting device manufactured on or after March 31, 2023 and used with a personal fall arrest system is

- (a) approved to CSA Standard Z259.2.2-17, *Self-retracting devices*,
- (b) anchored above the worker's head unless the manufacturer's specifications allow the use of a different anchor location, and
- (c) used in a manner that minimizes the hazards of swinging and limits the swing drop distance to 1.2 metres if a worker falls.

AR 191/2021 s145;242/2022

Descent control device

146 An employer must ensure that an automatic or manual descent control device manufactured on or after July 1, 2009 and used with a personal fall arrest system is approved to

- (a) CSA Standard Z259.2.3-99 (R2004), *Descent Control Devices*,
- (b) CEN Standard EN 341:1997, *Personal protective equipment against falls from a height — Descender devices*, or
- (c) NFPA Standard 1983, *Standard on Life Safety Rope and Equipment for Emergency Services, 2006 edition, classified as general or light duty*.

Life safety rope

147(1) An employer must ensure that a life safety rope manufactured on or after March 31, 2023 and used in a fall protection system

- (a) is approved to
 - (i) CSA Standard Z259.2.4-15, *Fall arresters and vertical rigid rails*,
 - (i.1) CSA Standard Z259.2.5-17, *Fall arresters and vertical lifelines*, or

- (ii) CEN Standard EN 1891:1998, *Personal protective equipment for the prevention of falls from a height — Low stretch kernmantle ropes*, as Type A rope,

or

- (b) meets the requirements of

- (i) CSA Standard Z259.2.4-15, *Fall arresters and vertical rigid rails*,
- (i.1) CSA Standard Z259.2.5-17, *Fall arresters and vertical lifelines*, or
- (ii) ANSI/ASSE Standard Z359.1-2007, *Safety requirements for personal fall arrest systems, subsystems and components*.

147(2) An employer must ensure that a life safety rope used in a fall protection system

- (a) extends downward to within 1.2 metres of ground level or another safe lower surface,
- (b) is free of knots or splices throughout the travel portion except for a stopper knot at its lower end,
- (c) is effectively protected to prevent abrasion by sharp or rough edges,
- (d) is made of material appropriate to the hazard and able to withstand adverse effects, and
- (e) is installed and used in a manner that minimizes the hazards of swinging and limits the swing drop distance to 1.2 metres if a worker falls.

147(3) A worker must use a vertical life safety rope in a manner that minimizes the hazards of swinging and limits the swing drop distance to 1.2 metres if a worker falls.

147(4) An employer must ensure that only one worker is attached to a life safety rope at any one time unless the manufacturer's specifications or specifications certified by a professional engineer allow for the attachment of more than one worker.

AR 191/2021 s147;242/2022

Adjustable lanyard for work positioning

148 An employer must ensure that an adjustable lanyard manufactured on or after March 31, 2023 and used by a worker as part of a work positioning system is approved to

- (a) CSA Standard Z259.11-17, *Personal energy absorbers and lanyards*, or
- (b) CEN Standard EN 358:2000, *Personal protective equipment for work positioning and prevention of falls from a height — Belts for work positioning and restraint and work positioning lanyards*.

AR 191/2021 s148;242/2022

Rope adjustment device for work positioning

148.1 An employer must ensure that a rope adjustment device manufactured on or after July 1, 2009 and used by a worker as part of a work positioning system is approved to

- (a) CSA Standard Z259.2.3-99 (R2004), *Descent Control Devices*,
- (b) CEN Standard EN 341:1997, *Personal protective equipment against falls from a height — Descender devices*, or

- (c) NFPA Standard 1983, *Standard on Life Safety Rope and Equipment for Emergency Services*, 2006 Edition, classified as general or light duty.

Wood pole climbing

149(1) An employer must ensure that a worker working on or from a wood pole uses fall restrict equipment that is approved to CSA Standard Z259.14-01, *Fall Restrict Equipment for Wood Pole Climbing*, in combination with

- (a) a lineman's body belt that
- (i) is approved to CSA Standard Z259.3-M1978 (R2003), *Lineman's Body Belt and Lineman's Safety Strap*, or
 - (ii) complies with section 142.1,

or

- (b) a full body harness that complies with section 142(1).

149(2) Subsection (1) does not apply to fall restrict equipment or a lineman's body belt in use before April 30, 2004.

Equipment compatibility

150 An employer must ensure that all components of a fall protection system are compatible with one another and with the environment in which they are used.

Inspection and maintenance

150.1 An employer must ensure that the equipment and personal protective equipment used as part of a fall protection system is

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

Removal from service

150.2(1) An employer must ensure that equipment and personal protective equipment used as part of a fall protection system is removed from service and either returned to the manufacturer or destroyed if

- (a) it is defective, or
- (b) it has come into contact with excessive heat, a chemical or any other substance that may corrode or otherwise damage the fall protection system.

150.2(2) An employer must ensure that after a personal fall arrest system has stopped a fall, the system is removed from service.

150.2(3) An employer must ensure that a personal fall arrest system that is removed from service is not returned to service unless a professional engineer or the manufacturer certifies that the system is safe to use.

Prusik and similar knots

150.3 An employer must ensure that a Prusik or similar sliding hitch knot is used in place of a fall arrester only during emergency situations or during training for emergency situations and only by a competent worker.

Clearance, maximum arresting force and swing

151(1) An employer must ensure that a personal fall arrest system is arranged so that a worker cannot hit the ground, an object which poses an unusual possibility of injury or a level below the work area.

151(2) An employer must ensure that a personal fall arrest system without a shock absorber limits a worker's free-fall distance to 1.2 metres.

151(3) An employer must ensure that a personal fall arrest system limits the maximum arresting force on a worker to 6 kilonewtons, unless the worker is using an E6 type shock absorber in accordance with the manufacturer's specifications, in which case the maximum arresting force must not exceed 8 kilonewtons.

151(4) A worker must limit the vertical distance of a fall by

- (a) selecting the shortest length lanyard that will still permit unimpeded performance of the worker's duties, and
- (b) securing the lanyard to an anchor no lower than the worker's shoulder height.

151(5) If the shoulder height anchor required by subsection (4)(b) is not available, a worker must secure the lanyard to an anchor that is located as high as is reasonably practicable.

151(6) If it is not reasonably practicable to attach to an anchor above the level of a worker's feet, the worker must ensure that the clearance and maximum arresting force requirements of subsections (1) and (3) are met.

Anchors

Anchor strength — permanent

152(1) An employer must ensure that a permanent anchor is capable of safely withstanding the impact forces applied to it and has a minimum breaking strength per attached worker of 16 kilonewtons or 2 times the maximum arresting force in any direction in which the load may be applied.

152(2) Subsection (1) does not apply to anchors installed before July 1, 2009.

152(3) Subsection (1) does not apply to the anchors of flexible horizontal lifeline systems that must meet the requirements of section 153(1).

152(4) The employer must ensure that an anchor rated at 2 times the maximum arresting force is designed, installed and used in accordance with

- (a) the manufacturer's specifications, or

- (b) specifications certified by a professional engineer.

Anchor strength — temporary

152.1(1) An employer must ensure that a temporary anchor used in a travel restraint system

- (a) has a minimum breaking strength in any direction in which the load may be applied of at least 3.5 kilonewtons per worker attached,
- (b) is installed, used and removed according to the manufacturer's specifications or specifications certified by a professional engineer,
- (c) is permanently marked as being for travel restraint only, and
- (d) is removed from use on the earliest of
 - (i) the date on which the work project for which it is intended is completed, or
 - (ii) the time specified by the manufacturer or professional engineer.

152.1(2) An employer must ensure that a temporary anchor used in a personal fall arrest system

- (a) has a minimum breaking strength in any direction in which the load may be applied of at least 16 kilonewtons or 2 times the maximum arresting force per worker attached,
- (b) is installed, used and removed according to the manufacturer's specifications or specifications certified by a professional engineer, and
- (c) is removed from use on the earliest of
 - (i) the date on which the work project for which it is intended is completed, or
 - (ii) the time specified by the manufacturer or professional engineer.

Duty to use anchors

152.2(1) If a worker uses a personal fall arrest system or a travel restraint system, the worker must ensure that it is safely secured to an anchor that meets the requirements of this Part.

152.2(2) An employer must ensure that a worker visually inspects the anchor prior to attaching a fall protection system.

152.2(3) An employer must ensure that a worker does not use a damaged anchor until the anchor is repaired, replaced or re-certified by the manufacturer or a professional engineer.

152.2(4) An employer must ensure that a worker uses an anchor connector appropriate to the work.

152.2(5) A worker must use an anchor connector appropriate to the work.

Independence of anchors

152.3 An employer must ensure that an anchor to which a personal fall arrest system is attached is not part of an anchor used to support or suspend a platform.

Wire rope sling as anchor

152.4 An employer must ensure that a wire rope sling used as an anchor is terminated at both ends with a Flemish eye splice rated to at least 90 percent of the wire rope's minimum breaking strength.

Flexible and rigid horizontal lifeline systems

153(1) An employer must ensure that a flexible horizontal lifeline system manufactured on or after July 1, 2009 meets the requirements of

- (a) CSA Standard Z259.13-04, *Flexible Horizontal Lifeline Systems*, or
- (b) the applicable requirements of CSA Standard Z259.16-04, *Design of Active Fall-Protection Systems*.

153(2) An employer must ensure that a rigid horizontal fall protection system is designed, installed and used in accordance with

- (a) the manufacturer's specifications, or
- (b) specifications certified by a professional engineer.

Installation of horizontal lifeline systems

153.1 An employer must ensure that before a horizontal lifeline system is used, a professional engineer, a competent person authorized by the professional engineer, the manufacturer or a competent person authorized by the manufacturer certifies that the system has been properly installed according to the manufacturer's specifications or to specifications certified by a professional engineer.

Fixed ladders and climbable structures

154(1) An employer must ensure that if a worker is working from or on a fixed ladder or climbable structure at a height of 3 metres or more and is not protected by a guardrail, continuous protection from falling is provided by

- (a) equipping the fixed ladder or climbable structure with an integral fall protection system that meets the requirements of
 - (i) CSA Standard Z259.2.4-15, *Fall arresters and vertical rigid rails*,
 - (i.1) CSA Standard Z259.2.5-17, *Fall arresters and vertical lifelines*, or
 - (ii) ANSI/ASSE Standard Z359.1-2007, *Safety requirements for personal fall arrest systems, subsystems and components*,

or

- (b) an alternate fall protection system.

154(2) Subsection (1) applies to fixed ladders and climbable structures constructed and installed after March 31, 2023.

AR 191/2021 s154:242/2022

Fall protection on vehicles and loads

155(1) If a worker may have to climb onto a vehicle or its load at any location where it is not reasonably practicable to provide a fall protection system for the worker, an employer must

- (a) take steps to eliminate or reduce the need for the worker to climb onto the vehicle or its load, and
- (b) ensure that the requirements of section 159(2) are met.

155(2) In addition to the requirements of subsection (1), an employer must ensure that if a load is not secured against movement, a worker does not climb onto the load.

155(3) A worker must not climb onto a load if the load is not secured against movement.

Boom-supported work platforms and aerial devices

156(1) An employer must ensure that a worker on a boom-supported elevating work platform, boom-supported aerial device, or forklift truck work platform uses a personal fall arrest system

- (a) connected to
 - (i) an anchor specified by the manufacturer of the work platform, aerial device or forklift truck, or
 - (ii) if no anchor is specified by the manufacturer, an anchor point certified by a professional engineer that meets the requirements of CSA Standard Z259.16-04, *Design of Active Fall-Protection Systems*,and
- (b) when connected to the anchor, the lanyard, if reasonably practicable, is short enough to prevent the worker from being ejected from the work platform or aerial device but is long enough to allow the worker to perform the worker's work.

156(2) An employer must ensure that a worker on a scissor lift or on an elevating work platform with similar characteristics uses a travel restraint system consisting of a full body harness and lanyard

- (a) connected to an anchor specified by the manufacturer of the scissor lift or elevating work platform, and
- (b) when connected to the anchor, the lanyard, if reasonably practicable, is short enough to prevent the worker from falling out of the scissor lift or elevating work platform but is long enough to allow the worker to perform the worker's work.

156(3) Subsection (2) does not apply if

- (a) the manufacturer's specifications allow a worker to work from the scissor lift or elevating work platform with similar characteristics using only its guardrails for fall protection, and
- (b) the scissor lift or elevating work platform is operating on a firm, substantially level surface.

156(4) Despite subsection (2), if a worker's movement cannot be adequately restricted in all directions by the travel restraint system, the employer must ensure that the worker uses a personal fall arrest system.

Water danger

157 An employer must ensure that a worker uses an appropriate fall protection system in combination with a life jacket or personal flotation device if the worker

- (a) may fall into water that exposes the worker to the hazard of drowning, or
- (b) could drown from falling into the water, from other than a boat.

Leading edge fall protection system

158 An employer using a leading edge fall protection system consisting of fabric or netting panels must ensure that

- (a) the system is used only to provide leading edge fall protection,
- (b) the system is used and installed according to the manufacturer's specifications,
- (c) a copy of the manufacturer's specifications for the system is available to workers at the work site at which the system is being used,
- (d) the fabric or netting is
 - (i) drop-tested at the work site in accordance with the requirements of 29 CFR Section 1926.502(C)4(i) published by the U.S. Occupational Safety and Health Administration, or
 - (ii) certified as safe for use by a professional engineer,and
- (e) all workers using the system are trained in its use and limitations.

Procedures in place of fall protection equipment

159(1) An employer may develop and use procedures in place of fall protection equipment in accordance with subsection (2), if

- (a) it is not reasonably practicable to use one of the fall protection systems described in this Part, and
- (b) use of procedures in place of fall protection equipment is restricted to the following situations:
 - (i) the installation or removal of fall protection equipment;
 - (ii) roof inspection;
 - (iii) emergency repairs;
 - (iv) at height transfers between equipment and structures if allowed by the manufacturer's specifications; and
 - (v) situations in which a worker must work on top of a vehicle or load and the requirements of section 155 have been met.

159(1.1) Repealed.

159(2) An employer using procedures in place of fall protection equipment must ensure that

- (a) a hazard assessment in accordance with the requirements of Part 2 is completed before work at height begins,

- (b) the procedures to be followed while performing the work must be in writing and available to workers before the work begins,
- (c) the work is carried out in such a way that minimizes the number of workers exposed to a fall hazard while work is performed,
- (d) the work is limited to light duty tasks of limited duration,
- (e) the worker performing the work is competent to do it,
- (f) when used for inspection, investigation or assessment activities, these activities take place prior to the actual start of work or after work has been completed, and
- (g) the procedures do not expose a worker to additional hazards.

Work positioning

160(1) An employer must ensure that if a worker uses a work positioning system, the worker's vertical free-fall distance in the event of a fall is restricted by the work positioning system to 600 millimetres or less.

160(2) If the centre of gravity of a worker using a work positioning system extends beyond an edge from which the worker could fall or if the work surface presents a slipping or tripping hazard because of its state or condition, an employer must ensure that the worker uses a back-up personal fall arrest system in combination with the work positioning system.

160(3) A worker must use a back-up personal fall arrest system in combination with the work positioning system if the worker's centre of gravity extends beyond an edge from which the worker could fall or if the work surface presents a slipping or tripping hazard because of its state or condition.

Control zones

161(1) If a control zone is used, an employer must ensure that it

- (a) is only used if a worker can fall from a surface that has a slope of no more than 4 degrees toward an unguarded edge or that slopes inwardly away from an unguarded edge, and
- (b) is not less than 2 metres wide when measured from the unguarded edge.

161(2) An employer must not use a control zone to protect workers from falling from a skeletal structure that is a work area.

161(3) If a worker will at all times remain further from the unguarded edge than the width of the control zone, no other fall protection system need be used.

161(4) Despite section 139, a worker is not required to use a fall protection system when crossing the control zone to enter or leave the work area.

161(5) When crossing a control zone referred to in subsections (3) and (4), to get to or from the unguarded edge, a worker must follow the most direct route.

161(6) An employer must ensure that a control zone is clearly marked with an effective raised warning line or another equally effective method if a worker is working within 2 metres of the control zone.

161(7) An employer must ensure that a worker who must work within a control zone uses

- (a) a travel restraint system, or
 - (b) an equally effective means of preventing the worker from getting to the unguarded edge.
- 161(8)** A person who is not directly required for the work at hand must not be inside a control zone.

Part 10

Fire and Explosion Hazards

Flammable or explosive atmospheres a hazard

161.1 Flammable or explosive atmospheres are considered a hazard for the purposes of Part 2.

General Protection and Prevention

Prohibitions

162(1) A person must not enter or work at a work area if more than 20 percent of the lower explosive limit of a flammable or explosive substance is present in the atmosphere.

162(2) Subsection (1) does not apply to a competent, properly equipped worker who is responding in an emergency.

162(3) A person must not smoke in a work area where a flammable substance is stored, handled, processed or used.

162(3.1) A person must not use an open flame, except in accordance with section 169, in a work area where a flammable substance is stored, handled, processed or used.

162(4) A person must not mix, clean or use a flammable or combustible liquid at a temperature at or above its flash point in an open vessel if a potential source of ignition is in the immediate vicinity of the activity.

162(5) A person must not use a flammable or combustible liquid at a temperature above its flash point in a washing or cleaning operation, unless the washing or cleaning equipment is specifically designed and manufactured for the use of the liquid.

162(6) A person must not store contaminated rags used to clean or wipe up flammable substances other than in a covered container that has a label that clearly indicates it is to be used for the storage of contaminated rags.

Classification of work sites

162.1(1) If the hazard assessment required by Part 2 determines that a work area is a hazardous location, an employer must ensure that

- (a) a professional engineer, or a competent person authorized by a professional engineer, divides and classifies the work area in accordance with section 18 of the *Canadian Electrical Code*,
- (b) for any work area falling under the *Code for Electrical Installations at Oil and Gas Facilities*, the area is divided and classified in accordance with rules 19-102 to 19-108 of that Code,
- (c) for any work area consisting of facilities described in section 20 of the *Canadian Electrical Code*, the area is divided and classified in accordance with section 20 of the *Canadian Electrical Code*, and
- (d) adequate documentation is prepared and maintained by a competent person, outlining the boundaries of the classified area and any specific measures to be taken to prevent the unintentional ignition of an explosive atmosphere.

162.1(2) If the hazard assessment required by Part 2 indicates that the basis of an area classification under subsection (1) has changed, an employer must review and update that classification.

Procedures and precautions

163(1) Repealed.

163(2) If the hazard assessment required by Part 2 determines that a work area is not a hazardous location, an employer must ensure that flammable substances stored or used at the work area,

- (a) will not be in sufficient quantity to produce an explosive atmosphere if inadvertently released,
- (b) are not stored within 30 metres of an underground shaft,
- (c) are not stored in the immediate vicinity of the air intake of
 - (i) a ventilation supply system,
 - (ii) an internal combustion engine, or
 - (iii) the fire box of a fired heater or furnace,and
- (d) are stored only in containers approved to
 - (i) CSA Standard B376-M1980 (R2008), *Portable Containers for Gasoline and Other Petroleum Fuels*,
 - (ii) NFPA Standard 30, *Flammable and Combustible Liquids Code*, 2008 Edition, or
 - (iii) ULC Standard C30 1995, *Containers, Safety*if manufactured on or after July 1, 2009.

163(2.1) If the work requires that the contents of metallic or conductive containers be transferred from one container to another, an employer must ensure that static electricity is controlled while the contents are being transferred.

163(3) Moved to section 165(3).

Contaminated clothing and skin

164(1) If a worker's clothing is contaminated with a flammable or combustible liquid, the worker must

- (a) avoid any activity where a spark or open flame may be created or exists,
- (b) remove the clothing at the earliest possible time in a manner consistent with clause (a), and
- (c) ensure that the clothing is decontaminated before it is used again.

164(2) If a worker's skin is contaminated with a flammable or combustible liquid, the worker must wash the skin at the earliest possible time.

Protective procedures and precautions in hazardous locations

165(1) Repealed.

165(2) Repealed.

165(3) An employer must ensure that in a hazardous location,

- (a) equipment used will not ignite a flammable substance, and
- (b) static electricity is controlled,
 - (i) in the case of conductive containers for flammable or combustible liquids while the contents are being transferred, by electrically bonding the containers to one another and electrically grounding them, and
 - (ii) in other cases, by some other effective means.

165(4) An employer must ensure that, if a work area is determined to be a hazardous location, the boundaries of the hazardous location are

- (a) clearly identified to warn workers of the nature of the hazards associated with the presence of the flammable substance in that work area, or
- (b) fenced off to prevent workers or equipment from entering the area without authorization.

165(5) If reasonably practicable, an employer must ensure that procedures and precautionary measures are developed for a hazardous location that will prevent the inadvertent release of

- (a) a flammable substance, or
- (b) oxygen gas if it can contact a flammable substance.

165(6) Despite subsection (5), if it is not reasonably practicable to develop procedures and precautionary measures that will prevent release, an employer must develop procedures and precautionary measures that will prevent an explosive atmosphere from igniting in a hazardous location.

Internal combustion engines

166(1) An employer must ensure that an internal combustion engine in a hazardous location has a combustion air intake and exhaust discharge that are

- (a) equipped with a flame arresting device, or
- (b) located outside the hazardous location.

166(2) An employer must ensure that all the surfaces of an internal combustion engine that are exposed to the atmosphere in a hazardous location are

- (a) at a temperature lower than the temperature that would ignite a flammable substance present in the hazardous location, or
- (b) shielded or blanketed in such a way as to prevent any flammable substance present in the hazardous location from contacting the surface.

166(2.1) If it is not reasonably practicable to comply with subsection (2), an employer must ensure that another effective safeguard is established.

166(3) Subsections (1) and (2) do not apply to a vehicle that is powered by an internal combustion engine.

166(4) An employer must ensure that a vehicle powered by an internal combustion engine is not located or operated in a hazardous location except in accordance with section 169.

166(5) An employer must ensure that an internal combustion engine is not located in a Zone 0 hazardous location as defined in the *Canadian Electrical Code* or in a part of a Division 1 hazardous location that meets the description of a Zone 0 location as defined in the *Canadian Electrical Code*.

166(6) An employer must ensure that an internal combustion engine is not located in a Zone 1 or Division 1 hazardous location as defined in the *Canadian Electrical Code* unless it is equipped with combustible gas monitoring equipment in accordance with section 18 of the *Canadian Electrical Code*.

166(7) An employer must ensure that an internal combustion engine is not located in a Class II, Division 1 or a Class III, Division 1 hazardous location as defined in the *Canadian Electrical Code*.

Flare stacks, flare pits and flares

167 An employer must ensure that open flames from flare pits, flare stacks or flares are not less than 25 metres beyond the boundary of a hazardous location.

Industrial furnaces and fired heaters

168(1) An employer must ensure that

- (a) a gas or oil fired furnace is designed, operated, monitored, controlled and maintained in a manner that minimizes the possibility of internal explosion of the fire box, and
- (b) if the furnace is heating flammable substances, there are no connections between the process medium supply system and the fuel supply system or another system connected to the inside of the fire box of the furnace.

168(2) An employer must ensure that the heated substance systems referred to in subsection (1)(b) are not isolated using inserted blinds or a double block and bleed system.

168(3) A worker must not attempt to ignite a furnace manually, or to re-ignite a furnace after shutdown, until

- (a) explosive concentrations of flammable substances are eliminated from the fire box by purging or removed by another effective means, and
- (b) tests or procedures are completed that ensure an explosive atmosphere is not present within the furnace.

168(4) An employer must ensure that intakes, exhausts and the fire box of a furnace or fired heater are not located or operated in a Division 1, Zone 0 or Zone 1 hazardous location of any Class as defined in the *Canadian Electrical Code*.

168(5) An employer must ensure that a furnace or fired heater is not located or operated in a Division 2 or Zone 2 hazardous location of any Class as defined in the *Canadian Electrical Code*, unless

- (a) the combustion process is totally enclosed except for the combustion air intake and the exhaust discharge,
- (b) all surfaces exposed to the atmosphere

- (i) operate below the temperature that would ignite a flammable substance present in the hazardous location, or
 - (ii) are shielded or blanketed in such a way as to prevent a flammable substance in the hazardous location from contacting the surface,
- and
- (c) the combustion air intake and exhaust discharge are equipped with a flame arresting device or are located outside the hazardous location.

168(6) If it is not reasonably practicable to comply with subsection (5)(b), an employer must ensure that another effective safeguard is established.

Hot work

169(1) Despite any other section in this Part, an employer must ensure that hot work is done in accordance with subsections (2) and (3) if

- (a) the work area is a hazardous location, or
- (b) the work area is not normally a hazardous location but an explosive atmosphere may exist for a limited time because
 - (i) a flammable substance is or may be in the atmosphere of the work area,
 - (ii) a flammable substance is or may be stored, handled, processed or used in the location,
 - (iii) the hot work is on or in an installation or item of equipment that contains a flammable substance or its residue, or
 - (iv) the hot work is on a vessel that contains residue that may release a flammable gas or vapour when exposed to heat.

169(2) An employer must ensure that hot work is not begun until

- (a) a hot work permit is issued that indicates
 - (i) the nature of the hazard,
 - (ii) the type and frequency of atmospheric testing required,
 - (iii) the safe work procedures and precautionary measures to be taken, and
 - (iv) the protective equipment required,
- (b) the hot work location is
 - (i) cleared of combustible materials, or
 - (ii) suitably isolated from combustible materials,
- (c) procedures are implemented to ensure continuous safe performance of the hot work, and
- (d) testing shows that the atmosphere does not contain
 - (i) a flammable substance, in a mixture with air, in an amount exceeding 20 percent of that substance's lower explosive limit for gas or vapours, or
 - (ii) the minimum ignitable concentration for dust.

169(3) An employer must ensure that the tests referred to in subsection (2)(d) are repeated at regular intervals appropriate to the hazard associated with the work being performed.

Hot taps

170(1) An employer must develop procedures in a hot tap plan specific to the type or class of hot tap work being performed before hot tap work begins.

170(2) The employer must ensure that the plan includes

- (a) a site hazard analysis,
- (b) a description of the sequence of events,
- (c) safety precautions to address the hazards, and
- (d) an emergency response plan.

170(3) The employer must ensure that

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

170(4) An employer must ensure, where reasonably practicable, that a hot tap is not undertaken if at the proposed hot tap location

- (a) the equipment contains a harmful substance,
- (b) the equipment is in hydrogen service, or
- (c) the equipment contains an explosive mixture.

Spray operations

170.1(1) An employer must ensure that a spray booth used to apply flammable substances is provided with ventilation in accordance with Part 26 and that the ventilation is

- (a) adequate to remove flammable vapours, mists or powders to a safe location, and

- (b) interlocked with the spraying equipment so that the spraying equipment is made inoperable when the ventilation system is not in operation.

170.1(2) An employer must ensure that a spray booth will not ignite a flammable substance.

170.1(3) When spray application of a flammable substance is carried out other than in a spray booth, an employer must ensure that the application is carried out in accordance with the *Alberta Fire Code* (1997), and is

- (a) carried out at least 6 metres away from anything that might obstruct ventilation, and
- (b) effectively isolated from all machinery and equipment that is, or may become, a source of ignition and that is within 2 metres measured vertically above and 6 metres measured in other directions from the place at which the spray painting substance is being applied.

170.1(4) If it is not reasonably practicable to ensure that the application is carried out as required by subsection (3)(a), an employer must ensure that the work area where the application is carried out is adequately ventilated to remove flammable vapours, mists or powders to a safe location.

170.1(5) An employer must provide a nozzle guard for use with airless spray machinery.

170.1(6) The worker operating airless spray machinery must ensure that the nozzle guard of airless spray machinery is in place at all times when the machinery is being operated.

Compressed and liquefied gas

171(1) An employer must ensure that

- (a) compressed or liquefied gas containers are used, handled, stored and transported in accordance with the manufacturer's specifications,
- (b) a cylinder of compressed flammable gas is not stored in the same room as a cylinder of compressed oxygen, unless the storage arrangements are in accordance with Part 3 of the *Alberta Fire Code* (1997),
- (c) compressed or liquefied gas cylinders, piping and fittings are protected from damage during handling, filling, transportation and storage,
- (d) compressed or liquefied gas cylinders are equipped with a valve protection cap if manufactured with a means of attachment, and
- (e) oxygen cylinders or valves, regulators or other fittings of the oxygen-using apparatus or oxygen-distributing system are kept free of oil and grease.

171(2) An employer must ensure that a compressed or liquefied gas system is not exposed to heat sources that generate temperatures that may

- (a) result in the failure or explosion of the contents or the system, or
- (b) exceed the maximum exposure temperatures specified by the manufacturer.

171(3) An employer must ensure that a compressed or liquefied gas system is kept clean and free from oil, grease and other contaminants that may

- (a) cause the system to fail, or
- (b) burn or explode if they come in contact with the contents of the system.

- 171(4)** An employer must ensure that on each hose of an oxygen fuel system,
- (a) a flashback device is installed at either the torch end or the regulator end, and
 - (b) a back-flow prevention device is installed at the torch end.
- 171(5)** An employer must ensure that compressed or liquefied gas cylinders are secured, preferably upright, and cannot fall or roll, unless a professional engineer certifies another method that protects against the hazards caused by dislodgment.
- 171(6)** Despite subsection (5), an employer must ensure that a cylinder containing acetylene is secured and stored upright.
- 171(7)** Moved to section 170.1(5).
- 171(8)** A worker must ensure that
- (a) compressed gas equipment designed to be used with a specific gas is only used with that gas,
 - (b) the cylinder valve is shut off and pressure in the hose is released when cutting or welding is not in progress,
 - (c) sparks, flames or other sources of ignition are not allowed to come in contact with the cylinders, regulators or hoses of a compressed or liquefied gas system, and
 - (d) compressed air is not used to blow dust or other substances from clothing.

Welding — general

- 171.1(1)** An employer must comply with the requirements of CSA Standard W117.2-06, *Safety in Welding, Cutting and Allied Processes*.
- 171.1(2)** An employer must ensure that welding or allied process equipment is erected, installed, assembled, started, operated, used, handled, stored, stopped, inspected, serviced, tested, cleaned, adjusted, carried, maintained, repaired and dismantled in accordance with the manufacturer's specifications.
- 171.1(3)** An employer must ensure that, before a welding or allied process is commenced, the area surrounding the operation is inspected and
- (a) all combustible, flammable or explosive material, dust, gas or vapour is removed, or
 - (b) alternate methods of rendering the area safe are implemented.
- 171.1(4)** If a welding or allied process is performed above an area where a worker may be present, an employer must ensure that adequate means are taken to protect a worker below the operation from sparks, debris and other falling hazards.
- 171.1(5)** An operator of an electric welding machine must not leave the machine unattended without removing the electrode.
- 171.1(6)** An employer must ensure that appropriate welding and ground leads are used to fasten the electric supply cable securely.

Gas welding or allied process

171.2(1) An employer must ensure that a regulator and its flexible connecting hose are tested immediately after connection to a gas cylinder to ensure that there is no leak of the gas supply.

171.2(2) An employer must ensure that if a leak of the gas supply develops during gas welding or an allied process,

- (a) the supply of gas is immediately shut off by the worker performing the welding or allied process, and
- (b) the work is not resumed until the leak is repaired.

Welding Services From Vehicles**Storage compartments**

172(1) An employer must ensure that welding services provided from vehicles comply with CSA Standard W117.2-01, *Safety in Welding, Cutting and Allied Processes* with the exception of Clause G.2 (Cabinets) of Annex G.

172(2) An employer must ensure that gases do not accumulate and reach their lower explosive limit by providing solid-walled storage compartments in which compressed gas cylinders are stored with vents

- (a) that have a minimum of 0.18 square metres of free area for every 0.42 cubic metres of compartment volume,
- (b) that have the free area split evenly between the top surface and the bottom surface of the storage compartment, and
- (c) that are unobstructed under all conditions.

172(3) An employer must ensure that solid-walled storage compartments in which compressed gas cylinders are stored are built so that gases or vapours cannot flow into adjoining compartments.

172(4) An employer must ensure that solid-walled compartments in which compressed gas cylinders are stored use

- (a) latching and locking hardware made of non-sparking materials, and
- (b) electrical components appropriate for use in an explosive atmosphere, if electrical components are located within the compartment.

172(5) Subsections (1) to (4) apply whether the compressed gas cylinder is stored vertically, horizontally or at an angle.

Horizontal cylinder storage

173(1) An employer must ensure that a compressed gas cylinder that is horizontal when it is transported or used in a vehicle

- (a) is in a storage compartment that incorporates a structure of sufficient strength to prevent the cylinder from passing through it should the valve end of the cylinder be damaged and vent its contents in an uncontrolled manner,

- (b) is in a storage compartment that incorporates a means of securing the cylinder that stops the cylinder from moving within the compartment and that puts the bottom of the cylinder in direct contact with the structure in clause (a), and
- (c) is protected against scoring during insertion into, and removal from, the storage compartment.

173(2) An employer must ensure that the regulator on a compressed gas cylinder that is horizontal when it is transported or used in a vehicle is protected from damage by other equipment in the storage compartment.

173(3) An employer must ensure that a storage compartment on a vehicle from which welding services are provided is certified by a professional engineer as meeting the requirements of subsections (1) and (2).

Handling cylinders

174(1) A worker must not insert or remove a compressed gas cylinder from a storage compartment by holding the valve or valve protection cap.

174(2) A worker must put on and secure to the valve outlet the valve protection cap or plug provided by the manufacturer of a compressed gas cylinder if the cylinder is not secured and not connected to dispensing equipment.

174(3) If a welding service vehicle is not in service for any reason, a worker must

- (a) close the compressed gas cylinder valves,
- (b) remove the regulators if they are not integral to the cylinders, and
- (c) put on and secure the valve protection caps or plugs.

174(4) A worker must shut off the cylinder valve and release the pressure in the hose if a compressed gas cylinder on a welding service vehicle is not in use or if the vehicle is left unattended.

Isolating methods

175 Moved to section 215.4.

Pigging

176 Moved to section 215.5.

Part 11

First Aid

Training standards

177(1) A person or agency that provides training in first aid must be approved by a Director of Medical Services or a Director if the person or agency is to provide training in first aid to workers under this Code.

177(2) A person or agency approved under subsection (1) must provide training in first aid to workers in accordance with CSA Standard Z1210-17, *First aid training for the workplace — Curriculum and quality management for training agencies*.

AR 191/2021 s177;242/2022

Providing services, supplies, equipment

178(1) A prime contractor or, if there is no prime contractor, an employer must provide first aiders, first aid supplies, first aid equipment, first aid kits and a first aid room for workers in accordance with the applicable requirements of Schedule 2, Tables 4 to 7.

178(2) If a first aid room for workers is a temporary or mobile facility, a prime contractor or, if there is no prime contractor, an employer must ensure that the room meets the requirements of Schedule 2, Table 4, except that

- (a) the room may be used for other services if it is maintained appropriately to provide first aid, and
- (b) where it is not reasonably practicable to provide a supply of hot and cold potable running water, a supply of cold potable water is acceptable.

178(3) A prime contractor or, if there is no prime contractor, an employer must ensure that each first aid kit required to be provided under Schedule 2, Tables 4 to 7, is equipped in accordance with CSA Standard Z1220-17, *First aid kits for the workplace*.

178(4) Despite subsections (1), (2) and (3), if there are 2 or more employers involved in the work at the work site and there is no prime contractor, the employers may enter into a written agreement to collectively provide first aiders, first aid supplies, first aid equipment, first aid kits and a first aid room for workers in accordance with the applicable requirements of Schedule 2, Tables 4 to 7.

AR 191/2021 s178;242/2022

Location of first aid

179 A prime contractor or, if there is no prime contractor, an employer must

- (a) ensure that first aiders, first aid supplies, first aid equipment, first aid kits and the first aid room for workers required by this Code are
 - (i) located at or near the work site they are intended to serve, and
 - (ii) readily available and accessible during all working hours,
- (b) ensure that first aid supplies, first aid equipment and first aid kits are
 - (i) maintained in a clean, dry and serviceable condition,

- (ii) contained in a material that protects the contents from the environment, and
- (iii) clearly identified as first aid supplies, first aid equipment and first aid kits,
- (c) post, at conspicuous places at the work site, signs indicating how to contact first aiders and the location of first aid supplies, first aid equipment, first aid kits and the first aid room for workers or, if posting of signs is not reasonably practicable, ensure that each worker is made aware of how to contact first aiders and the location of first aid supplies, first aid equipment, first aid kits and the first aid room for workers, and
- (d) ensure that an emergency communication system is in place for workers to summon first aiders.

AR 191/2021 s179;242/2022

Emergency transportation

180(1) Before sending workers to a work site, a prime contractor or, if there is no prime contractor, an employer must make and implement a plan to transport ill or injured workers from the work site to the nearest health care facility.

180(2) The plan referred to in subsection (1) must

- (a) be suitable, considering the distance to be travelled and the types of illnesses or injuries that may occur at the work site,
- (b) include measures to protect persons from exposure to the weather,
- (c) ensure vehicles are readily available and can accommodate a stretcher and an accompanying person, and
- (d) include systems that allow the persons being transported to communicate with the health care facility to which the ill or injured worker is being taken.

180(3) If a worker is ill or injured and needs to be accompanied during transport to a health care facility, the prime contractor or, if there is no prime contractor, the employer must ensure that the worker is accompanied by at least one first aider, in addition to the operator of the transportation.

180(4) Subsection (3) does not apply if there are 3 or fewer workers at the work site at the time.

AR 191/2021 s180;242/2022

First aid providers

181(1) A prime contractor or, if there is no prime contractor, an employer must

- (a) designate first aiders in accordance with Schedule 2, Table 5, 6 or 7,
- (b) except as provided in subsection (3), ensure a worker who is designated as a first aider has successfully completed training in first aid from an approved training agency, and
- (c) make and maintain a report of workers at a work site who are currently designated as first aiders.

181(2) If an advanced first aider, advanced care paramedic or nurse with an advanced first aid certificate is required at a work site, a prime contractor or, if there is no prime contractor, an employer must ensure that

- (a) the advanced first aider, advanced care paramedic or nurse with an advanced first aid certificate is based at or near the first aid room for workers,
- (b) when not in the first aid room for workers, the advanced first aider, advanced care paramedic or nurse with an advanced first aid certificate is readily available,
- (c) an effective means of communication to contact the advanced first aider, advanced care paramedic or nurse with an advanced first aid certificate is in place, and
- (d) if the advanced first aider, advanced care paramedic or nurse with an advanced first aid certificate is required to perform non-first aid duties, such duties must be of a type that let the advanced first aider, advanced care paramedic or nurse with an advanced first aid certificate remain in a fit and clean condition.

181(3) Subsection (1)(b) does not apply if the first aider is an emergency medical responder, advanced care paramedic or primary care paramedic.

181(4) This section does not apply to a hospital, medical clinic or physician's office, or a nursing home as defined in the *Nursing Homes Act*, where a physician, nurse or licensed practical nurse is always readily available.

AR 191/2021 s181;242/2022

Duty to report injury or illness

182 If a worker has an illness or injury at the work site, the worker must report the illness or injury to the prime contractor or, if there is no prime contractor, to the employer as soon as possible.

AR 191/2021 s182;242/2022

Record of injury or illness

183(1) An employer must record every illness or injury that occurs at the work site in a record kept for that purpose as soon as possible after the illness or injury is reported to the employer or the employer otherwise becomes aware of the illness or injury.

183(2) A record under subsection (1) must include the following:

- (a) the name of the worker that has the illness or injury;
- (b) a description of the illness or injury;
- (c) the first aid given to the worker;
- (d) the name and qualifications of the person giving first aid;
- (e) the date and time of the illness or injury;
- (f) the date and time the illness or injury was reported or the employer otherwise became aware of the illness or injury;
- (g) where at the work site the illness or injury occurred;
- (h) the work-related cause of the illness or injury, if any.

183(3) An employer must retain the records kept under this section for 3 years from the date the illness or injury is recorded.

AR 191/2021 s183;242/2022

First aid records access

184(1) This section applies to records of first aid given to a worker.

184(2) Subject to sections 31, 34 and 36 of the Act, a person who has custody of records must ensure that no person other than the worker has access to the worker's first aid records unless

- (a) the record is in a form that does not identify the worker,
- (b) the worker has given written permission for another person to have access to the records, or
- (c) access, use or disclosure of the information is required or authorized by law.

184(3) An employer must provide a worker with a copy of the first aid records pertaining to the worker if the worker requests a copy.

AR 191/2021 s184;242/2022

Part 12

General Safety Precautions

Housekeeping

185 An employer must ensure that a work site is kept clean and free from materials or equipment that could cause workers to slip or trip.

Lighting

186(1) An employer must ensure that lighting at a work site is sufficient to enable work to be done safely.

186(2) An employer must ensure that a light source above a working or walking surface is protected against damage.

186(3) An employer must ensure that there is emergency lighting at a work site if workers are in danger if the normal lighting system fails.

186(4) Emergency lighting must generate enough light so that workers can

- (a) leave the work site safely,
- (b) start the necessary emergency shut-down procedures, and
- (c) restore normal lighting.

Pallets and storage racks

187(1) An employer must ensure that pallets used to transport or store materials or containers are loaded, moved, stacked, arranged and stored in a manner that does not create a danger to workers.

187(2) An employer must ensure that racks used to store materials or equipment

- (a) are designed, constructed and maintained to support the load placed on them, and
- (b) are placed on firm foundations that can support the load.

187(3) A worker must report any damage to a storage rack to an employer as quickly as practicable.

187(4) The employer and the workers at a work site must take all reasonable steps to prevent storage racks from being damaged to the extent that their integrity as structures is compromised.

Placement of roofing materials

187.1(1) An employer must ensure that supplies and roofing materials stored on the roof of a residential building under construction are located not less than 2 metres from a roof edge.

187.1(2) An employer must ensure that the weight of supplies and roofing materials referred to in subsection (1) is uniformly distributed.

Restraining hoses and piping

188(1) An employer must ensure that a hose or piping and its connections operating under pressure are restrained if workers could be injured by its movement if it fails or if it is disconnected.

188(2) Despite subsection (1), if a hose or piping and its connections operating at a working pressure of 2000 kilopascals or more cannot be restrained, in order to prevent a failure that could injure workers, an employer must ensure that the hose or piping and its connections are designed, installed, used, inspected and maintained

- (a) in accordance with the manufacturer's specifications, or
- (b) in accordance with specifications certified by a professional engineer.

188(3) Subsection (1) does not apply to properly maintained fire hoses used by competent workers.

Securing equipment and materials

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

Skeleton structures

190(1) An employer must ensure that the erection drawings and procedures for a project that includes connecting the structural parts of a skeleton structure are prepared and certified by a professional engineer.

190(2) The erection drawings and procedures referred to in subsection (1) must

- (a) show the sequence in which the structure is to be erected,
- (b) show the horizontal and vertical placement of base structures and footings, and
- (c) ensure that the structure is stable during assembly.

190(3) If the erection procedures referred to in subsection (1) must be changed because of site conditions or unanticipated loads on the skeleton structure, the employer must ensure that the changed, additional or alternative procedures are prepared and certified by a professional engineer before they are implemented.

190(4) An employer must ensure that a competent worker at a work site where a skeleton structure is being erected

- (a) coordinates the operation until the structure is permanently stabilized, and
- (b) directs the removal of the temporary supporting structures.

Signallers

191(1) If this Code requires signals to be given by a designated signaller, an employer must designate a competent worker to give the signals.

191(2) An employer must ensure that, if the designated signaller uses hand signals, the signaller wears high-visibility safety apparel that clearly identifies the worker as a designated signaller.

191(3) A designated signaller using hand signals must wear the high-visibility safety apparel required by the employer under subsection (2).

191(4) Before giving a signal to proceed, a designated signaller must ensure that there are no hazards in the vicinity.

191(5) If a signaller is designated, an equipment operator must take signals only from the designated signaller.

191(6) An employer must ensure that only one designated signaller at a time gives signals to an equipment operator.

191(7) Despite subsections (5) and (6), an equipment operator must take a “STOP” signal from a worker who is not a designated signaller.

191(8) Despite subsections (5) and (6), if signals cannot be transmitted properly between a designated signaller and an equipment operator, an employer must ensure that

- (a) additional designated signallers are available to transmit signals, or
- (b) a means of ensuring clear and complete communication other than using designated signallers is provided.

Stabilizing masonry walls

192 An employer must ensure that temporary supporting structures

- (a) are used to stabilize a masonry wall that is more than 2 metres high during its erection, and
- (b) are not removed until the wall is permanently stabilized.

Tire servicing

193(1) An employer must ensure that a competent worker services, inspects, disassembles and reassembles a tire or tire and wheel assembly in accordance with the manufacturer’s specifications.

193(2) An employer must ensure that the manufacturer’s service manuals for tires and wheels serviced by the employer are readily available to workers.

193(3) An employer must ensure that a competent worker inflates a tire mounted on a split-rim or locking ring wheel only if

- (a) the wheel assembly is in a tire cage or is similarly restrained, and
- (b) flying parts from split-rim or locking ring failure or tire rupture can be contained.

193(4) An employer must ensure that a worker uses a clamp-on type of connector to inflate split-rim and locking ring wheels.

193(5) If a clamp-on type of connector is used to inflate a tire, the employer must ensure that the worker

- (a) uses an in-line pressure gauge and positive pressure control, and
- (b) inflates the tire from a safe position out of the immediate danger area.

193(6) A person must not inflate a tire with a clamp-on type of connector unless the person is in a safe position and out of the immediate danger area.

Vehicle traffic control

194(1) If vehicle traffic at a work site is dangerous to workers on foot, in vehicles or on equipment, an employer must ensure that the traffic is controlled to protect the workers.

194(2) An employer must ensure that a worker on foot and exposed to traffic wears high-visibility safety apparel.

194(3) A worker on foot and exposed to traffic must wear high-visibility safety apparel.

194(4) If a worker is designated by an employer to control traffic, the employer must ensure that the designated traffic controller wears high-visibility safety apparel that

- (a) clearly identifies the worker as a designated traffic controller, and
- (b) is retroreflective if the worker is controlling traffic in the dark or visibility is poor.

194(5) A worker designated to control traffic must wear high-visibility safety apparel that complies with subsection (4).

194(6) If a worker is designated by an employer to control traffic, the employer must ensure that the designated traffic controller uses a handheld signal light if it is dark or visibility is poor.

194(7) If traffic on a public highway is dangerous to workers, an employer must protect the workers from the traffic using

- (a) warning signs,
- (b) barriers,
- (c) lane control devices,
- (d) flashing lights,
- (e) flares,
- (f) conspicuously identified pilot vehicles,
- (g) automatic or remote-controlled traffic control systems,
- (h) designated persons directing traffic, or
- (i) methods described in the *Manual of Uniform Traffic Control Devices for Canada* (1998), and its updates, published up to and including June 30, 2009 by the Transportation Association of Canada.

Working on ice

195(1) If a worker is to work on ice and the water beneath the ice is more than 1 metre deep at any point, an employer must ensure the ice will support the load to be placed on it.

195(2) The employer must test the ice for the purposes of subsection (1)

- (a) before work begins, and
- (b) as often during the work as necessary to ensure the safety of the workers.

Part 13

Joint Health and Safety Committees and Health and Safety Representatives

Application of this Part

196 This Part applies to a work site that is required to have a joint health and safety committee under section 13 of the Act or a health and safety representative under section 14 of the Act.

Worker membership selection

196.1(1) In this section, “union” means any union that is a certified bargaining agent or has acquired bargaining rights on behalf of workers at a work site.

196.1(2) Worker members of a joint health and safety committee who represent non-union workers must be selected by the non-union workers.

196.1(3) Worker members of a joint health and safety committee who represent unionized workers must be selected by the applicable union.

196.1(4) An employer must determine how many worker members are needed

- (a) to equitably represent any union at the work site and non-unionized workers, and
- (b) to address relevant occupational health and safety concerns.

196.1(5) The employer shall specify a reasonable time by which any union and any non-unionized workers must provide the employer with the names of the worker representatives.

196.1(6) If the workers, or where applicable, the union representing workers, do not select workers for the committee, then the employer must select those worker members.

Co-chairs of committee

196.2 A joint health and safety committee must have 2 co-chairs, one chosen by the persons representing the employer on the committee and the other chosen by the worker members on the committee.

Terms of reference

197 An employer must ensure each joint health and safety committee develops written terms of reference

- (a) outlining the process to select co-chairs,
- (b) outlining the process for selecting worker members to the committee to ensure worker members are representative of the workers for that employer,
- (c) establishing a term of office for committee members,
- (d) outlining the frequency for regular committee meetings and how meeting records will be maintained,

- (e) outlining processes for conducting meetings, and forwarding health and safety concerns to the attention of the employer,
- (f) establishing a process to replace a member during the member's term of office,
- (g) establishing a dispute resolution process for when the committee cannot agree on a recommendation to the employer, and
- (h) outlining processes to address circumstances where committee members are not fulfilling their duties.

Special meetings of committees

198(1) A joint health and safety committee must convene a special meeting if requested to do so by an officer.

(2) The employer shall maintain a copy of the minutes of a special meeting for 2 years and have them readily available for inspection by a joint health and safety committee member or an officer.

Quorum

199 A quorum of a joint health and safety committee is 1/2 of the members if

- (a) worker members and members representing the employer are present, and
- (b) at least 1/2 of those present are worker members.

Posting names of committee members or health and safety representatives

199.1 The employer must

- (a) maintain a record of the names and contact information for the members of the joint health and safety committee or health and safety representative, and
- (b) conspicuously post contact information for the joint health and safety committee or health and safety representative at every work site where workers are represented by the committee or representative, or by another means as agreed to by the joint health and safety committee or health and safety representative.

Special meetings of representatives

199.2 A health and safety representative may call a special meeting with an employer to deal with concerns at the work site.

Time away for committee or representative work and entitlement to pay

199.3 A worker who is a member of a joint health and safety committee or who is a health and safety representative is deemed to be at work during the times the worker is performing joint health and safety committee or health and safety representative duties, or attending training in connection with these duties.

200 Repealed.

Training

201 An employer must ensure that members of a joint health and safety committee or a health and safety representative are trained in the following:

- (a) the roles and responsibilities of co-chairs and members on joint health and safety committees and health and safety representatives;
- (b) the obligations of work site parties;
- (c) the rights of workers.

202-207 Repealed.

Part 14

Lifting and Handling Loads

Equipment

208(1) An employer must provide, where reasonably practicable, appropriate equipment for lifting, lowering, pushing, pulling, carrying, handling or transporting heavy or awkward loads.

208(2) An employer must ensure that workers use the equipment provided under subsection (1).

208(3) Workers must use the equipment provided for lifting, lowering, pushing, pulling, carrying, handling or transporting heavy or awkward loads.

208(4) For the purposes of this section, a heavy or awkward load includes equipment, goods, supplies, persons and animals.

Adapting heavy or awkward loads

209 If the equipment provided under section 208 is not reasonably practicable in a particular circumstance or for a particular heavy or awkward load, the employer must take all practicable means to

- (a) adapt the load to facilitate lifting, lowering, pushing, pulling, carrying, handling or transporting the load without injuring workers, or
- (b) otherwise minimize the manual handling required to move the load.

Work site design — health care facilities

209.1(1) An employer must ensure that appropriate patient/client/resident handling equipment is adequately incorporated into the design and construction of

- (a) a new health care facility, and
- (b) a health care facility undergoing significant physical alterations, renovations or repairs.

209.1(2) An employer must ensure that any new patient/client/resident handling equipment installed at an existing work site, including vehicles in which patient/client/resident handling occurs, fits adequately in the space intended for it.

209.1(3) Subsections (1) and (2) do not apply to health care facility construction, alterations, renovations or repairs started before July 1, 2009.

Patient/client/resident handling

209.2(1) An employer must develop and implement a safe patient/client/resident handling program if workers are required to lift, transfer or reposition patients/clients/residents.

209.2(2) The program required by subsection (1) must include an annual evaluation of its effectiveness at preventing worker injuries.

209.2(3) An employer must ensure that workers follow the safe handling program required by subsection (1).

209.2(4) Workers must follow the safe handling program required by subsection (1).

Assessing manual handling hazards

210(1) Before a worker manually lifts, lowers, pushes, pulls, carries, handles or transports a load that could injure the worker, an employer must perform a hazard assessment that considers

- (a) the weight of the load,
- (b) the size of the load,
- (c) the shape of the load,
- (d) the number of times the load will be moved, and
- (e) the manner in which the load will be moved.

210(2) Before a worker performs any manual patient/client/resident handling activities, an employer must perform a hazard assessment that considers the worker's physical and mental capabilities to perform the work.

210(3) If the hazard assessment required by section 7 and subsections (1) and (2) determines that there is a potential for musculoskeletal injury, an employer must ensure that all reasonably practicable measures are used to eliminate or reduce that potential in accordance with section 9.

Musculoskeletal injuries

211 If a worker reports to the employer what the worker believes to be work-related symptoms of a musculoskeletal injury, the employer must promptly

- (a) review the activities of that worker, and of other workers doing similar tasks, to identify work-related causes of the symptoms, if any, and
- (b) take corrective measures to avoid further injuries if the causes of the symptoms are work-related.

Training to prevent musculoskeletal injury

211.1(1) An employer must ensure that a worker who may be exposed to the possibility of musculoskeletal injury is trained in specific measures to eliminate or reduce that possibility.

211.1(2) An employer must ensure that the training referred to in subsection (1) includes

- (a) identification of factors that could lead to a musculoskeletal injury,
- (b) the early signs and symptoms of musculoskeletal injury and their potential health effects, and
- (c) preventive measures including, where applicable, the use of altered work procedures, mechanical aids and personal protective equipment.

Part 15 Managing the Control of Hazardous Energy

Machinery, Equipment or Powered Mobile Equipment

Isolation re machinery, equipment or powered mobile equipment

212(1) If machinery, equipment or powered mobile equipment is to be serviced, repaired, tested, adjusted or inspected, or if any other work is to be performed on the machinery, equipment or powered mobile equipment that requires the control of hazardous energy, an employer must ensure that no worker performs such work on the machinery, equipment or powered mobile equipment until it has come to a complete stop and

- (a) all hazardous energy that may pose a hazard to a worker is isolated by activation of an energy-isolating device and the energy-isolating device is secured in accordance with section 214.1, 215 or 215.1, or
- (b) the machinery, equipment or powered mobile equipment is otherwise rendered inoperative in a manner that prevents its unintended activation and provides equal or greater protection than the protection afforded under clause (a).

212(2) Despite subsection (1), an employer must develop and implement procedures and controls to ensure that machinery, equipment or powered mobile equipment is safely serviced, repaired, tested, adjusted or inspected, or that any other work is safely performed on it, if

- (a) the manufacturer's specifications require the machinery, equipment or powered mobile equipment to remain operative while it is being serviced, repaired, tested, adjusted or inspected, or has any other work performed on it, or
- (b) there are no manufacturer's specifications and it is not reasonably practicable to stop or render inoperative the machinery, equipment or powered mobile equipment.

AR 191/2021 s212;242/2022

Verifying isolation

213 A worker must not perform work on machinery, equipment or powered mobile equipment that requires the control of hazardous energy until

- (a) the requirements of section 212 are completed,
- (b) the machinery, equipment or powered mobile equipment is tested by the worker to verify that it is inoperative or otherwise made safe, and
- (c) the worker confirms that the machinery, equipment or powered mobile equipment is inoperative or otherwise made safe.

AR 191/2021 s213;242/2022

Securing Isolation

Assigning personal locks

214(1) An employer must assign to each of its workers involved in the isolation of hazardous energy a personal lock with a unique mark or identification tag on the lock to identify the lock as belonging to the worker to whom it is assigned.

214(2) During the time hazardous energy is isolated in accordance with section 212, an employer must make readily available to workers a written list of the names of every worker to whom a personal lock is assigned and a description of the unique mark or identification tag associated with each personal lock.

214(3) A worker may be assigned more than one personal lock under this section to enable compliance with the requirements of this Part.

214(4) Control of a personal lock assigned to a worker under this section may be transferred to a supervisor or a worker in the circumstances referred to in section 214.1(4)(b), 215(5)(b) or 215.1(4)(b).

AR 191/2021 s214;242/2022

Securing by individual workers

214.1(1) Once all energy-isolating devices have been activated to control hazardous energy as required by section 212, an employer must ensure that a worker secures each energy-isolating device with that worker's personal lock.

214.1(2) Once each energy-isolating device is secured as required by subsection (1), the worker who secures the energy-isolating device with that worker's personal lock must verify that the hazardous energy has been effectively isolated.

214.1(3) If more than one worker is working on machinery, equipment or powered mobile equipment that requires hazardous energy to be controlled, an employer must ensure that

- (a) every such worker secures that worker's personal lock to each energy-isolating device being used, and
- (b) the first worker securing that worker's personal lock verifies that the hazardous energy has been effectively isolated.

214.1(4) If a worker who has secured a personal lock to an energy-isolating device is reassigned before the work is completed, or the work is extended from one shift to another, an employer must ensure that

- (a) a supervisor or a worker designated by the employer secures that supervisor's or worker's personal lock to the energy-isolating device prior to removal of the reassigned or departing worker's lock, or
- (b) the control of the reassigned or departing worker's personal lock is transferred to a supervisor or a worker designated by the employer.

214.1(5) After the work requiring isolation of hazardous energy has been completed, an employer must ensure that the machinery, equipment or powered mobile equipment is returned to operation in accordance with section 215.3.

AR 242/2022 s20

Securing by group control procedures

215(1) An employer must ensure that group control procedures are developed and implemented under this section if the requirements of section 214.1 would not provide adequate protection from hazardous energy because of

- (a) the number of workers involved in the work requiring hazardous energy control, and
- (b) the number of energy-isolating devices involved.

215(2) An employer must ensure that group control procedures developed under this section comply with subsections (3) to (7).

215(3) Once all energy-isolating devices have been activated as required by section 212, an employer must ensure that a supervisor or a worker designated by the employer

- (a) secures all energy-isolating devices with a personal lock or other equivalent means of securing the device,
- (b) secures any keys used to lock the devices used under clause (a),
- (c) verifies that all hazardous energy is effectively isolated, and
- (d) completes and posts at a conspicuous place at the work site a report that identifies the machinery, equipment or powered mobile equipment covered by the group control procedures developed under subsection (1) and the verification under clause (c).

215(4) An employer must ensure that each worker secures that worker's personal lock to the key-securing system referred to in subsection (3)(b) before servicing, repairing, testing, adjusting or inspecting machinery, equipment or powered mobile equipment or performing any other work that requires the control of hazardous energy.

215(5) If a worker who has secured a personal lock on an energy-isolating device is reassigned before the work is completed, or the work is extended from one shift to another, an employer must ensure that

- (a) a supervisor or a worker designated by the employer secures that supervisor's or worker's personal lock to the energy-isolating device prior to the removal of the reassigned or departing worker's lock, or
- (b) the control of the reassigned or departing worker's personal lock is transferred to the supervisor or a worker designated by the employer.

215(6) On completing the work requiring isolation of hazardous energy, a worker referred to in subsection (4) or (5) must remove that worker's personal lock from the key-securing system in accordance with the group control procedures developed under subsection (1).

215(7) After the work requiring isolation of hazardous energy is completed, an employer must ensure that the machinery, equipment or powered mobile equipment is returned to operation in accordance with section 215.3.

AR 191/2021 s215;242/2022

Securing by complex group control procedures

215.1(1) An employer must ensure that complex group control procedures are developed and implemented under this section if the requirements of section 214.1 or 215 would not provide adequate protection from hazardous energy because of

- (a) the physical size and extent of the machinery, equipment or powered mobile equipment,
- (b) the relative inaccessibility of the energy-isolating devices,
- (c) the number of workers involved in the work requiring hazardous energy control,
- (d) the number of energy-isolating devices involved,
- (e) the extended length of time of the required isolation,
- (f) the interdependence and interrelationship of the components being isolated, or
- (g) any other reason that would render compliance with the requirements of section 214.1 or 215 inadequate to protect the workers.

215.1(2) An employer must ensure that complex group control procedures developed under subsection (1) are certified by a professional engineer as safe and appropriate for the protection of workers and include the following:

- (a) procedures to ensure continuous safe performance of the work requiring isolation of hazardous energy;
- (b) procedures relating to a work permit or master tag requiring
 - (i) each involved worker to personally sign on the job before commencing the work and sign off the job on completing the work, or
 - (ii) a supervisor or a worker designated by the employer to sign each worker involved in the work on and off the job;
- (c) procedures for a supervisor or a worker designated by the employer to
 - (i) activate all required energy-isolating devices to control hazardous energy in accordance with section 212, and
 - (ii) secure the energy-isolating devices;
- (d) procedures for another supervisor or a worker designated by the employer to verify that all hazardous energy is effectively isolated;
- (e) procedures for workers to secure energy-isolating devices with personal locks and verify effective isolation, where the energy-isolating device is reasonably accessible;
- (f) procedures for attaching, removing or transferring control of personal locks if a worker is reassigned or the work continues over a shift change.

215.1(3) An employer must ensure that each worker secures that worker's personal lock on an energy-isolating device in accordance with the complex group control procedures developed under subsection (1) before servicing, repairing, testing, adjusting or inspecting machinery, equipment or powered mobile equipment or performing any other work that requires the control of hazardous energy.

215.1(4) If a worker who has secured a personal lock on an energy-isolating device is reassigned before the work is completed, or the work is extended from one shift to another, an employer must ensure that

- (a) a supervisor or a worker designated by the employer secures that supervisor's or worker's personal lock to the energy-isolating device prior to the removal of the reassigned or departing worker's lock, or
- (b) the control of the reassigned or departing worker's personal lock is transferred to the supervisor or a worker designated by the employer.

215.1(5) On completing the work requiring isolation of hazardous energy, a worker referred to in subsection (3) or (4) must remove that worker's personal lock in accordance with the complex group control procedures developed under subsection (1).

215.1(6) After the work requiring isolation of hazardous energy has been completed, an employer must ensure that the machinery, equipment or powered mobile equipment is returned to operation in accordance with section 215.3.

AR 191/2021 s215.1;242/2022

Securing remotely controlled systems

215.2(1) An employer must ensure that procedures for a control system for energy-isolating devices are developed and implemented if securing an energy-isolating device as required by section 212 is not reasonably practicable on a system that remotely controls the operation of machinery, equipment or powered mobile equipment.

215.2(2) An employer must ensure the procedures developed under this section provide equal or greater protection than the protection afforded to workers under section 212.

215.2(3) After the work requiring isolation of hazardous energy is completed, an employer must ensure that the system is returned to operation in accordance with section 215.3.

AR 191/2021 s215.2;242/2022

Returning to operation

215.3(1) A worker must not remove a personal lock or other equivalent means of securing the energy-isolating device unless

- (a) the worker is the worker who secured it,
- (b) the worker is the supervisor or worker designated by an employer under section 215 or 215.1, or
- (c) the worker is acting in accordance with the procedures required by section 215.2.

215.3(2) Despite subsection (1), in an emergency or if the worker who secured a personal lock or other equivalent means of securing the energy-isolating device is not available, a supervisor or a worker designated by an employer may remove the lock or other equivalent means of securing the energy-isolating device in accordance with the applicable requirements under this Part.

215.3(3) An employer must ensure that an energy-isolating device is not removed until

- (a) each involved worker is accounted for,

- (b) all personal locks secured by workers under section 214.1, 215 or 215.1 are removed, and
- (c) it is verified that no worker is in danger by the removal of the energy-isolating device or the return to operation of the machinery, equipment or powered mobile equipment.

AR 191/2021 s215.3;242/2022

Piping or Pipelines

Isolation re piping or pipelines

215.4 If piping or a pipeline containing a substance under pressure is to be serviced, repaired, tested, adjusted or inspected, or if any other work is to be performed on it that requires the control of hazardous energy, an employer must ensure that no worker performs such work on the piping or pipeline until flow in the piping or pipeline has been stopped or regulated to a safe level and the location at which the work is to be carried out is isolated and secured in accordance with section 215.5.

AR 191/2021 s215.4;242/2022

Isolation requirements for piping or a pipeline

215.5(1) To isolate piping or a pipeline containing a substance under pressure, an employer must ensure the use of

- (a) a system of blanking or blinding, or
- (b) a double block and bleed isolation system providing
 - (i) 2 blocking seals on either side of the isolation point, and
 - (ii) an operable bleed-off between the 2 seals.

215.5(2) An employer must ensure that piping or a pipeline that is blanked or blinded is clearly marked to indicate that a blank or blind is installed.

215.5(3) An employer must ensure that, if valves or similar blocking seals with a bleed-off valve between them are used to isolate piping or a pipeline, the bleed-off valve is secured in the "OPEN" position and the valves or similar blocking seals in the flow lines are functional and secured in the "CLOSED" position.

215.5(4) An employer must ensure that the device used to secure the valves or seals referred to in subsection (3) is

- (a) a positive mechanical means of keeping the valves or seals in the required position, and
- (b) strong enough and designed to withstand unintended opening.

215.5(5) Despite subsection (1), if it is not reasonably practicable to provide blanking, blinding or double block and bleed isolation, an employer must develop and implement procedures for an alternate means of isolation certified by a professional engineer as safe and appropriate for the protection of workers.

AR 191/2021 s215.5;242/2022

Pigging and testing of piping or pipelines

215.6(1) A worker who is not directly involved in a pigging and testing operation must not be in the immediate area of piping or pipeline exposed during the operation.

- 215.6(2)** An employer must ensure that, before a pig is removed,
- (a) a pigcatcher on piping or a pipeline is isolated from the piping or pipeline,
 - (b) the pigcatcher is depressurized, and
 - (c) there are no workers at the end of the piping or pipeline or in the immediate area of the pigcatcher if the piping, pipeline or pigcatcher is under pressure during the pigging and testing operation.

215.6(3) An employer must ensure workers directly involved in the pigging and testing operation are positioned so they are not in a location where they may be injured by the operation.

AR 242/2022 s20

Part 16 Noise

Duty to reduce

216 An employer must ensure that all reasonably practicable measures are used to reduce the noise to which workers are exposed in areas of the work site where workers may be present.

AR 191/2021 s216;242/2022

Noise control design

217 An employer must ensure that the following are designed and constructed in such a way that the continuous noise levels generated do not exceed 85 dBA or are as low as reasonably practicable:

- (a) a new work site or work area;
- (b) significant physical alterations, renovations or repairs to an existing work site or work area;
- (c) a work process introduced to the work site or work area;
- (d) significant equipment introduced to the work site or work area.

AR 191/2021 s217;242/2022

Worker exposure to noise

218 An employer must ensure that a worker's exposure to noise at a work site does not exceed

- (a) the noise exposure limits in Schedule 3, and
- (b) 85 dBA L_{ex} .

AR 191/2021 s218;242/2022

Noise exposure assessment

219(1) If workers are, or may be, exposed to noise at a work site or work area in excess of 82 dBA L_{ex} , an employer must ensure a noise exposure assessment is conducted in accordance with CSA Standard Z107.56-18, *Measurement of noise exposure*.

219(2) An employer must ensure a noise exposure assessment at a work site is performed using

- (a) a noise dosimeter meeting the requirements for a Type 2 instrument as specified by ANSI/ASA S1.25-1991 (R2020), *Specification for Personal Noise Dosimeters*, or IEC 61252:1993/AMD2:2017, *Electroacoustics — Specifications for personal sound exposure meters*, and set at
 - (i) a criterion level of 85 dBA with a 3 dB exchange rate,
 - (ii) a threshold level at or below 75 dBA or "off", and
 - (iii) slow response,

or

- (b) a sound level meter or an integrating sound level meter that meets the requirements as specified by

- (i) ANSI/ASA S1.4-2014/Part 1/IEC 61672-1:2013 (R2019), *Electroacoustics — Sound Level Meters — Part 1: Specifications*,
- (ii) ANSI/ASA S1.4-2014/Part 2/IEC 61672-2:2013 (R2019), *Electroacoustics — Sound Level Meters — Part 2: Pattern Evaluation Tests*, and
- (iii) ANSI/ASA S1.4-2014/Part 3/IEC 61672-3:2013 (R2019), *Electroacoustics — Sound Level Meters — Part 3: Periodic Tests*.

219(3) An employer must ensure that a noise exposure assessment is

- (a) conducted and interpreted by a competent person who
 - (i) is trained in conducting noise exposure assessments,
 - (ii) is trained in the calibration, operation and maintenance of the equipment used in conducting noise exposure measurements, and
 - (iii) can demonstrate an understanding of the method used for measurement,and
- (b) updated if a change in equipment, process or other thing affects the noise level or the length of time a worker is exposed to noise.

AR 191/2021 s219;242/2022

Record of noise exposure assessment

220(1) An employer must ensure that each noise exposure assessment is recorded and includes

- (a) the sound level readings measured,
- (b) the dates of measurements,
- (c) the tasks of workers or occupations evaluated,
- (d) the type of measuring equipment used,
- (e) the work area evaluated, and
- (f) the date the assessment is completed.

220(2) An employer must ensure that

- (a) a copy of the noise exposure assessment is available on request to an affected worker or an officer, and
- (b) the record of a noise exposure assessment is retained for at least 3 years from the date the assessment was completed.

AR 191/2021 s220;242/2022

Noise management program

221 If a noise exposure assessment confirms that workers are exposed to excess noise at a work site, an employer must develop and implement a noise management program that includes

- (a) procedures for addressing noise at the work site,
- (b) identification of the work area at the work site where noise may exceed the noise exposure limits,

- (c) procedures for measuring worker exposure to noise,
- (d) procedures for educating workers in the hazards of exposure to excess noise,
- (e) the methods of noise control to be used,
- (f) training workers in the correct use of noise control measures and hearing protection devices,
- (g) the selection, use and maintenance of hearing protection devices to be used and worn by workers,
- (h) posting of suitable warning signs in any work area where the noise level exceeds 85 dBA,
- (i) the requirements for audiometric testing and the maintenance of audiometric test records, and
- (j) an annual review of the noise management program that includes consideration of the data received under section 223(6).

AR 191/2021 s221;242/2022

Hearing protection

222 An employer must ensure that hearing protection devices used and worn by workers at a work site or work area

- (a) meet the requirements of CSA Standard Z94.2-14 (R2019), *Hearing protection devices — Performance, selection, care, and use*, and
- (b) are fit tested in accordance with CSA Standard Z94.2-14 (R2019), *Hearing protection devices — Performance, selection, care, and use*.

AR 191/2021 s222;242/2022

Audiometric testing

223(1) An employer must provide, at the employer's expense, the following audiometric tests for a worker who is or may be exposed to excess noise at a work site or in a work area:

- (a) an initial baseline test as soon as reasonably practicable, but not later than 6 months after the worker is employed or within 6 months after a worker is or may be exposed to excess noise because of a change in the worker's duties or process conditions;
- (b) a test not more than 12 months after the initial baseline test;
- (c) a test at least every 2nd year after the test under clause (b).

223(2) An employer must ensure that audiometric tests are administered by an audiometric technician who

- (a) works in consultation with a physician, audiologist or occupational health nurse familiar, to the extent possible, with the work site or work area, and
- (b) prior to testing, arranges for an assessment of any results that indicate a significant threshold shift to be conducted
 - (i) where the person consulted under clause (a) is a physician or audiologist, by the physician or audiologist, or
 - (ii) where the person consulted under clause (a) is an occupational health nurse, by a physician or audiologist.

223(3) The audiometric technician conducting the audiometric testing must

- (a) use an audiometer in accordance with ANSI/ASA S3.6-2018, *Specification for Audiometers*, and
- (b) conduct audiometric tests in accordance with CSA Standard Z107.6:16 (R2020), *Audiometric testing for use in hearing loss prevention programs*.

223(4) If the results of an audiometric test indicate a significant threshold shift, the audiometric technician must

- (a) advise the worker of the test results not more than 30 days after the test is completed, and
- (b) forward the results of the audiometric test, any other relevant information and the results of the baseline audiometric test to the physician or audiologist referred to in subsection (2)(b).

223(5) If the physician or audiologist referred to in subsection (4) confirms the audiogram as a significant threshold shift, the physician or audiologist must

- (a) advise the worker to that effect not more than 30 days after the test results are received under subsection (4), and
- (b) with the written consent of the worker, provide the results of the audiometric test to the worker's physician.

223(6) Each physician or audiologist who receives audiometric test results under subsection (4)(b) must

- (a) provide aggregate data on audiometric test results to the employer at least annually, and
- (b) advise the employer as soon as possible of any concerns that, in the opinion of the physician or audiologist, are related to noise management at the work site or work area.

223(7) Information received by

- (a) the physician or audiologist under subsection (4)(b) must be retained by the physician or audiologist for at least 10 years from the date of receipt, and
- (b) the employer under subsection (6) must be retained by the employer for at least 2 years from the date of receipt.

AR 191/2021 s223;242/2022

Deemed work time

224 A worker who undergoes audiometric testing under section 223 is deemed to be at work during the times when the worker is

- (a) travelling to and from the audiometric test, and
- (b) undergoing the audiometric test.

AR 191/2021 s224;242/2022

Part 17

Overhead Power Lines

Safe limit of approach distance

225(1) Before work is done or equipment is operated within 7 metres of an overhead power line, an employer must

- (a) determine the voltage of the power line, and
- (b) establish the appropriate safe limit of approach distance listed in Schedule 4.

225(2) Except as provided for in subsection (3), an employer must ensure that the safe limit of approach distance, as established in subsection (1), is maintained and that no work is done and no equipment is operated at a distance less than the established safe limit of approach distance.

225(3) Before work is done or equipment is operated in the vicinity of an overhead power line at a distance less than the established safe limit of approach distance listed in Schedule 4, an employer must notify the operator of the electric utility, the rural electrification association or the industrial power producer who operates the overhead power line and obtain the operator's assistance in protecting workers involved.

225(4) An employer must ensure that earth or other materials are not placed under or beside an overhead power line if doing so reduces the safe clearance to less than the established safe limit of approach distance listed in Schedule 4.

225(5) A worker must maintain safe clearance of not less than the established safe limit of approach distance listed in Schedule 4 when working in the vicinity of an overhead power line.

AR 191/2021 s225;242/2022

Transported loads, equipment and buildings

226 The safe limit of approach distances listed in Schedule 4 do not apply to a load, equipment or building that is transported under overhead power lines if the total height, including equipment transporting it, is less than 4.15 metres.

AR 191/2021 s226;242/2022

Utility worker exemption

227 Section 225 does not apply to utility workers working in accordance with the requirements of CAN/ULC-S801-14, *Standard on Electric Utility Workplace Electrical Safety for Generation, Transmission, and Distribution*.

AR 191/2021 s227;242/2022

Part 18

Personal Protective Equipment

Duty to use personal protective equipment

228(1) If the hazard assessment indicates the need for personal protective equipment, an employer must ensure that

- (a) workers wear personal protective equipment that is correct for the hazard and protects workers,
- (b) workers properly use and wear the personal protective equipment,
- (c) the personal protective equipment is in a condition to perform the function for which it is designed, and
- (d) workers are trained in the correct use, care, limitations and assigned maintenance of the personal protective equipment.

228(2) A worker must

- (a) use and wear properly the appropriate personal protective equipment specified in this Code in accordance with the training and instruction received,
- (b) inspect the personal protective equipment before using it, and
- (c) not use personal protective equipment that is unable to perform the function for which it is designed.

228(3) An employer must ensure that the use of personal protective equipment does not itself endanger the worker.

Eye Protection

Eye and face protectors

229(1) If a worker's eyes may be injured or irritated at a work site, an employer must ensure that the worker wears personal protective equipment to protect the eyes that is

- (a) approved to CSA Standard Z94.3-15, *Eye and face protectors*, and
- (b) appropriate to the work being done and the hazard involved.

229(2) Prescription eyewear may be worn if it

- (a) is personal protective equipment to protect the eyes,
- (b) meets the requirements of CSA Standard Z94.3-15, *Eye and face protectors*, and
- (c) is appropriate to the work and the hazard involved.

229(2.1) Prescription personal protective equipment to protect the eyes having glass lenses must not be used if there is danger of impact unless it is worn behind equipment meeting the requirements of subsection (1).

229(2.2) If the use of plastic prescription lenses is impracticable, and there is no danger of impact, a worker may use lenses made of treated safety glass meeting the requirements of

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

229(2.3) Despite subsection (2), prescription personal protective equipment to protect the eyes may consist of frames that meet the requirements of ANSI Standard Z87.1-2003, *Occupational and Educational Personal Eye and Face Protection Devices* provided the lenses meet the requirements of CSA Standard Z94.3-15, *Eye and face protectors*.

229(3) If a worker must wear full face piece respiratory protective equipment and the face piece is intended to prevent materials striking the eyes, an employer must ensure that the face piece

- (a) meets the requirements of CSA Standard Z94.3-15, *Eye and face protectors*, or
- (b) meets the impact and penetration test requirements of section 9 of
 - (i) ANSI Standard Z87.1-2003, *Occupational and Educational Personal Eye and Face Protection Devices*, or
 - (ii) ANSI Standard Z87.1-1989, *Practice for Occupational and Educational Eye and Face Protection*.

AR 191/2021 s229;242/2022

Contact lenses

230 An employer must ensure that, if wearing contact lenses poses a hazard to the worker's eyes during work, the worker is advised of the hazards and the alternatives to wearing contact lenses.

Electric arc welding

231 A worker must not perform electric arc welding if it is reasonably possible for another worker to be exposed to radiation from the arc unless the other worker is wearing suitable personal protective equipment to protect the eyes or is protected by a screen.

Flame Resistant Clothing

Use of flame resistant clothing

232(1) If a worker may be exposed to a flash fire or electrical equipment flashover, an employer must ensure that the worker wears personal protective equipment that includes flame resistant outerwear and uses other personal protective equipment appropriate to the hazard.

232(2) A worker must ensure that clothing worn beneath flame resistant outerwear and against the skin is made of flame resistant fabrics or natural fibres that will not melt when exposed to heat.

Foot Protection

Footwear

233(1) An employer must ensure that a worker uses footwear that is appropriate to the hazards associated with the work being performed and the work site.

233(1.1) An employer must not require a worker to wear footwear that may pose a health or safety risk to the worker.

233(2) If the hazard assessment identifies that protective footwear needs to have toe protection, a puncture resistant sole, metatarsal protection, electrical protection, chainsaw protection or any combination of these, the employer must ensure that the worker wears personal protective equipment to protect the feet that is approved to

- (a) CSA Standard Z195-14, *Protective footwear*, or
- (b) ASTM Standard F2413-05, *Specification for Performance Requirements for Protective Footwear*,

if the personal protective equipment to protect the feet was manufactured on or after March 31, 2023.

233(3) Despite subsection (2), if a worker is likely to be exposed to a hazard other than those referred to in subsection (2), the employer must ensure that the worker uses footwear appropriate to the hazard.

233(4) If a worker is unable, for medical reasons, to wear personal protective equipment to protect the feet that complies with subsection (2), the worker may substitute external safety toecaps if the employer ensures that

- (a) the safety toecaps meet the impact force requirements of
 - (i) CSA Standard Z195-14, *Protective footwear*, or
 - (ii) ASTM Standard F2413-05, *Specification for Performance Requirements for Protective Footwear*,
- (b) metatarsal protection is not needed to protect the feet from injury,
- (c) the hazard assessment confirms that the worker will not be exposed to any sole penetration hazards, and
- (d) wearing the safety toecaps does not itself create a hazard for the worker.

233(5) An employer must ensure that a firefighter wears personal protective equipment to protect the feet that is approved to

- (a) CSA Standard Z195-14, *Protective footwear*,
- (b) NFPA Standard 1971, *Protective Ensemble for Structural Fire Fighting*, 2007 Edition, or
- (c) NFPA Standard 1977, *Protective Clothing and Equipment for Wildland Fire Fighting*, 2005 Edition,

if the personal protective equipment to protect the feet was manufactured on or after March 31, 2023.

AR 191/2021 s233;242/2022

Head Protection

Protective headwear

234(1) Subject to sections 235, 236 and 237, if there is a foreseeable danger of injury to a worker's head at a work site and there is a significant possibility of lateral impact to the head, an employer must ensure that the worker wears protective headwear that is appropriate to the hazards and meets the requirements of

- (a) CSA Standard Z94.1-15, *Industrial protective headwear — Performance, selection, care, and use*, or
- (b) ANSI Standard Z89.1-2003, *American National Standard for Industrial Head Protection*, for Type II head protection,

if the protective headwear was manufactured on or after March 31, 2023.

234(2) Subject to sections 235, 236 and 237, if there is a foreseeable danger of injury to a worker's head at a work site and the possibility of lateral impact to the head is unlikely, an employer must ensure that the worker wears protective headwear that is appropriate to the hazard and meets the requirements of

- (a) CSA Standard CAN/CSA Z94.1-05, *Industrial Protective Headwear*, or
- (b) ANSI Standard Z89.1-2003, *American National Standard for Industrial Head Protection*,

if the protective headwear was manufactured on or after July 1, 2009.

AR 191/2021 s234;242/2022

Bicycles and skates

235(1) An employer must ensure that a worker who is riding a bicycle or using in-line skates or a similar means of transport wears protective headwear

- (a) that is approved to one of the following standards for bicycle safety helmets if the protective headwear was manufactured on or after July 1, 2009:
 - (i) CSA CAN/CSA D113.2-M89 (R2004), *Cycling Helmets*;
 - (ii) CPSC, Title 16 Code of U.S. Federal Regulations Part 1203, *Safety Standard for Bicycle Helmets*;
 - (iii) Snell Memorial Foundation B-90A, *1998 Standard for Protective Headgear for Use in Bicycling*;
 - (iv) Snell Memorial Foundation B-95A, *1998 Standard for Protective Headgear for Use with Bicycles*;
 - (v) Snell Memorial Foundation N-94, *1994 Standard for Protective Headgear in Non-Motorized Sports*;
 - (vi) ASTM F1447-06, *Standard Specification for Helmets Used in Recreational Bicycling or Roller Skating*,
- (vii) – (x) repealed,
- and
- (b) that is free of damage or modification that would reduce its effectiveness.

235(2) Despite subsection (1), if workers at a work site normally wear protective headwear in accordance with section 234, that protective headwear may be worn by workers using a bicycle or similar means of transport at the work site if

- (a) the worker travels at a speed of not more than 20 kilometres per hour, and
- (b) the protective headwear is worn with a fastened chin strap.

All-terrain vehicles, snow vehicles, motorcycles

236(1) An employer must ensure that a worker riding an all-terrain vehicle, snow vehicle, motorized trail bike or motorcycle or, subject to subsection (2), a small utility vehicle at a work site wears protective headwear approved to one of the following standards:

- (a) U.S.A. Federal Motor Vehicle Safety Standard FMVSS 218, *Motorcycle Helmets* 1993 OCT;
- (b) BSI Standard BS 6658: 05, *Specification for Protective Helmets for Vehicle Users*;
- (c) Snell Memorial Foundation Standard M2005, *2005 Helmet Standard for Use in Motorcycling*,

if the protective headwear was manufactured on or after July 1, 2009.

236(1.1) Subsection (1) does not apply to small utility vehicles equipped with seat belts and rollover protection.

236(2) Protective headwear in good condition that meets the requirements of an earlier version of a standard listed in subsection (1) may be used unless it is damaged.

236(3) Subsection (1) does not apply if the vehicle is equipped with rollover protective structures that comply with section 270 and seat belts or restraining devices that comply with section 271.

236(4) A worker who wears protective headwear under subsection (1) and who uses an all-terrain vehicle, snow vehicle, motorized trail bike or motorcycle to travel to a remote work site may continue to wear that protective headwear while working at the work site if

- (a) the work does not subject the worker to potential contact with exposed energized electrical sources, and
- (b) the work is done for a short period of time.

Firefighters

237 Despite section 234, an employer may permit a firefighter to wear protective headwear that meets the requirements of the following standards considering the nature of the hazard:

- (a) NFPA Standard 1971, *Protective Ensemble for Structural Fire Fighting*, 2007 Edition; or
- (b) NFPA Standard 1977, *Protective Clothing and Equipment for Wildland Fire Fighting*, 2005 Edition,

if the protective headwear was manufactured on or after July 1, 2009.

Bump hat

238 Despite section 234, an employer may permit a worker to wear a bump hat protective headwear at the work site if the danger of injury is limited to the worker's head striking a stationary object.

Exemption from wearing headwear

239(1) Despite section 234, if it is impractical for a worker to wear protective headwear during a particular work process,

- (a) the employer must ensure that the worker's head is protected using an adequate alternative means of protection during the work process, and

(b) the worker may conduct the work while the alternative means of protection is in place.

239(2) A worker must wear protective headwear if the foreseeable danger of injury to the worker's head persists immediately after completing the work process referred to in subsection (1).

Life Jackets and Personal Flotation Devices

Compliance with standards

240 An employer must ensure that a life jacket or personal flotation device is approved by

- (a) Transport Canada, or
- (b) an agency approved by Transport Canada.

AR 191/2021 s240;242/2022

Use of jackets and flotation devices

241(1) If there is a foreseeable danger that a worker could be exposed to the hazard of drowning, an employer must ensure that the worker wears a life jacket.

241(2) A worker who could be exposed to the hazard of drowning must wear a life jacket.

241(2.1) Subsections (1) and (2) do not apply if other safety measures are in place that will protect a worker from the hazard of drowning.

241(3) Despite subsections (1) and (2), if a worker performs work from a boat for an extended period of time, the worker may wear a personal flotation device if the employer ensures that there is also a life jacket readily accessible to each worker on the boat.

Limb and Body Protection

Limb and body protection

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

Skin protection

243 An employer must ensure that a worker's skin is protected from a harmful substance that may injure the skin on contact or may adversely affect a worker's health if it is absorbed through the skin.

Respiratory Protective Equipment

Respiratory dangers

244(1) An employer must determine the degree of danger to a worker at a work site and whether the worker needs to wear respiratory protective equipment if

- (a) a worker is or may be exposed to an airborne contaminant or a mixture of airborne contaminants in a concentration exceeding their occupational exposure limits,
- (b) the atmosphere has or may have an oxygen concentration of less than 19.5 percent by volume, or

(c) a worker is or may be exposed to an airborne biohazardous material.

244(2) In making a determination under subsection (1), the employer must consider

- (a) the nature and exposure circumstances of any contaminants or biohazardous material,
- (b) the concentration or likely concentration of any airborne contaminants,
- (c) the duration or likely duration of the worker's exposure,
- (d) the toxicity of the contaminants,
- (e) the concentration of oxygen,
- (f) the warning properties of the contaminants, and
- (g) the need for emergency escape.

244(3) Based on a determination under subsection (1), the employer must

- (a) subject to clause (b), provide and ensure the availability of the appropriate respiratory protective equipment to the worker at the work site, and
- (b) despite section 247, when the effects of airborne biohazardous materials are unknown, provide and ensure the availability of respiratory protective equipment appropriate to the worker's known exposure circumstances.

244(3.1) Subsection (3) does not apply when an employer has developed and implemented procedures that effectively limit exposure to airborne biohazardous material.

244(4) A worker must use the appropriate respiratory protective equipment provided by the employer under subsection (3).

Code of practice

245(1) If respiratory protective equipment is used at a work site, an employer must prepare a code of practice governing the selection, maintenance and use of respiratory protective equipment.

245(2) In the case of a health care worker who may be exposed to airborne biohazardous material, an employer must ensure that the code of practice required under subsection (1) includes training on at least an annual basis.

Approval of equipment

246 An employer must ensure that respiratory protective equipment required at a work site is approved

- (a) by NIOSH, or
- (b) by another standards setting and equipment testing organization, or combination of organizations, approved by a Director.

246.1 Repealed.

Selection of equipment

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

Storage and use

248(1) An employer must ensure that respiratory protective equipment kept ready to protect a worker is

- (a) stored in a readily accessible location,
- (b) stored in a manner that prevents its contamination,
- (c) maintained in a clean and sanitary condition,
- (d) inspected before and after each use to ensure it is in satisfactory working condition, and
- (e) serviced and used in accordance with the manufacturer's specifications.

248(2) An employer must ensure that respiratory protective equipment that is not used routinely but is kept for emergency use is inspected at least once every calendar month by a competent worker to ensure it is in satisfactory working condition.

Quality of breathing air

249(1) An employer must ensure that air used in a self-contained breathing apparatus or air line respiratory protective equipment

- (a) is of a quality that meets the requirements of Table 1 of CSA Standard Z180.1-00 (R2005), *Compressed Breathing Air and Systems*, and
- (b) does not contain a substance in a concentration that exceeds 10 percent of its occupational exposure limit.

249(2) Subsection (1)(b) does not apply to substances listed in Table 1 of CSA Standard Z180.1-00 (R2005), *Compressed Breathing Air and Systems*.

Effective facial seal

250(1) An employer must ensure that respiratory protective equipment that depends on an effective facial seal for its safe use is correctly fit tested and tested in accordance with CSA Standard Z94.4-02, *Selection, Use and Care of Respirators*.

250(2) An employer must ensure that, if a worker is or may be required to wear respiratory protective equipment and the effectiveness of the equipment depends on an effective facial seal, the worker is clean shaven where the face piece of the equipment seals to the skin of the face.

Equipment for immediate danger

251 If an employer determines under section 244 that breathing conditions at a work site are or may become immediately dangerous to life or health, the employer must ensure that a worker wears self-contained breathing apparatus or air line respiratory protective equipment that

- (a) is of a type that will maintain positive pressure in the face piece,

- (b) has a capacity of at least 30 minutes unless the employer's hazard assessment indicates the need for a greater capacity,
- (c) provides full-face protection in situations where contaminants may irritate or damage the eyes,
- (d) in the case of air line respiratory protective equipment, is fitted with an auxiliary supply of respirable air of sufficient quantity to enable the worker to escape from the area in an emergency, and
- (e) in the case of a self-contained breathing apparatus, has an alarm warning of low pressure.

Equipment — no immediate danger

252 An employer must ensure that a worker wears self-contained breathing apparatus or air line respiratory protective equipment having a capacity of at least 30 minutes if

- (a) the employer determines under section 244 that conditions at the work site are not or cannot become immediately dangerous to life or health but
 - (i) the oxygen content of the atmosphere is or may be less than 19.5 percent by volume, or
 - (ii) the concentration of airborne contaminants exceeds or may exceed that specified by the manufacturer for air purifying respiratory protective equipment,and
- (b) the complete equipment required by section 251 is not provided.

Air purifying equipment

253 An employer may permit workers to wear air purifying respiratory protective equipment if

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

Emergency escape equipment

254(1) Despite sections 251 and 252, if normal operating conditions do not require the wearing of respiratory protective equipment but emergency conditions may occur requiring a worker to escape from the work area, the employer may permit the escaping worker to wear

- (a) mouth bit and nose-clamp personal protective equipment if
 - (i) the personal protective equipment is designed to protect the worker from the specific airborne contaminants present, and
 - (ii) the oxygen content of the atmosphere during the escape is 19.5 percent or greater by volume,

or

- (b) alternative personal protective equipment that can be proven to give the worker the same or greater protection as the personal protective equipment referred to in clause (a).

254(2) Before permitting a worker to use the equipment referred to in subsection (1), the employer must consider the length of time it will take the worker to escape from the work area.

Abrasive blasting operations

255 If a worker is performing abrasive blasting, the employer must ensure that the worker wears personal protective equipment specifically designed for abrasive blasting, supplied with air that is at a positive pressure of not more than 140 kilopascals.

Part 19

Powered Mobile Equipment

Operator responsibilities

256(1) A worker must not operate powered mobile equipment unless the worker

- (a) is trained to safely operate the equipment,
- (b) has demonstrated competency in operating the equipment to a competent worker designated by the employer,
- (c) is familiar with the equipment's operating instructions, and
- (d) is authorized by the employer to operate the equipment.

256(2) Subsection (1)(a), (b) and (c) do not apply if a worker in training operates the equipment under the direct supervision of a competent worker designated by the employer.

256(3) The operator of powered mobile equipment must

- (a) report to the employer any conditions affecting the safe operation of the equipment,
- (b) operate the equipment safely,
- (c) maintain full control of the equipment at all times,
- (d) use the seat belts and other safety equipment in the powered mobile equipment,
- (e) ensure that passengers in the powered mobile equipment use the seat belts and other safety equipment in the powered mobile equipment, and
- (f) keep the cab, floor and deck of the powered mobile equipment free of materials, tools or other objects that could interfere with the operation of the controls or create a tripping or other hazard to the operator or other occupants of the equipment.

256(4) Repealed.

Visual inspection

257(1) Before operating powered mobile equipment, the operator must complete a visual inspection of the equipment and the surrounding area to ensure that the powered mobile equipment is in safe operating condition and that no worker, including the operator, is endangered when the equipment is started up.

257(2) While powered mobile equipment is in operation, the operator must complete a visual inspection of the equipment and surrounding area at the intervals required by the manufacturer's specifications or, in the absence of manufacturer's specifications, the employer's operating procedures.

257(3) Despite subsections (1) and (2), if the powered mobile equipment is continuously operated as part of an ongoing work operation, the operator may visually inspect the equipment during the work shift or work period as required by the employer's operating procedures.

257(4) A person must not start powered mobile equipment if the visual inspection under subsection (1) is not completed.

257.1 Repealed.

Dangerous movement

258(1) If the movement of a load or the cab, counterweight or any other part of powered mobile equipment creates a danger to workers,

- (a) an employer must not permit a worker to remain within range of the moving load or part, and
- (b) the operator must not move the load or the equipment if a worker is exposed to the danger.

258(2) If the movement of a load or the cab, counterweight or any other part of powered mobile equipment creates a danger to workers, a worker must not remain within range of the moving load or part.

258(3) If a worker could be caught between a moving part of a unit of powered mobile equipment and another object, an employer must

- (a) restrict entry to the area by workers, or
- (b) require workers to maintain a clearance distance of at least 600 millimetres between the powered mobile equipment and the object.

Pedestrian traffic

259(1) An employer must ensure that, if reasonably practicable,

- (a) walkways are designated that separate pedestrian traffic from areas where powered mobile equipment is operating, and
- (b) workers use the designated walkways.

259(2) If it is not reasonably practicable to use designated walkways, an employer must ensure that safe work procedures are used to protect workers who enter areas where powered mobile equipment is operating.

Inspection and maintenance

260(1) An employer must ensure that powered mobile equipment is inspected by a competent worker for defects and conditions that are hazardous or may create a hazard.

260(2) An inspection under subsection (1) must be made in accordance with the manufacturer's specifications.

260(3) If an inspection under subsection (1) indicates that powered mobile equipment is hazardous or potentially hazardous, an employer must ensure that

- (a) the health and safety of a worker who may be exposed to the hazard is protected immediately,
- (b) the powered mobile equipment is not operated until the defect is repaired or the condition is corrected, and
- (c) the defect is repaired or the unsafe condition corrected as soon as reasonably practicable.

260(4) Despite subsection (3), if an inspection under subsection (1) indicates that the powered mobile equipment is potentially hazardous but the equipment can be operated safely, an employer must ensure that

- (a) the operator is made aware of the potential hazard, and

(b) the defect or condition is repaired as soon as reasonably practicable.

260(5) An employer must ensure that a record of the inspections and maintenance carried out as required by subsections (1) and (2) is kept at the work site and readily available to a worker who operates the powered mobile equipment.

260(6) Repealed.

Maintenance on elevated parts

261 An employer must ensure that if elevated parts of powered mobile equipment are being maintained or repaired by workers, the parts and the powered mobile equipment are securely blocked in place and cannot move accidentally.

Starting engines

262(1) Subject to subsection (3), an employer must ensure that a worker does not start the power unit of powered mobile equipment if the drive mechanisms and clutches of the equipment are engaged.

262(2) A worker must not start the power unit of powered mobile equipment if the drive mechanisms and clutches of the equipment are engaged.

262(3) An employer must ensure that no worker, including the operator, can be injured due to the movement of powered mobile equipment or any part of it, if

- (a) its power unit can be started from a location other than the equipment's control platform or cab seat, or
- (b) it is not reasonably practicable to disengage its drive mechanism or clutches.

Unattended equipment

263(1) A person must not leave the controls of powered mobile equipment unattended unless the equipment is secured against unintentional movement by an effective method of immobilizing the equipment.

263(2) A person must not leave the controls of powered mobile equipment unattended unless a suspended or elevated part of the powered mobile equipment is either landed, secured in a safe position or both.

Lights

264(1) An employer must ensure that powered mobile equipment operated during hours of darkness or when, due to insufficient light or unfavourable atmospheric conditions, workers and vehicles are not clearly discernible at a distance of at least 150 metres is equipped with lights that illuminate

- (a) a direction in which the equipment travels,
- (b) the working area around the equipment, and
- (c) the control panel of the equipment.

264(2) An employer must ensure that the lights on earthmoving construction machinery installed on or after July 1, 2009 complies with SAE Standard J1029 (2007), *Lighting and Marking of Construction, Earthmoving Machinery*.

Windows and windshields

265(1) An employer must ensure that glazing used as part of the enclosure for a cab, canopy or rollover protective structure on powered mobile equipment is safety glass or another non-shattering material providing at least equivalent protection.

265(2) An employer must ensure that the glazing installed on or after July 1, 2009 on an enclosure of powered mobile equipment is approved to ANSI Standard ANSI/SAE Z26.1 (1996), *Safety Glazing Material for Glazing Motor Vehicles and Motor Vehicle Equipment Operating on Land Highways — Safety Standard*.

265(3) An employer must ensure that broken or cracked glazing that obstructs an operator's view from powered mobile equipment is replaced as soon as is reasonably practicable.

265(4) An employer must ensure that a windshield on powered mobile equipment has windshield wipers of sufficient size and capacity to clean matter that obstructs the operator's view from the windshield.

Other safety equipment

266 An employer must ensure that powered mobile equipment has

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

Warning signal

267(1) An employer must ensure that, if a powered mobile equipment operator's view of the equipment's path of travel is obstructed or cannot be seen directly or indirectly in a direction, the powered mobile equipment has

- (a) an automatic audible warning device that
 - (i) activates if the equipment controls are positioned to move the equipment in that direction, and
 - (ii) is audible above the ambient noise level,
- (b) a warning device or method appropriate to the hazards of the work site, or

- (c) an automatic system that stops the equipment if a worker is in its path.

267(2) If it is impractical to equip powered mobile equipment in accordance with subsection (1), the operator must ensure that the operator and other workers are protected from injury before moving the equipment by

- (a) doing a visual inspection on foot of the area into which the equipment will move,
 - (b) following the directions of a traffic control or warning system,
 - (c) getting directions from a designated signaller or other worker who
 - (i) has an unobstructed view of the area into which the equipment will move, or
 - (ii) is stationed in a safe position in continuous view of the operator,
- or
- (d) ensuring all other workers are removed from the area into which the equipment will move.

Bulkheads

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

Guards and screens

269 An employer must ensure that powered mobile equipment has a cab, screen, shield, grill, deflector, guard or other adequate protection for the operator if the hazard assessment indicates there is a significant possibility that the operator may be injured by flying or projecting objects.

Rollover protective structures

270(1) An employer must ensure that the following types of powered mobile equipment weighing 700 kilograms or more have rollover protective structures:

- (a) tracked (crawler) or wheeled bulldozers, loaders, tractors or skidders, other than those operating with side booms;
- (b) back hoes with a limited horizontal swing of 180 degrees;
- (c) motor graders;
- (d) self-propelled wheeled scrapers;
- (e) industrial, agricultural and horticultural tractors, including ride-on lawnmowers;
- (f) wheeled trenchers.

270(2) An employer must ensure that a rollover protective structure installed on or after July 1, 2009 complies with the applicable requirements of

- (a) CSA Standard B352.0-95 (R2006), *Rollover Protective Structures (ROPS) for Agricultural, Construction, Earthmoving, Forestry, Industrial and Mining Machines — Part 1: General Requirements*, and

- (i) CSA Standard B352.1-95 (R2006), *Rollover Protective Structures (ROPS) for Agricultural, Construction, Earthmoving, Forestry, Industrial and Mining Machines — Part 2: Testing Requirements for ROPS on Agricultural Tractors*, or
- (ii) CSA Standard B352.2-95 (R2006), *Rollover Protective Structures (ROPS) for Agricultural, Construction, Earthmoving, Forestry, Industrial and Mining Machines — Part 3: Testing Requirements for ROPS on Construction, Earthmoving, Forestry, Industrial and Mining Machines*,
- (b) SAE Standard J1042 (2003), *Operator Protection for General-Purpose Industrial Machines*,
- (c) SAE Standard J1194 (1999), *Rollover Protective Structures (ROPS) for Wheeled Agricultural Tractors*,
- (d) ISO Standard 3471: 2000, *Earth moving machinery — Roll-over protective structures — Laboratory tests and performance requirements*, or
- (e) OSHA Standard 1928.52, *Protective Frames for Wheel-type Agricultural Tractors — Test Procedures and Performance Requirements*.

270(3) If powered mobile equipment is not referred to in subsection (1) and a hazard assessment identifies rollover as a potential hazard, the employer must

- (a) equip the powered mobile equipment with a rollover protective structure that is either supplied by the manufacturer or certified by a professional engineer as being suited to that equipment, or
- (b) institute safe work procedures that eliminate the possibility of rollover.

270(4) Repealed.

270.1 Repealed.

Equipment with rollover protection

271(1) An employer must ensure that the powered mobile equipment fitted with a rollover protective structure manufactured on or after July 1, 2009 has seat belts for the operator and passengers that comply with

- (a) SAE Standard J386 (2006), *Operator Restraint System for Off-Road Work Machines*, or
- (b) SAE Information Report J2292 (2006), *Combination Pelvic/Upper Torso (Type 2) Operator Restraint Systems for Off-Road Work Machines*.

271(2) Despite subsection (1), if the work process makes wearing the seat belts in the powered mobile equipment impracticable, the employer may permit workers to wear shoulder belts or use bars, screens or other restraining devices designed to prevent the operator or a passenger from being thrown out of the rollover protective structure.

Falling objects protective structures

272(1) If the hazard assessment identifies that an operator of powered mobile equipment is exposed to falling objects, the employer must ensure that the powered mobile equipment is equipped with a falling objects protective structure.

272(2) A falling objects protective structure installed on or after July 1, 2009 must comply with the appropriate requirements of

- (a) SAE Standard J167 (2002), *Overhead Protection for Agricultural Tractors — Test Procedures and Performance Requirements*,
- (b) SAE Standard J/ISO 3449 (2005), *Earthmoving Machinery — Falling-Object Protective Structures — Laboratory Tests and Performance Requirements*, or
- (c) SAE Standard J1042 (2003), *Operator Protection for General-Purpose Industrial Machines*.

272(3) An employer, instead of using a falling objects protective structure that complies with subsection (2), may use equipment that is certified by a professional engineer as providing the equivalent or better protection.

Recertification after modification

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

Fuel tank in cab

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

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

Worker transportation

275(1) An employer must ensure that no part of an operator's or passenger's body extends beyond the side of a vehicle or powered mobile equipment while it is in operation.

275(2) An employer must ensure that equipment or material in a vehicle or unit of powered mobile equipment is positioned or secured to prevent injury to the operator and passengers, if any.

275(3) An employer must ensure that sufficient protection against inclement weather is provided for workers travelling in a vehicle or unit of powered mobile equipment.

275(4) If a vehicle or unit of powered mobile equipment with an enclosed body is used to transport workers, an employer must ensure that the equipment's exhaust gases do not enter the enclosed body.

Riding on loads

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

276.1 Repealed.

Hazardous loads

277(1) An employer must ensure that workers are not servicing or maintaining a vehicle while flammable, combustible or explosive materials are

- (a) being loaded into or unloaded from the vehicle, or
- (b) in the vehicle, other than in the vehicle's fuel tank or a portable fuel tank that is approved to the appropriate ULC standard for that tank.

277(2) For the purposes of subsection (1), servicing and maintaining a vehicle does not include checking or topping up fluid levels or air pressure.

277(3) A worker must not service or maintain a vehicle in contravention of subsection (1).

Tank trucks

278(1) The operator must ensure that a tank truck containing flammable, combustible or explosive materials is bonded and grounded while

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

278(1.1), (1.2) Repealed.

278(2) Section 277 does not apply to a commercial tank truck designed to transport flammable, combustible or explosive materials.

Refuelling

279(1) An employer must ensure that a worker does not

- (a) smoke within 7.5 metres of a vehicle while it is being refuelled,
- (b) refuel a vehicle when there is a source of ignition within 7.5 metres of that vehicle, or
- (c) dispense flammable fuels into the fuel tank of a motor vehicle or watercraft while its engine is running.

279(2) A person must not

- (a) smoke within 7.5 metres of a vehicle while it is being refuelled,
- (b) refuel a vehicle when there is a source of ignition within 7.5 metres of that vehicle, or
- (c) dispense flammable fuels into the fuel tank of a motor vehicle or watercraft while its engine is running.

279(3) An employer must ensure that a worker dispensing flammable fuel

- (a) takes precautions to prevent the fuel from overflowing or spilling,
- (b) does not knowingly overfill the fuel system, and
- (c) does not use an object or device that is not an integral part of the hose nozzle valve assembly to maintain the flow of fuel.

279(4) Subsections (1)(c) and (2)(c) do not apply to the fuelling system of the motor vehicle or watercraft if its manufacturer or a professional engineer certifies

- (a) it is safe to refuel while the engine is running, and
- (b) the safe work practices to be used during the refuelling.

All-Terrain Vehicles and Snow Vehicles

Three-wheeled all-terrain vehicles

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

Operator's manual

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

Load and slope limitations

282(1) The operator of an all-terrain vehicle or snow vehicle must ensure that, if it is used to move a load, the load conforms to the weight, height and other limits specified by the manufacturer of the all-terrain vehicle or snow vehicle.

282(2) If the manufacturer has not set limits for operation of the all-terrain vehicle or snow vehicle on sloping ground, the employer must implement safe work procedures appropriate for the slopes on which the equipment is used.

Forklift Trucks

Load chart

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

Seat belt

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

Pile Driving Equipment and Practices

Chocking

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

Pile hoisting

286(1) The operator of pile driving equipment must ensure that pilings are not hoisted in the leads if workers who are not directly involved in the pile hoisting are on the superstructure or within range of a falling pile.

286(2) A worker must not

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

Restraining hoses and connections

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

Brake bands and clutches

288 An employer must ensure that

- (a) at the beginning of a work shift, the brake bands and clutches of pile driving equipment are inspected by a competent worker designated by the employer, and
- (b) if the worker finds contamination by oil or grease, the contaminated units are dismantled and cleaned or replaced before they are used.

Timber piles

289 The employer must ensure that

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

Crane boom inspection

290(1) An employer must ensure that a crane boom used for driving piles with a vibratory hammer is

- (a) inspected
 - (i) at the intervals specified in the manufacturer's specifications or specifications certified by a professional engineer, or
 - (ii) annually or every 600 operating hours, whichever comes first,and
- (b) certified by a professional engineer as safe for continued use.

290(2) An employer must ensure that a crane boom with a vibratory pile extractor is

- (a) inspected
 - (i) at the intervals specified in the manufacturer's specifications or specifications certified by a professional engineer, or
 - (ii) annually or every 200 operating hours, whichever comes first,

and

(b) certified by a professional engineer as safe for continued use.

290(3) An employer must ensure that a crane boom used for dynamic compaction is

(a) inspected

(i) at the intervals specified in the manufacturer's specifications or specifications certified by a professional engineer, or

(ii) annually or every 200 operating hours, whichever comes first,

and

(b) certified by a professional engineer as safe for continued use.

Personal Vehicle for Work Purposes

Licensing and mechanical inspection

290.1 If a worker uses a personal vehicle for work purposes,

(a) an employer must ensure that the worker complies with section 256(1) by complying with the appropriate licensed driver requirements of provincial legislation, and

(b) the worker must ensure that the vehicle is maintained in sound mechanical condition.

Concrete Pump Trucks

Safety requirements

290.2(1) An employer must ensure that all load bearing components of a concrete pump truck undergo non-destructive testing under the direction and control of a professional engineer in accordance with the manufacturer's specifications at 12-month intervals from the date of the concrete pump truck's most recent certification.

290.2(2) An employer must ensure that the operator of a concrete pump truck visually inspects all load bearing components and safety and control devices of the concrete pump truck before each use.

290.2(3) Before using a concrete pump truck at a work site, an employer must ensure that the outriggers of the equipment are extended in accordance with the manufacturer's specifications.

290.2(4) While a concrete pump truck is in use at a work site, an employer must ensure that no worker or other person is positioned under a distribution boom or mast connected to the concrete pump truck.

290.2(5) An employer must ensure that a concrete pump truck is not moved when its distribution boom or mast is partially or fully extended, unless the truck is designed to be moved with its distribution boom or mast partially or fully extended.

Part 20

Radiation Exposure

Prevention and protection

- 291** If a worker may be exposed to ionizing radiation at a work site, an employer must
- (a) develop and implement safe work practices and procedures to be used when the worker works with or approaches the radiation source,
 - (b) if practicable, involve affected workers in the development and implementation of the safe work practices and procedures, and
 - (c) inform affected workers of the potential hazards, including reproductive hazards, of ionizing radiation and the radiation source and the precautions to be taken to protect the workers and other persons from those hazards.

Shielding

291.1 An employer that uses radiation equipment or a radiation source that produces ionizing radiation must ensure that the structural shielding design for the radiation facility is adequate to ensure that the maximum effective dose limits and maximum equivalent dose limits specified in Tables 1 and 2 respectively of Schedule 12 are not exceeded.

X-ray equipment

- 291.2** An employer must ensure that the use, operation, handling, installation, calibration, testing, demonstration, service, repair, maintenance or disposal of
- (a) x-ray equipment used in a veterinary practice complies with *Radiation Protection in Veterinary Medicine: Recommended Safety Procedures for Installation and Use of Veterinary X-ray Equipment: Safety Code 28* (1991), published by Health Canada,
 - (b) baggage inspection x-ray equipment complies with *Requirements for the Safe Use of Baggage X-ray Inspection Systems: Safety Code 29* (1993), published by Health Canada,
 - (c) x-ray equipment used in a dental practice complies with *Radiation Protection in Dentistry: Recommended Safety Procedures for the Use of Dental X-ray Equipment: Safety Code 30* (Revised 2000), published by Health Canada,
 - (d) analytical x-ray equipment complies with
 - (i) *Safety Requirements and Guidance for Analytical X-ray Equipment: Safety Code 32* (1994), published by Health Canada, and
 - (ii) *Addendum to Safety Code 32: Portable, Hand-held, X-ray Tube Based Open-beam XRF Devices* (2014), published by Health Canada,
 - (e) industrial x-ray equipment complies with *Radiation Protection and Safety for Industrial X-ray Equipment: Safety Code 34* (2003), published by Health Canada, and
 - (f) x-ray equipment used for medical diagnosis complies with *Safety Procedures for the Installation, Use and Control of X-ray Equipment in Large Medical Radiological Facilities: Safety Code 35* (2008), published by Health Canada.

Lasers

291.3(1) In this section, “health care facility” means a facility where laser radiation is administered for diagnostic, therapeutic or research purposes by health professionals.

291.3(2) An employer must ensure that the use, operation, handling, installation, calibration, testing, demonstration, service, repair, maintenance or disposal of lasers

- (a) in a health care facility complies with CAN/CSA Z386:20, *Safe Use of Lasers in Health Care* published by the Canadian Standards Association, and
- (b) in a facility other than in a health care facility, complies with ANSI Standard Z136.1-2014, *American National Standard for Safe Use of Lasers* published by the American National Standards Institute.

Radiation exposure limits

291.4(1) An employer must ensure that a worker’s exposure to ionizing radiation is kept as low as reasonably practicable.

291.4(2) An employer must ensure that a worker’s exposure to ionizing radiation does not exceed any of the applicable maximum dose limits listed in Schedule 12, Tables 1 and 2.

291.4(3) A worker who uses radiation equipment, non-ionizing radiation equipment or a radiation source must ensure that exposure of any person to radiation is kept as low as reasonably practicable.

291.4(4) An employer must ensure that a worker’s exposure to non-ionizing radiation does not exceed any of the applicable maximum exposure limits listed in Schedule 12, Tables 3 and 4.

Monitoring worker exposure to ionizing radiation (dosimetry)

291.5(1) An employer must ensure that

- (a) a worker who uses or may be exposed to radiation through the use of any ionizing radiation equipment described in subsection (2) is provided with and uses an appropriate device, provided by a dosimetry service provider licensed by the Canadian Nuclear Safety Commission, to monitor the worker’s personal exposure to ionizing radiation,
- (b) the records obtained from the monitoring are kept for at least 5 years,
- (c) affected workers are informed of and have access to their personal exposure records, and
- (d) the dose of a worker as determined by monitoring pursuant to clause (a) is reported to the National Dose Registry.

291.5(2) The ionizing radiation equipment referred to in subsection (1)(a) is

- (a) diagnostic or therapeutic x-ray equipment,
- (b) particle accelerators,
- (c) industrial x-ray equipment,
- (d) irradiation x-ray equipment, and
- (e) any other ionizing radiation equipment for which the registration certificate requires monitoring of the personal exposure of radiation workers.

Additional protections for pregnant and young workers

291.6(1) If an employer is informed by a worker that the worker is pregnant, the employer must reassess the worker's employment duties or training activities, as the case may be, and modify the duties or activities, where reasonable to do so, to ensure that the worker's effective dose of ionizing radiation does not exceed the applicable maximum effective dose limits specified in Table 1 of Schedule 12.

291.6(2) An employer must not allow a worker under the age of 18 years to use or be involved in the use of ionizing designated radiation equipment or an ionizing radiation source except where

- (a) the worker is a student undergoing a course of instruction involving the use of such equipment or source, and
- (b) the use forms part of that course and is conducted under the direct supervision of a competent worker.

Designated radiation equipment — registration certificate required

291.7(1) An employer must ensure that no worker operates designated radiation equipment unless a registration certificate has been issued by an authorized radiation health registration agency or by a Director for that equipment.

291.7(2) A worker must not operate designated radiation equipment unless a registration certificate has been issued by an authorized radiation health registration agency or by a Director for that equipment.

291.7(3) Despite subsections (1) and (2),

- (a) an authorized radiation protection inspection agency may operate designated radiation equipment as part of an equipment inspection, and
- (b) a supplier of designated radiation equipment may operate designated radiation equipment as part of an equipment installation

without there being a registration certificate for that equipment.

291.7(4) An employer who holds a registration certificate must comply with all terms and conditions imposed by the authorized radiation health registration agency or by a Director.

291.7(5) An employer who holds a registration certificate must not modify the characteristics of the radiation emitted from the equipment that was the subject of the certificate or the protective properties of the facility in which the equipment is located.

291.7(6) An employer that holds a registration certificate must

- (a) if practicable, ensure that a copy or a record of the certificate is posted near the equipment, or
- (b) if it is not practicable to post the certificate, communicate to the workers who will use the equipment the terms and conditions contained in the certificate.

Part 21 Rigging

Breaking strength

292(1) An employer must ensure that rigging is not subjected to a load of more than

- (a) 10 percent of the breaking strength of the weakest part of the rigging, if a worker is being raised or lowered,
- (b) subject to section 292.1, 20 percent of the ultimate breaking strength of the weakest part of the rigging in all other situations unless the manufacturer has fatigue rated the rigging in accordance with CEN Standard EN 1677-1: 2000, *Components for slings — Part 1: Forged steel components, Grade 8*, and
- (c) subject to section 292.1, if the rigging is fatigue rated in accordance with CEN Standard EN 1677-1:2000 and a worker is not being raised or lowered, the maximum load must not exceed 25 percent of the ultimate breaking strength.

292(2) Despite subsection (1), an employer may use a dedicated rigging assembly designed and certified for a particular lift or project by a professional engineer, but the dedicated rigging assembly must be re-rated to comply with subsection (1) before it is used for another lift or project.

Safety factors

292.1(1) Subject to section 292, an employer must ensure that rigging components are rated relative to their ultimate breaking strength in accordance with the following safety factors:

- (a) running lines, 3.5 to 1;
- (b) non-rotating hoist lines, 5 to 1;
- (c) tugger lines/blocks for pulling, 3 to 1;
- (d) pendant lines/guy lines, 3 to 1; and
- (e) winch lines, 2 to 1.

292.1(2) An employer must ensure that rigging components or hoisting lines that are used in any towing operation are not used for any hoisting operation.

Load ratings

293(1) An employer must ensure that the maximum load rating of the rigging, as determined by the rigging manufacturer or a professional engineer, is legibly and conspicuously marked on the rigging.

293(2) Despite subsection (1), if it is not practicable to mark the rigging, the employer must ensure the maximum load rating of the rigging is available to the workers at the work site.

Inspection

294 An employer must ensure that rigging to be used during a work shift is inspected thoroughly prior to each period of continuous use during the shift to ensure that the rigging is functional and safe.

Prohibition

295 A worker must not use rigging that does not comply with this Part.

Rigging protection

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

Standards

297(1) An employer must ensure that wire rope, alloy steel chain, synthetic fibre rope, metal mesh slings and synthetic fibre slings manufactured on or after July 1, 2009 meet the requirements of ASME Standard B30.9-2006, *Safety Standard for Cableways, Cranes, Derricks, Hoists, Hooks, Jacks, and Slings*.

297(2) An employer must ensure that below-the-hook lifting devices, other than slings, meet the requirements of ASME Standard B30.20-2006, *Below-the-Hook Lifting Devices*.

297(3) Despite subsection (2), an employer may use a capacity data sheet to label a spreader bar with its rated capacity.

297(4) Where a capacity data sheet is used in accordance with subsection (3), an employer must ensure that the data sheet and corresponding spreader bar are identified by a unique numbering system.

Slings

298(1) An employer must ensure that synthetic fibre slings are permanently and legibly marked or appropriately tagged with the following:

- (a) the manufacturer's name or trademark;
- (b) the manufacturer's code or stock number;
- (c) the safe working load for the types of hitches permitted; and
- (d) where appropriate, the type and material of construction.

298(2) An employer must ensure that slings at a worksite are not subjected to pull tests beyond 100 percent of their rated load capacity.

Rope wound on drum

299(1) An employer must ensure that rope on a winding drum is securely fastened to the drum.

299(2) An employer must ensure that the number of wraps of rope remaining at all times on a drum

- (a) complies with the manufacturer's specifications for the rope and the drum, or
- (b) if there are no manufacturer's specifications, is not less than 5 full wraps.

Cable clips

300(1) An employer must ensure that U-bolt type clips used for fastening wire rope are installed

- (a) so that the U-bolt section of the clip bears on the short or “dead” side of the rope,
- (b) so that the saddle of a clip bears on the long or “live” side of the rope, and
- (c) using the number and with the spacing that complies with the specifications in Schedule 5.

300(2) An employer must ensure that cable clips used for fastening wire rope are installed and torqued to the manufacturer’s specifications or, in the absence of manufacturer’s specifications, to the values specified in Schedule 5.

300(3) An employer must ensure that double-saddle clips (fist clips) used for fastening wire rope are installed using the number and the spacing and torque that complies with the specifications in Schedule 5.

300(4) An employer must ensure that double-base clips used for fastening wire rope are installed with a spacing that is not less than 6 times the diameter of the rope.

Ferrules

301(1) If a ferrule is used to form an eye loop in a wire rope and

- (a) the ends of the splice are visible beneath the ferrule, or
- (b) the ferrule is identified as covering a “Flemish eye” splice,

the employer must ensure that the ferrule is commercially manufactured of steel and properly swaged onto the splice.

301(2) Despite subsection (1), if an aluminum alloy ferrule must be used, an employer must ensure that the ferrule is

- (a) commercially manufactured,
- (b) identified as being made of aluminum alloy, and
- (c) properly swaged onto the splice.

Matching components

302(1) An employer must ensure that the wire ropes, sheaves, spools and drums used in rigging have a diameter of not less than the diameter specified by the manufacturer for use in that circumstance.

302(2) An employer must ensure that the rope used in rigging is of the correct size for the sheave, spool or drum over which the rope passes.

302(3) An employer must ensure that the grooving of wire rope sheaves is of the correct size for the wire rope used.

302(4) An employer must ensure that end fittings and connectors used on a wire rope conform to the manufacturer’s specifications as to number, size and method of installation.

302(5) An employer must ensure that rigging blocks are constructed and installed so that the ropes cannot jump off the sheaves.

Safety latches

303(1) An employer must ensure that a hook has a safety latch, mousing or shackle if the hook could cause injury if it is dislodged while in use.

303(2) Despite subsection (1), if a competent worker disconnecting the hook would be in danger if the hook has a safety latch, mousing or shackle, the employer may use another type of hook.

303(3) Despite subsection (1), an employer may use a sorting hook for hoisting a skeleton steel structure or for performing similar operations if a sorting hook is safer to use than a hook with a safety latch, mousing or shackle.

303(4) During a hoisting operation in a caisson, an employer

- (a) must not use a spring-loaded safety latch hook, and
- (b) must use a shackle assembly consisting of a pin fully shouldered into the eyes of the shackle and secured by a nut that is prevented from rotating by a cotter pin.

Makeshift rigging and welding

304 An employer must ensure that rigging does not have

- (a) makeshift fittings or attachments, including those constructed from reinforcing steel rod, that are load bearing components,
- (b) rigging and fittings that are repaired by welding unless they are certified safe for use by a professional engineer after the repair is completed, or
- (c) alloy steel chain that is welded or annealed.

Rejection Criteria

Synthetic fibre slings

305(1) An employer must ensure that a synthetic fibre web sling is permanently removed from service if it is damaged or worn as follows:

- (a) the length of the edge cut exceeds the web thickness;
- (b) the depth of an abrasion is more than 15 percent of the webbing thickness, taken as a proportion of all plies;
- (c) the total depth of the abrasion on both sides of the webbing is more than 15 percent of the webbing thickness, taken as a proportion of all plies;
- (d) the depth of the warp thread damage is up to 50 percent of the webbing thickness and the damage
 - (i) is within 25 percent of the sling width of the edge, or
 - (ii) covers 25 percent of the sling width;
- (e) the warp thread damage is as deep as the sling is thick
 - (i) in an area that is within 25 percent of the sling width of the edge, or
 - (ii) over an area that is more than 12.5 percent of the width of the sling;

- (f) weft thread damage allows warp threads to separate over an area that is wider than 25 percent of the sling width and longer than twice the sling width.

305(2) An employer must ensure that a synthetic fibre web sling is permanently removed from service if

- (a) part of the sling is melted, charred or damaged by chemicals,
- (b) stitches in load bearing splices are broken or worn, or
- (c) end fittings are excessively pitted or corroded, cracked, distorted or broken.

305(3) An employer must ensure that a synthetic fibre web sling is permanently removed from service if it is damaged in such a way that the total effect of the damage on the sling is approximately the same as the effect of any one of the types of damage referred to in subsection (1) or (2).

305(4) An employer must ensure that a synthetic fibre web sling that is permanently removed from service under this section is physically altered to prevent its further use as a sling.

Wire rope

306(1) An employer must ensure that wire rope is permanently removed from service if

- (a) wear or corrosion affects individual wires over more than 1/3 of the original diameter of the rope,
- (b) there is evidence that the rope structure is distorted because of bulging, kinking, bird-caging or any other form of damage,
- (c) there is evidence of heat or arc damage, or
- (d) the normal rope diameter is reduced, from any cause, by more than
 - (i) 0.4 millimetres if the normal rope diameter is 8 millimetres or less,
 - (ii) 1 millimetre if the normal rope diameter is more than 8 millimetres and less than 20 millimetres,
 - (iii) 2 millimetres if the normal rope diameter is 20 millimetres or more and less than 30 millimetres, and
 - (iv) 3 millimetres if the normal rope diameter is 30 millimetres or more.

306(2) An employer must ensure that a running wire rope is permanently removed from service

- (a) if 6 or more randomly distributed wires are broken in one rope lay, or
- (b) if 3 or more wires are broken in one strand in one rope lay.

306(3) An employer must ensure that a stationary wire rope such as a guy line is permanently removed from service

- (a) if 3 or more wires are broken in one rope lay in sections between end connections, or
- (b) if more than one wire is broken within one rope lay of an end connection.

306(4) An employer must ensure that wire rope that does not rotate because of its construction is permanently removed from service

- (a) if there is evidence of the damage referred to in subsection (1),

- (b) if 2 randomly distributed wires are broken in 6 rope diameters, or
- (c) if 4 randomly distributed wires are broken in 30 rope diameters.

Metal mesh slings

307 An employer must ensure that a metal mesh sling is removed from service if

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

Electric arc damage

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

Damaged hooks

309 An employer must ensure that a worn, damaged or deformed hook is permanently removed from service if the wear or damage exceeds the specifications allowed by the manufacturer.

Part 22

Safeguards

Safeguards

310(1) Repealed.

310(2) An employer must provide safeguards if a worker may accidentally, or through the work process, come into contact with

- (a) moving parts of machinery or equipment,
- (b) points of machinery or equipment at which material is cut, shaped or bored,
- (c) surfaces with temperatures that may cause skin to freeze, burn or blister,
- (d) energized electrical cables,
- (e) debris, material or objects thrown from machinery or equipment,
- (f) material being fed into or removed from process machinery or equipment,
- (g) machinery or equipment that may be hazardous due to its operation, or
- (h) any other hazard.

310(2.1) Repealed.

310(3) Subsection (2) does not apply to machinery that already has a safeguard that

- (a) automatically stops the machinery if a worker comes into contact with a moving part or a point at which material is cut, shaped or bored,
- (b) prevents a worker from coming into contact with a hazard referred to in subsection (2), or
- (c) eliminates the hazards referred to in subsection (2) before a worker can be injured.

310(4) If an employer determines that an effective safeguard cannot be provided in the circumstances, the employer must ensure that an alternative mechanism or system or a change in work procedure is put into place to protect workers from being exposed to hazards that exist if there is no safeguard.

310(5) An alternative mechanism or system or a change in work procedure put into place under subsection (4) must offer protection to workers that is equal to or greater than the protection from a safeguard referred to in subsection (3).

310(6) An employer must place warning signs on machinery that starts automatically

- (a) on a clearly visible location at a point of access to the machinery, and
- (b) that give clear instructions to workers on the nature of the hazard.

Tampering with safeguards

311(1) A person must not remove a safeguard from a machine that is operating if the safeguard is not designed to be removed when the machine is operating.

311(2) A person must not remove a safeguard or make it ineffective unless removing it or making it ineffective is necessary to perform maintenance, tests, repairs, adjustments or other tasks on equipment.

311(3) If a worker removes a safeguard or makes it ineffective, the worker must ensure that

- (a) alternative protective measures are in place until the safeguard is replaced,
- (b) the safeguard is replaced immediately after the task is completed, and
- (c) the safeguard functions properly once replaced.

311(4) If a safeguard for machinery is removed or made ineffective and the machinery cannot be directly controlled by a worker, the worker who removes the safeguard or makes it ineffective must lock out or lock out and tag the machinery or render it inoperative.

No safeguards

312(1) Despite other sections in this Part, an employer may allow the machinery to be operated without the safeguards if

- (a) safeguards are normally required by this Code for machinery, and
- (b) the machinery cannot accommodate or operate with these safeguards.

312(2) If machinery in subsection (1) is operated without safeguards, the employer must ensure workers operating or in the vicinity of the machine wear personal protective equipment that

- (a) is appropriate to the hazard, and
- (b) offers protection equal to or greater than that offered by the safeguards.

Building shafts

313(1) An employer must ensure that if a work platform is necessary to ensure the safety of workers in a building shaft, there is

- (a) a main work platform that is completely decked and designed to support any anticipated load, and
- (b) a 2nd platform not more than 4 metres below the main work platform.

313(2) An employer must ensure that if there is no work platform at a doorway or opening to a building shaft,

- (a) the doorway or opening is enclosed,
- (b) the enclosure is not less than 2 metres high, and
- (c) there is an access door opening out from the enclosed area.

313(3) An employer must ensure that, while a building shaft is being constructed, at least one warning sign indicating the presence of an open building shaft is placed at each point of entry to the shaft.

Covering openings

314(1) An employer must ensure that an opening or hole through which a worker can fall is protected by

- (a) a securely attached cover designed to support an anticipated load, or

(b) guardrails and toe boards.

314(2) If a person removes a cover, guardrail or toe board, or any part thereof, protecting an opening or hole for any reason, an employer must ensure a temporary cover or other means of protection replaces it immediately.

314(3) If a temporary cover is used to protect an opening or hole, an employer must ensure a warning sign or marking clearly indicating the nature of the hazard

(a) is posted near or fixed on the cover, and

(b) is not removed unless another effective means of protection is immediately provided.

Guardrails

315(1) An employer must ensure that a guardrail required by this Code

(a) has a horizontal top member installed between 920 millimetres and 1070 millimetres above the base of the guardrail,

(b) has a horizontal, intermediate member spaced mid-way between the top member and the base,

(c) has vertical members at both ends of the horizontal members with intermediate vertical supports that are not more than 3 metres apart at their centres, and

(d) is constructed of lumber that is 38 millimetres by 89 millimetres or of material with properties the same as or better than those of lumber.

315(2) Despite subsection (1), a temporary guardrail does not require a horizontal intermediate member if it has a substantial barrier positioned within the space bounded by the horizontal top member, toe board and vertical members that prevents a worker from falling through the space.

315(3) An employer must ensure that a guardrail is secured so that it cannot move in any direction if it is struck or if any point on it comes into contact with a worker, materials or equipment.

Hoppers, bins and chutes

316 If a worker can access materials in hoppers, bins or chutes, an employer must ensure the hoppers, bins or chutes have horizontal bars, screens or equally effective safeguards that prevent a worker from falling into the hoppers, bins or chutes.

Machine failure

317 If a worker may be injured if a machine fails, an employer must install safeguards on the machine strong enough to contain or deflect flying particles of material, broken parts of machinery and a shock wave.

Protection from falling objects

318(1) An employer must ensure that workers in a work area where there may be falling objects are protected from the falling objects by an overhead safeguard.

318(2) An employer must ensure that a safeguard used under subsection (1) is designed to withstand the shock loads from objects that may fall onto it.

318(3) Despite subsection (1), if the danger from falling objects is in a location in a work site where workers go intermittently or incidentally to their regular duties, an employer may place appropriate and adequate warning signs, horns, flashing lights or similar devices at the location to warn workers of the hazard.

318(4) An employer must ensure that a safeguard used on a hoist or scaffold under subsection (1)

- (a) is made of wire mesh or an enclosure material that is equally or more efficient at containing equipment and materials,
- (b) is not less than 1 metre high from the floor, platform or working level of the safeguard, and
- (c) encloses all sides of a cantilever hoist platform or skip, except the side adjacent to the building.

318(5) If the material being hoisted or lowered is of a kind that prevents the sides of a cantilever hoist platform or skip from being enclosed as required by subsection (4), an employer must provide another effective alternative safeguard against falling materials for the workers.

318(6) An employer must ensure that a safeguard around the surface opening of an underground shaft serving a tunnel

- (a) is made of wire mesh or an enclosure material that is equally or more effective at containing equipment and materials, and
- (b) is not less than 1 metre high from the surface.

318(7) An employer must ensure that a safeguard is installed on all sides of

- (a) the cage of a building shaft hoist or a tower hoist, or
- (b) a hoist cage in an underground shaft serving a tunnel.

318(8) An employer must ensure that a safeguard used on a cage under subsection (7) is made of

- (a) wire mesh, or
- (b) an enclosure material that is equally or more effective at containing equipment and materials and at protecting workers from hazards associated with the movement of a cage in a shaft.

Push stick or block

319 If a worker may be injured while feeding materials into cutting or shaping machinery, an employer must ensure the machine worker uses a push stick, push block or other similar means of feeding the material.

Safety nets

320(1) An employer must ensure that a safety net

- (a) meets the requirements of ANSI Standard A10.11-1989 (R1998), *Construction and Demolition Operations — Personnel and Debris Nets*,
- (b) has safety hooks or shackles of drawn, rolled or forged steel with an ultimate tensile strength of not less than 22.2 kilonewtons,
- (c) has joints between net panels capable of developing the full strength of the web,

- (d) extends not less than 2.4 metres beyond the work area,
- (e) extends not more than 6 metres below the work area, and
- (f) is installed and maintained so that the maximum deflection under impact load does not allow any part of the net to touch another surface.

320(2) An employer must ensure that the supporting structure to which a personnel safety net is attached is certified by a professional engineer as being capable of withstanding any load the net is likely to impose on the structure.

320(3) Subsection (1) does not apply to properly maintained rescue nets used by firefighters and other emergency services personnel.

Toe boards

321(1) An employer must ensure that

- (a) a toe board required by this Code is not less than 140 millimetres in height above the surface of the work area, and
- (b) the space between the bottom of the toe board and the surface of the work area is not more than 6 millimetres high.

321(2) An employer must ensure that toe boards are installed at the outer edge above the work area if a worker may be under a permanent floor, platform, mezzanine, walkway, ramp, runway or other permanent surface where

- (a) guardrails are installed, or
- (b) materials can fall more than 1.8 metres.

321(3) An employer must ensure that toe boards are installed at the outer edge above the work area of temporary scaffolding or a temporary work platform if materials can fall more than 3.5 metres.

321(4) An employer must ensure that toe boards are installed around the top of a pit containing a machine with exposed rotating parts if workers may be working in the pit.

321(5) Subsection (1) does not apply to

- (a) the entrance of a loading or unloading area if the employer takes other precautions to ensure that materials do not fall from the permanent surface, or
- (b) the entrance to a ladder.

Wire mesh

322 An employer must ensure that wire mesh used in a safeguard required by this Code is

- (a) fabricated of wire at least 1.6 millimetres in diameter, and
- (b) spaced to reject a ball 40 millimetres in diameter.

Part 23

Scaffolds and Temporary Work Platforms

Scaffolds

CSA Standard applies

323 Subject to sections 324 and 325, an employer must ensure that scaffolds erected to provide working platforms during the construction, alteration, repair or demolition of buildings and other structures comply with CSA Standard CAN/CSA S269.2-M87 (R2003), *Access Scaffolding for Construction Purposes*.

Design

- 324(1)** An employer must ensure that a single pole or double pole scaffold is
- (a) supported against lateral movement by adequate bracing,
 - (b) anchored by one tie-in for each 4.6 metre vertical interval and one tie-in for each 6.4 metre horizontal interval,
 - (c) anchored by one tie-in for each 3 metre vertical interval and one tie-in for each 3 metre horizontal interval if the scaffold is hoarded, and
 - (d) set plumb on a base plate, jackscrew or other load dispersing device on a stable surface.
- 324(2)** An employer must ensure that ropes or wire ropes used in scaffolding are
- (a) protected against fraying or other damage, and
 - (b) made of heat or chemical resistant material if there is a possibility of exposure to heat or chemicals.
- 324(3)** An employer must ensure that wooden scaffolds are constructed of unpainted dressed lumber.
- 324(4)** Despite subsection (1)(c), an employer must ensure that hoarded masonry walk-through scaffold frames
- (a) are anchored by not less than one-tie in for each 9 square metres of hoarding surface area, and
 - (b) have vertical tie-ins spaced at least 2 metres apart but not more than 3 metres apart.
- 324(5)** If scaffolding or a temporary work platform can be damaged by powered mobile equipment or a vehicle contacting it, an employer must take reasonable measures to protect the scaffolding or temporary work platform from being contacted.

Load

- 325(1)** An employer must ensure that a scaffold is designed and constructed to support at least 4 times the load that may be imposed on it.
- 325(2)** An employer must ensure that the load to which a scaffold is subjected never exceeds the equivalent of 1/4 of the load for which it is designed.

325(3) An employer must ensure that a scaffold used to carry the equivalent of an evenly distributed load of more than 367 kilograms per square metre is

- (a) designed and certified by a professional engineer, and
- (b) constructed, maintained and used in accordance with the certified specifications.

325(4) Subsection (3) applies to a type of scaffold that is not otherwise specifically referred to in this Code.

325(5) An employer must ensure that all workers on a scaffold are informed of the maximum load that the scaffold is permitted to carry.

Tagging requirements

326(1) An employer must ensure that a scaffold is colour coded using tags at each point of entry indicating its status and condition as follows:

- (a) a green tag with “Safe for Use”, or similar wording, to indicate it is safe for use;
- (b) a yellow tag with “Caution: Potential or Unusual Hazard”, or similar wording, to indicate the presence of a potential or unusual hazard;
- (c) a red tag with “Unsafe for Use”, or similar wording, to indicate it is not safe to use.

326(2) An employer must ensure that a bracket scaffold, double-pole scaffold, needle-beam scaffold, outrigger scaffold, single-pole scaffold, suspended scaffold or swingstage scaffold erected but not immediately put into service, or not used for more than 21 consecutive calendar days, has a red tag at each point of entry until it is inspected and tagged by a competent worker for use.

326(3) An employer must ensure that a bracket scaffold, double-pole scaffold, needle-beam scaffold, outrigger scaffold, single-pole scaffold, suspended scaffold or swingstage scaffold is inspected and tagged by a competent worker before it is used for the first time and at intervals of not more than 21 calendar days while workers work from the scaffold or materials are stored on it.

326(4) A tag attached to a scaffold under this section expires 21 calendar days after the date of the inspection it records.

326(5) A tag required by this section must include

- (a) the duty rating of the scaffold,
- (b) the date on which the scaffold was last inspected,
- (c) the name of the competent worker who last inspected the scaffold,
- (d) any precautions to be taken while working on the scaffold, and
- (e) the expiry date of the tag.

326(6) A worker must not use a scaffold if it has

- (a) a red tag,
- (b) a green or yellow tag that has expired, or
- (c) no tag at all.

326(7) Subsection (6) does not apply to a competent worker who is involved in the erection, inspection or dismantling of a scaffold.

326(8) Repealed.

Vertical ladder on scaffold

327(1) An employer must ensure that a vertical ladder that gives access to a working level of a scaffold is used by a worker only to move up or down between levels of the scaffold.

327(2) Workers moving between levels of a scaffold on a vertical ladder

- (a) must not extend a part of their body, other than an arm, beyond the side rails of the ladder, and
- (b) must maintain a 3-point stance on the ladder at all times.

327(3) The employer must ensure that a ladder attached to a scaffold and providing access to a working level of a scaffold

- (a) is securely fastened to the scaffold,
- (b) does not lean away from the scaffold,
- (c) extends at least 1 metre above the uppermost working level of the scaffold,
- (d) has rungs that are uniformly spaced at a centre-to-centre distance of 250 millimetres to 305 millimetres,
- (e) has a maximum unbroken length of 9.1 metres measured from the ground or between working levels, and
- (f) is equipped with a ladder cage that begins within 2.4 metres of the ground or working level if the ladder is more than 6.1 metres in height.

327(4) The employer must ensure that the ladder cage required by subsection (3)(f) is

- (a) circular with an inside diameter that measures no more than 760 millimetres, or
- (b) square with inside dimensions that measure no more than 760 millimetres by 760 millimetres.

327(5) Despite subsection (3)(e) and (f), the ladder may have a maximum unbroken length of more than 9.1 metres and does not require a ladder cage if a fall protection system complying with Part 9 is used.

Working from a ladder

328(1) An employer must ensure that no worker performs work from a ladder that is used to give access to the working levels of a scaffold.

328(2) A worker must not perform work from a ladder that is used to give access to the working levels of a scaffold.

Scaffold planks

329(1) An employer must ensure that a commercially manufactured scaffold plank is used, stored, inspected and maintained according to the manufacturer's specifications.

- 329(2)** An employer must ensure that a solid sawn lumber scaffold plank is
- (a) graded as scaffold grade or better, and
 - (b) sized 51 millimetres by 254 millimetres.
- 329(3)** An employer must ensure that a solid sawn lumber scaffold plank
- (a) is used, stored, inspected and maintained according to the manufacturer's specifications, or
 - (b) if there are no manufacturer's specifications, is made of at least number one grade lumber that is 51 millimetres by 254 millimetres with a wane limited to 20 percent of the width of the wide face of the plank and the warp limited to ensure a flat surface.
- 329(4)** An employer must ensure that a scaffold plank
- (a) is visually inspected by a competent worker before it is installed in a scaffold,
 - (b) is subjected to and passes a load test before it is installed in a scaffold if a visual inspection reveals damage that could affect its strength or function,
 - (c) extends not less than 150 millimetres and not more than 300 millimetres beyond a ledger, and
 - (d) is secured to prevent movement in any direction that may create a danger to a worker.
- 329(5)** Despite subsection (4)(c), an employer must ensure that an overlapping scaffold plank extends not less than 300 millimetres beyond a ledger.

Scaffold platform

- 330(1)** An employer must ensure that the platform of a scaffold
- (a) is a minimum width of 500 millimetres, except that a nominal 300 millimetre wide platform may be used with ladderjacks, pump jacks or similar systems,
 - (b) does not have an open space between the platform and a structure that is greater than 250 millimetres in width,
 - (c) if not level, is designed to ensure adequate footing for workers using the platform, and
 - (d) is continuous around obstructions that would create openings into or through which a worker might step or fall through.
- 330(2)** Repealed.

Metal scaffolding

- 331** An employer must ensure that
- (a) metal scaffolding is erected, used, inspected, maintained and dismantled in accordance with the manufacturer's specifications or specifications certified by a professional engineer, and
 - (b) the structural parts of metal scaffolding are securely fastened together as required by the manufacturer.

Bracket scaffolds

- 332(1)** An employer must ensure that a bracket scaffold

- (a) is constructed, installed and used in accordance with the manufacturer's specifications or specifications certified by a professional engineer,
- (b) is securely attached to the support wall in a manner that prevents the bracket from dislodging, and
- (c) is used only as a light duty scaffold.

332(2) An employer must ensure that the brackets on a bracket scaffold are spaced at intervals of not more than 3 metres.

Double-pole scaffolds

333(1) An employer must ensure that uprights and ledgers

- (a) of light duty double-pole scaffolds are spaced not more than 3 metres apart, and
- (b) of heavy duty double-pole scaffolds are spaced not more than 2.3 metres apart.

333(2) An employer must ensure that the dimensions of parts of wooden double-pole scaffolds are not less than those specified in Schedule 6, Tables 1, 2, 3 and 4.

Free-standing or rolling scaffolds

334(1) An employer must ensure that

- (a) the height of a free-standing or rolling scaffold is not more than 3 times its smallest base dimension,
- (b) if outriggers are used to attain the 3 to 1 ratio, the outriggers are firmly attached and ensure the stability of the scaffold,
- (c) if a vehicle is used instead of scaffold wheels to form a rolling scaffold, all parts of the scaffold are securely fastened together and the scaffold is securely attached to the vehicle,
- (d) if outriggers are required to maintain the stability of a vehicle-mounted scaffold, the outriggers are securely attached to the frame of the vehicle, and
- (e) a rolling scaffold is equipped with locking wheels or there are blocks for the wheels.

334(2) A worker must not remain on a rolling scaffold while it is being moved unless

- (a) the height of its work platform is not more than twice its smallest base dimension, and
- (b) the surface over which it travels is firm, level and free of hazards that may cause the scaffold to topple.

334(3) A worker using a rolling scaffold must engage the wheel locking devices or block the scaffold against movement while the scaffold is stationary and a worker is working from the scaffold.

Half-horse scaffolds

335(1) An employer must ensure that

- (a) a half-horse scaffold is used only as a light duty scaffold,
- (b) half-horse scaffold ledgers are not more than 3 metres apart, and

(c) half-horse scaffold legs are not spliced or more than 5 metres high.

335(2) An employer must ensure that the parts of a half-horse scaffold are not less than the lumber sizes specified in Schedule 6, Table 5 or 6.

335(3) If a part of a half-horse scaffold is not made of lumber, an employer must ensure that the part is made of a material that has properties equal to or greater than those of lumber.

Ladderjack scaffolds

336(1) An employer must ensure that ladders used for ladderjack scaffolds are

- (a) erected in accordance with the manufacturer's specifications, or
- (b) if there are no manufacturer's specifications, are not more than 3 metres apart.

336(2) An employer must ensure that brackets in a ladderjack scaffold are designed to

- (a) be supported by the side rails of the ladder, or
- (b) have at least 90 millimetres of width resting on the ladder rung.

336(3) An employer must ensure that a ladderjack scaffold is not more than 5 metres high.

336(4) An employer must ensure that there are not more than 2 workers at a time on a ladderjack scaffold.

336(5) Despite sections 329 and 330, an employer may use a single commercially manufactured extendable painter's plank or a commercially manufactured aluminum or laminated plank on a ladderjack scaffold.

Needle-beam scaffolds

337(1) An employer must ensure that beams supporting a needle-beam scaffold

- (a) are constructed of lumber, or a material that has properties equal to or greater than those of lumber,
- (b) are not less than 89 millimetres by 140 millimetres, and
- (c) are placed on their edge.

337(2) An employer must ensure that planks forming the working platform of a needle-beam scaffold are pinned to prevent shifting.

337(3) An employer must ensure that ropes supporting a needle-beam scaffold have

- (a) a breaking strength of at least 39 kilonewtons, and
- (b) a diameter of not less than 16 millimetres.

337(4) An employer must ensure that beam ends of a needle-beam scaffold are provided with stops to prevent the ropes from slipping off the beam.

Outrigger scaffolds

338(1) This section applies to outrigger scaffolds, including suspended outrigger scaffolds.

338(2) If a reference in this section is made to lumber, a material that has properties equal to or greater than those of lumber may be used in its place.

338(3) An employer must ensure that

- (a) thrustouts are constructed of lumber that is 89 millimetres by 140 millimetres and placed on their edge,
- (b) thrustouts do not extend more than 2 metres beyond the edge of the bearing surface,
- (c) thrustouts are securely braced at the fulcrum point against movement or upset,
- (d) the inboard ends of thrustouts are securely anchored against horizontal or vertical movement or upset,
- (e) the inboard portion from the fulcrum point to the point of anchorage is not less than 1.5 times the length of the outboard portion,
- (f) the maximum distance between thrustouts is 2.3 metres,
- (g) if a working platform is suspended or thrust out, the platform is
 - (i) supported by vertical lumber hangers that are 38 millimetres by 140 millimetres or larger and not more than 3 metres long secured to the side of each thrustout and extending at least 300 millimetres above the top of each thrustout, and
 - (ii) secured to a block that rests on the top edge of each thrustout as an additional support,
- (h) a suspended platform is supported by lumber beams that are 38 millimetres by 140 millimetres and that are
 - (i) secured to the vertical hangers at least 300 millimetres above the bottom of the hangers, and
 - (ii) resting on blocks that are secured to the side of the hangers below each beam as an additional support,
- (i) working platforms are completely planked between the hangers, and
- (j) a suspended platform is braced to prevent swaying.

338(4) An employer must ensure that

- (a) counterweights are not used,
- (b) stops to prevent lateral movement of the hangers are fixed to
 - (i) the thrustout and block referred to in subsection (3)(g)(ii),
 - (ii) the ledgers and the blocks referred to in subsection (3)(h),and
- (c) materials are not stored on outrigger scaffolds.

Roofing brackets

339 An employer must ensure that a roofing bracket is

- (a) constructed to support the loads that may be put on it,

- (b) provided with effective non-slip devices, and
- (c) secured to the roof with nails.

Single-pole scaffolds

340 An employer must ensure that

- (a) a wooden single-pole scaffold is used only as a light duty scaffold and is not more than 9 metres in height,
- (b) the uprights on a wooden single-pole scaffold are spaced not more than 3 metres apart, and
- (c) the dimensions and/or strength of members of single-pole scaffolds are not less than those specified in Schedule 6, Tables 7 and 8.

Suspended scaffolds

341(1) This section applies to suspended scaffolds other than suspended outrigger scaffolds or suspended swingstage scaffolds.

341(2) An employer must ensure that

- (a) a commercially manufactured suspended scaffold is erected, used, operated and maintained in accordance with the manufacturer's specifications or specifications certified by a professional engineer, and
- (b) a suspended scaffold that is not commercially manufactured is designed and certified by a professional engineer.

341(3) An employer must ensure that

- (a) the upper end of the suspension rope terminates in a spliced loop in which a steel thimble or eye is securely inserted,
- (b) the suspension rope is secured to a thrustout by a bolt passing through the shackle, the steel thimble or the eye and the bolt is drawn up tightly to the end plate of the shackle by a securing nut,
- (c) the planks of the platform are laid tightly together and overlap the supporting ledgers at each end of the scaffold by at least 300 millimetres, and
- (d) working platforms are not less than 1 metre wide.

341(4) An employer must ensure that all parts of a suspended scaffold are inspected at reasonably practicable intervals.

341(5) An employer must ensure that

- (a) thrustouts are securely anchored to the building,
- (b) counterweights are not used for anchoring a thrustout, and
- (c) a stop bolt is placed at the outer end of each thrustout.

341(6) An employer must ensure that the working parts of a hoisting mechanism are left exposed so that

- (a) defective parts of the mechanism can be easily detected, and
- (b) an irregularity in the operation of the mechanism can be easily detected.

341(7) An employer must ensure that a suspended scaffold platform has an enclosure that

- (a) is on the 3 sides of the platform that are not adjacent to the building,
- (b) is made of wire mesh that complies with section 322 or another material that is at least as effective at containing materials or equipment, and
- (c) extends not less than 1 metre above the platform.

AR 191/2021 s341;242/2022

Swingstage scaffolds

342(1) An employer must ensure that

- (a) a commercially manufactured swingstage scaffold is erected, used, operated and maintained in accordance with the manufacturer's specifications or specifications certified by a professional engineer,
- (b) a swingstage scaffold that is not commercially manufactured is designed and certified by a professional engineer, and
- (c) operating procedures are developed for a swingstage scaffold referred to in clause (b).

342(2) If it is necessary for the safe operation of a swingstage scaffold with a platform, an employer must ensure that the platform is designed to prevent the swingstage scaffold from swinging or swaying away from the building or structure.

Requirements for swingstage scaffold

343(1) An employer must ensure that a swingstage scaffold is used only as a light duty scaffold.

343(2) An employer must ensure that a swingstage scaffold is suspended by at least 2 upper attachment points placed so that the suspension ropes are parallel.

343(3) An employer must ensure that a platform is at least 500 millimetres wide and fastened to the stirrups.

343(4) An employer must ensure that a platform is equipped with rollers or fenders that bear against the side of the building or structure to hold the platform at a distance from the wall sufficient to avoid an obstacle, but not so far as to allow a worker to fall through the space between the wall and the platform.

343(5) An employer must ensure that a thrustout, clamp or parapet hook is tied back or otherwise secured to a solid part of the structure and cannot move or be dislodged.

343(6) An employer must ensure that counterweights

- (a) are firmly attached to the thrustouts,
- (b) are heavy enough to counterbalance 4 times the maximum weight likely to be on the scaffold, and
- (c) do not consist of bagged or loose material.

- 343(7)** An employer must ensure that power units on a swingstage scaffold are equipped with
- (a) manually operated constant pressure controls, and
 - (b) positive drives for raising and lowering the scaffold.
- 343(8)** An employer must ensure that a swingstage scaffold platform has an enclosure that
- (a) is on the 3 sides of the platform that are not adjacent to the building,
 - (b) is made of wire mesh that complies with section 322 or another material that is at least as effective at containing materials or equipment, and
 - (c) extends not less than 1 metre above the platform.

Safety on swingstage scaffolds

- 344(1)** An employer must ensure that if workers are required to be on a swingstage scaffold, the hoisting equipment is equipped with automatically operating locking mechanisms so that the suspension ropes cannot slip or run free.
- 344(2)** An employer must ensure that if workers are required to be on a manually operated swingstage scaffold,
- (a) the hoisting mechanism is securely locked in a positive drive position, and
 - (b) the scaffold has a secondary anti-fall device that connects the scaffold to the suspension rope at a point above the hoisting mechanism.
- 344(3)** An employer must ensure that a powered swingstage scaffold has a manually operated secondary mechanism or an escape device, other than the vertical lifeline used for fall protection, if workers cannot reach a safe exit when there is a mechanical failure or power failure.
- 344(4)** An employer must ensure that a worker on the stage of a swingstage scaffold can use the manually operated secondary mechanism or escape device referred to in subsection (3) to move the scaffold to a point at which the worker can exit safely.
- 344(5)** An employer must ensure that a suspension rope is long enough to reach the next working surface below the scaffold.
- 344(6)** An employer must ensure that the end of a suspension rope is doubled back and held securely by a cable clamp so that the hoisting machine cannot run off the end of the rope.
- 344(7)** An employer must ensure that 2 or more swingstage scaffolds are not linked together by bridging the distance between them.

Workers on swingstage scaffolds

- 345(1)** Before starting to work on a swingstage scaffold, a worker must inspect the scaffold to ensure that
- (a) the thrustouts or parapet hooks are secured in accordance with section 343, and
 - (b) counterweights meet the requirements of section 343.
- 345(2)** A worker on a swingstage scaffold must ensure that

- (a) all ropes from the scaffold that extend to the ground or a landing are prevented from tangling, and
- (b) when the scaffold is being moved up or down on its suspension ropes, the stage is not out of level by more than 10 percent of its length.

345(3) A person on a swingstage scaffold must

- (a) remain between the stirrups at all times,
- (b) not bridge the distance between the scaffold and any other scaffold,
- (c) not use a vertical lifeline used for fall protection as a means of entering or leaving a swingstage, and
- (d) not use bagged or loose materials as counterweights on the scaffold.

345(4) An employer must ensure that if a worker may fall 3 metres or more while working from a suspended swingstage scaffold, the worker's personal fall arrest system is connected to a vertical lifeline.

345(5) Despite subsection (4), an employer may allow a worker using a swingstage scaffold to connect a personal fall arrest system to a horizontal lifeline or anchorage on the swingstage scaffold if the failure of one suspension line will not substantially alter the position of the swingstage scaffold.

Elevating Platforms and Aerial Devices

Worker safety

346(1) An employer must ensure that a worker is not travelling in a basket, bucket, platform or other elevated or aerial device that is moving on a road or work site if road conditions, traffic, overhead wires, cables or other obstructions create a danger to the worker.

346(2) A person must not travel in a basket, bucket, platform or other elevated or aerial device that is moving on a road or work site if road conditions, traffic, overhead wires, cables or other obstructions create a danger to the person.

Standards

347(1) An employer must ensure that a self-propelled work platform manufactured on or after July 1, 2009 with a boom-supported elevating platform that telescopes, articulates, rotates or extends beyond the base dimensions of the platform meets the requirements of

- (a) CSA Standard CAN/CSA B354.4-02, *Self-Propelled Boom-Supported Elevating Work Platforms*, or
- (b) ANSI Standard ANSI/SIA A92.5-2006, *Boom-Supported Elevating Work Platforms*.

347(2) Subsection (1) does not apply to a work platform mounted on a motor vehicle.

347(3) An employer must ensure that a self-propelled integral chassis elevating work platform manufactured on or after July 1, 2009 with a platform that cannot be positioned laterally completely beyond the base and with its primary functions controlled from the platform meets the requirements of

- (a) CSA Standard CAN/CSA B354.2-01 (R2006), *Self-Propelled Elevating Work Platforms*, or
- (b) ANSI Standard ANSI/SIA A92.6-2006, *Self-Propelled Elevating Work Platforms*.

347(4) An employer must ensure that a manually propelled, integral chassis elevating work platform manufactured on or after July 1, 2009 with a platform that cannot be positioned laterally completely beyond the base, that may be adjusted manually or using power and that must not be occupied when moved horizontally, meets the requirements of

- (a) CSA Standard CAN3 B354.1-04, *Portable elevating work platforms*, or
- (b) ANSI Standard ANSI/SIA A92.3-2006, *Manually Propelled Elevating Aerial Platforms*.

347(5) An employer must ensure that a telescopic aerial device, aerial ladder, articulating aerial device, vertical tower, material-lifting aerial device or a combination of any of them, when mounted on a motor vehicle, whether operated manually or using power, meets the requirements of CSA Standard CAN/CSA C225-00 (R2005), *Vehicle-Mounted Aerial Devices*.

347(6) An employer must ensure that a mast-climbing elevating work platform that may be adjusted manually or using power meets the requirements of ANSI Standard ANSI/SIA A92.9-1993, *Mast-Climbing Work Platforms*.

347(7) An employer must ensure that a vehicle mounted bridge inspection and maintenance elevating work platform meets the requirements of ANSI Standard ANSI/SIA A92.8-1993 (R1998), *Vehicle-Mounted Bridge Inspection and Maintenance Devices*.

347(8) An employer must ensure that an order picker meets the requirements of ASME Standard B56.1-2000, *Safety Standard for Low Lift and High Lift Trucks*.

347(9) Repealed.

Permanent suspension powered work platforms

348(1) An employer must ensure that the platform of a permanent suspension powered work platform

- (a) is constructed, installed, operated, tested, inspected, maintained, altered and repaired in accordance with CSA Standard CAN/CSA Z271-98 (R2004), *Safety Code for Suspended Elevating Platforms*, or
- (b) if it was installed before April 30, 2004, is certified by a professional engineer.

348(2) For the purposes of subsection (1), the “rated capacity” in CSA Standard CAN/CSA Z271-98 (R2004) is to be taken to mean the total weight of

- (a) workers and hand tools, with a minimum aggregate weight of 115 kilograms per worker, and
- (b) water and other equipment that the work platform is designed to lift at the rated speed.

Fork-mounted work platforms

349(1) An employer must ensure that a cage or work platform mounted on the forks of powered mobile equipment and intended to only support material is so designed and constructed that it is securely attached to the lifting carriage or forks of the powered mobile equipment, so that the cage or platform cannot accidentally move laterally or vertically and so that the powered mobile equipment cannot tip.

349(2) An employer must ensure that a work platform mounted on the forks of powered mobile equipment and intended to support a worker

- (a) is commercially manufactured or, if not commercially manufactured, is designed and certified by a professional engineer,
- (b) has guardrails and toe boards, and
- (c) has a screen or similar barrier that prevents a worker from touching any drive mechanism.

349(3) An employer must ensure that the operator of the powered mobile equipment remains at the controls while a worker is on the elevated fork-mounted work platform.

349(4) A person must not be on a fork-mounted work platform while the powered mobile equipment to which the platform is attached is moving horizontally.

Suspended man baskets

350 Moved to section 75.1

Boatswain's chairs

351(1) An employer must ensure that

- (a) a commercially manufactured boatswain's chair is assembled, used and maintained in accordance with the manufacturer's specifications or specifications certified by a professional engineer, or
- (b) a boatswain's chair that is not commercially manufactured is designed and certified by a professional engineer.

351(2) An employer must ensure that a boatswain's chair provides stable support for the user.

351(3) An employer must ensure that a rope used to suspend a boatswain's chair is

- (a) made of synthetic fibre with a breaking strength of at least 27 kilonewtons, and
- (b) is compatible for use with the rigging hardware in the suspension system.

351(4) An employer must ensure that a wire rope used to suspend a boatswain's chair is

- (a) of a type recommended for suspending boatswain's chairs by the rope manufacturer, and
- (b) is suitable for the hoist being used.

Temporary supporting structures

352(1) An employer must ensure that a temporary supporting structure and every part of it, including metal scaffold components, are designed, constructed and braced in accordance with CSA Standard S269.1-1975 (R2003), *Falsework for Construction Purposes*.

352(2) Subsection (3) applies to a temporary supporting structure unless the requirements of CSA Standard S269.1-1975 (R2003), *Falsework for Construction Purposes* are more stringent.

352(3) An employer must ensure that a temporary supporting structure is certified by a professional engineer if the temporary supporting structure

- (a) consists of shoring that is more than 3.7 metres in height,
- (b) may transmit loads to another part of the structure that may not provide adequate support, or

- (c) is designed to act as a unit composed of parts so connected to one another that a load applied to any part of it may alter the stresses induced in other parts.

352(4) A professional engineer certification for the purposes of subsection (3) must show

- (a) the size and specifications of the temporary supporting structure, including the type and grade of all materials for its construction,
- (b) the loads for which the temporary supporting structure is designed,
- (c) the sequence of loading or unloading the temporary supporting structure, if the loading or unloading sequence is critical to its stability, and
- (d) the shoring sequence, as necessary, after the temporary supporting structure is stripped.

Fly form deck panels

353(1) An employer must ensure that a fly form deck panel

- (a) is capable of resisting a minimum horizontal load of 3.6 kilonewtons applied in any direction at the upper edge,
- (b) has a safety factor against overturning of at least 2 to 1, and
- (c) has a safety factor against sliding of at least 1.5 to 1.

353(2) An employer must ensure that attachments to the panel are completed and secured before the fly form deck panel is detached from the hoist used to position the panel.

353(3) An employer must ensure that erection drawings and procedures respecting a fly form deck panel are readily available to the workers who will assemble, fly, use, dismantle or reuse the panel.

353(4) The erection drawings and procedures referred to in subsection (3) must include

- (a) a plan view, longitudinal section and cross-section of the panel,
- (b) the calculated position of the panel's centre of gravity,
- (c) step-by-step procedures for all phases of assembly, flying, use, dismantling, repair and reuse of the panel,
- (d) procedures for installing the panel on non-typical floors, and
- (e) any supplementary specifications for using the panels that are prepared by the manufacturer, a professional engineer or the employer.

353(5) An employer must ensure that no person is on a fly form deck panel while it is being flown.

353(6) A person must not be on a fly form deck panel while it is being flown.

Part 24

Toilets and Washing Facilities

Restrictions by employer

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

Drinking fluids

355(1) An employer must ensure that an adequate supply of drinking fluids is available to workers at a work site.

355(2) The drinking fluids available at a work site must include potable water.

355(3) Unless water is provided by a drinking fountain, the employer must ensure that an adequate supply of single-use drinking cups is provided in a sanitary container located by the water supply.

355(4) If there are outlets at a work site for both potable water and non-potable fluid, the employer must ensure that the outlet for potable water has a prominent label that clearly indicates drinking water.

Exception

356 Sections 357 to 361 do not apply to

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

Toilet facilities

357(1) Subject to subsection (2), an employer must ensure that a work site has the number of toilets for each sex that are required by Schedule 7, in separate toilet facilities.

357(2) A work site may have only one toilet facility for the use of both sexes if

- (a) the total number of workers at the work site is never more than 10, and
- (b) the door to the toilet facility can be locked from the inside.

357(3) If 3 or more toilets are required for men, an employer may substitute not more than 2/3 of the toilets with urinals.

357(4) If 2 toilets are required for men, an employer may substitute one of them with a urinal.

357(5) An employer must ensure that a toilet facility is located so that it is readily accessible to the workers who may use it.

357(6), (7) Repealed.

Water and drainage

358(1) If a work site is connected to a public or municipal water main and sanitary drainage system, the employer must ensure that the toilets are connected to that system.

358(2) If a work site is not connected to a public or municipal water main and sanitary drainage system, the employer must ensure that the toilets are self-contained units or connected to a septic tank.

358(3) An employer must ensure that a toilet that is a self-contained unit is emptied and serviced at regular intervals to ensure the unit does not overflow.

Hand cleaning facilities

359(1) An employer must ensure that at least one wash basin or hand cleaning facility is provided in a toilet facility.

359(2) An employer must ensure that there is one wash basin or hand cleaning facility for every 2 toilets in addition to the wash basin or hand cleaning facility required under subsection (1) if 3 or more toilets are required in a toilet facility.

359(3) An employer may substitute circular wash fountains for wash basins or hand cleaning facilities required by subsections (1) and (2) on the basis that each 500 millimetres of the fountain's circumference is equivalent to one wash basin or hand cleaning facility.

Supplies and waste receptacle

360 An employer must ensure that a toilet facility at a work site has

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

Condition of facilities

361(1) An employer must ensure that a lunch room, change room, toilet, urinal, wash basin, hand cleaning facility, circular wash fountain or shower at a work site is clean and sanitary and operational.

361(2) An employer must ensure that changing rooms, lunch rooms, toilet facilities and rooms in which a wash basin or shower are located are not used as storage areas for materials unless the storage facilities are properly constructed for those materials.

Part 25

Tools, Equipment and Machinery

Contact by clothing, etc.

362(1) If contact is likely between moving parts of machinery, electrically energized equipment or part of the work process and a worker's clothing, personal protective equipment, jewellery, hair or any other thing that may cause a hazard to workers, an employer must ensure that

- (a) the worker's clothing, personal protective equipment and any other thing fits closely to the body,
- (b) the worker does not wear bracelets, rings, dangling neckwear, a wristwatch or similar articles, and
- (c) the worker's head and facial hair is short or confined and cannot be snagged or caught.

362(2) If contact is likely between moving parts of machinery, electrically energized equipment or part of the work process and a worker's clothing, personal protective equipment, jewellery, hair or any other thing that may cause a hazard to workers, a worker must

- (a) wear clothing, personal protective equipment and any other thing that fits closely to the body,
- (b) not wear bracelets, rings, dangling neckwear, a wristwatch or similar articles, and
- (c) have head and facial hair that is short or confined and cannot be snagged or caught.

362(3) Despite subsections (1) and (2), a worker may wear a medical alert bracelet that has a breakaway or tear away band.

AR 191/2021 s362;242/2022

Machines close together

363 An employer must ensure that a worker is not in danger because the machines installed at a work site are close to each other or to a worker.

Moving workers

364 An employer must ensure that machinery or equipment used to move, raise or lower workers is designed by the manufacturer or certified by a professional engineer as being appropriate for that purpose.

364.1 Repealed.

Starting machinery

365(1) An employer must ensure that an alarm system is installed if

- (a) a machine operator does not have a clear view of the machine or parts of it from the control panel or operator's station, and
- (b) moving machine parts may endanger workers.

365(2) The alarm system must effectively warn workers that the machine is about to start.

Preventing machine activation

- 366** An employer must install a positive means to prevent the activation of equipment if
- (a) a worker is required, during the course of the work process, to feed material into the machine, or
 - (b) a part of the worker's body is within the danger zone of the machine.

Operator responsibilities

- 367(1)** Before starting machinery, an operator must ensure that starting the machinery will not endanger the operator or another worker.
- 367(2)** While operating machinery, an operator must ensure that its operation will not endanger the operator or another worker.

Controls

- 368** An employer must ensure that an operational control on equipment
- (a) is designed, located or protected to prevent unintentional activation, and
 - (b) if appropriate, is suitably identified to indicate the nature or function of the control.

Immobilizing machinery

- 369** A worker must not leave a machine, or a part of or extension to a machine, unattended or in a suspended position unless the machine is immobilized and secured against accidental movement.

Drive belts

- 370(1)** A worker must not shift a drive belt on a machine manually while the machine or motor is energized.
- 370(2)** An employer must ensure that a permanent drive belt shifter
- (a) is provided for all loose pulleys on a machine, and
 - (b) is constructed so that the drive belt cannot creep back onto the driving pulley.

Continuous-feed machinery

- 371** An employer must ensure that the drive mechanism of a powered, continuously fed feeder device permits the feeder mechanism to be stopped independently of the processing mechanism.

Elevated conveyor belts

- 372(1)** If an elevated conveyor belt passes over a walkway, an employer must ensure that the conveyor
- (a) has side walls high enough to prevent materials from falling from it, and

- (b) runs in a trough strong enough to carry the weight of a broken chain, rope, belt or other material that falls from the conveyor.

372(2) A worker must use a walkway to cross over a conveyor belt if

- (a) the conveyor belt is moving, or
- (b) the conveyor belt is motionless but has not been locked out in accordance with Part 15.

372(3) A worker must not cross under a moving conveyor belt except at a walkway.

Crossing conveyor belts

373(1) A worker must cross over a conveyor belt using a bridge that is at least 1 metre wide and has adequate guardrails.

373(2) Despite subsection (1), a worker may cross over a conveyor belt at a location other than a bridge if the belt is locked out.

373(3) A worker must cross under a moving conveyor belt at a designated place where the worker is protected from moving parts of the conveyor and from material falling from the belt.

Actuated fastening tools

374 A worker must not permit the trigger of an actuated fastening tool to be mechanically held in the "ON" position unless the manufacturer's specifications permit the tool to be used that way.

Grinders

375(1) An employer must ensure that

- (a) a grinder is operated in accordance with the manufacturer's specifications and, subject to subsection (2), equipped with a grinder guard,
- (b) the maximum safe operating speed of the grinder accessory in revolutions per minute is equal to or greater than the maximum speed of the grinder shaft in revolutions per minute, and
- (c) if a hand held grinder is used, the object being ground cannot move.

375(2) An employer must ensure that the guard of a hand held grinder covers the area of the grinder accessory contained within an arc of at least 120 degrees of the accessory's circumference.

375(3) An employer must ensure that if a tool rest is installed on a fixed grinder, the manufacturer's specifications are followed if they exist, or the tool rest is

- (a) installed in a manner compatible with the work process,
- (b) securely attached to the grinder,
- (c) set at or within 3 millimetres of the face of the wheel, and
- (d) set at or above the centre line of the wheel.

375(4) A worker must not

- (a) grind material using the side of an abrasive wheel unless the wheel has been designated for that purpose, or

- (b) adjust a tool rest while a grinder accessory is in motion.

Chainsaws

376(1) An employer must ensure that a chainsaw

- (a) is operated, adjusted and maintained in accordance with the manufacturer's specifications, and
- (b) is designed or equipped with a mechanism that minimizes the risk of injury from kickback when the saw is in use.

376(2) A worker must not adjust the chain of a chainsaw while the saw's motor is idling.

Circular saw blades

377(1) An employer must ensure that a circular saw blade with a crack of any size adjacent to the collar line, or with a crack elsewhere that exceeds the limits specified in Schedule 8, Table 1, is

- (a) removed from service, and
- (b) replaced or repaired.

377(2) If a circular saw blade has a crack near the periphery that does not exceed the limits specified in Schedule 8, Table 1, an employer must ensure that

- (a) the blade is removed from service and replaced,
- (b) the crack in the blade is repaired, or
- (c) the crack is prevented from getting longer by slotting, centre punching, drilling or another effective means.

377(3) An employer must ensure that a circular saw that is repaired under subsection (1) or (2) is retensioned as necessary by a competent worker.

Band saw blades

378(1) An employer must ensure that a band saw blade, other than a shake band saw blade, with a crack that exceeds the limits specified in Schedule 8, Table 2, is

- (a) removed from service and replaced, or
- (b) the crack in the blade is repaired.

378(2) An employer must ensure that a band saw blade, other than a shake band saw blade, with a crack that does not exceed the limits specified in Schedule 8, Table 2, is

- (a) removed from service until the crack is repaired, or
- (b) the crack is prevented from getting longer by centre punching or another means.

378(3) An employer must ensure that a band saw that is repaired under subsection (1) or (2) is retensioned as necessary by a competent worker.

378(4) A worker must not use a shake band saw blade that is cracked.

Band saw wheels

379(1) Unless a manufacturer specifies or a professional engineer certifies otherwise, an employer must ensure that a cast steel band saw wheel measured 25 millimetres inboard from the rim edge has a minimum rim thickness

- (a) of 14 millimetres for wheels up to and including 1.8 metres in diameter,
- (b) of 16 millimetres for wheels more than 1.8 metres in diameter and up to and including 2.75 metres in diameter, and
- (c) of 17.5 millimetres for wheels more than 2.75 metres in diameter.

379(2) An employer must ensure that a band saw wheel that is more than 1.2 metres in diameter is tested for cracks at least once every 12 calendar months by a competent worker.

379(3) An employer must ensure that a band saw wheel that has been exposed to excessive heat is removed from service until the wheel manufacturer or a professional engineer certifies it is safe for continued use.

Power-fed circular saws

380(1) An employer must ensure that a power-fed circular rip saw with horizontal power-driven infeed rolls has a sectional non-kickback device located in front of the saw blade across the full width of the feed rolls.

380(2) An employer must ensure that a power-fed circular resaw has

- (a) a splitter that is as high as the top of the saw, and
- (b) a cover.

Cut-off saws

381(1) An employer must ensure that a hand-operated cut-off saw, other than a radial arm saw, is equipped with a device that returns the saw automatically to the back of the table when the saw is released at any point in its travel.

381(2) An employer must ensure that a limit device is used to prevent a swing or sliding cut-off saw from travelling past the outside edge of the cutting table.

Sawmill head rig

382(1) An employer must ensure that a circular head saw has adjustable guides and a splitter that

- (a) is located not more than 75 millimetres from the back of the head saw, and
- (b) extends not less than 250 millimetres above the carriage bench.

382(2) An employer must ensure that the upper half of a top saw on a circular head rig is covered.

382(3) An employer must ensure that circular head saw guide adjustment controls are operated remotely from the guides.

Sawmill log carriage

- 383(1)** An employer must ensure that a sawmill log carriage has
- (a) a substantial buffer stop at each end of the carriage travel,
 - (b) a carriage with a safety device that keeps the head blocks not less than 30 millimetres from the saw,
 - (c) each head block equipped with a dog, and
 - (d) sweepers at the front and back of the carriage to clear obstructions from the track.
- 383(2)** A worker must not use frayed or worn rope, whether fibre or wire, on carriage drives.
- 383(3)** An employer must ensure that a sawyer's lever, operating the carriage drive mechanism, is designed and constructed to operate in the opposite direction from the direction the carriage travels if the operator's position with respect to the carriage could put the operator in danger.
- 383(4)** An employer must ensure that
- (a) a sawmill with a device for turning logs has a hold-down device installed on the carriage, and
 - (b) a secure restraining device maintains the carriage drive control mechanism and the log-turning control in neutral if the operator is not at the controls.

Robots

- 384(1)** An employer must ensure that the design, construction, installation, testing, start up, operation and maintenance of an industrial robot system comply with CSA Standard Z434-03 (R2008), *Industrial Robots and Robot Systems — General Safety Requirements*.
- 384(2) to 384(8)** Repealed.

Teaching a robot

- 385** If a worker is teaching a robot, an employer must ensure that
- (a) only the worker teaching the robot is allowed to enter the restricted work envelope,
 - (b) the robot system is under the sole control of the worker teaching the robot,
 - (c) if the robot is under drive power, it operates at slow speed only or at a speed that is deliberately selected and maintained by the worker teaching the robot,
 - (d) the robot cannot respond to a remote interlock or signal that would activate the robot, and
 - (e) the worker is outside the restricted work envelope before the robot is returned to automatic operation.

Part 26

Ventilation Systems

Application

386 This Part applies to work sites if a mechanical ventilation system controls worker exposure to

- (a) an airborne contaminant that exceeds or is likely to exceed the occupational exposure limits prescribed in this Code,
- (b) a biological contaminant that exceeds or is likely to exceed the occupational exposure limits prescribed in this Code,
- (c) potentially hazardous dust, fumes, gas, mist, aerosol, smoke, vapour or other particulate of a kind or quantity that is given off by a process,
- (d) an atmosphere that has flammable levels of gases, vapours, liquids or solids, or
- (e) an atmosphere that has less than 19.5 percent or more than 23 percent by volume of oxygen.

Design

387(1) An employer must ensure that a ventilation system is

- (a) designed, installed and maintained in accordance with established engineering principles, and
- (b) maintained and operated according to the manufacturer's specifications.

387(2) An employer must ensure that

- (a) externally exhausted air from a ventilation system is, if reasonably practicable, prevented from entering a work site,
- (b) make up air of a volume that does not compromise the effectiveness of the ventilation system and other ventilation systems is provided, and
- (c) if it is a recirculating air system, the concentration of a contaminant controlled by the ventilation system and discharged within the work site from the system, if reasonably practicable, does not exceed 10 percent of the contaminant's occupational exposure limit.

Safety

388(1) An employer must ensure that provision is made to warn workers immediately if a ventilation system fails and to provide for their protection.

388(2) An employer must ensure that workers at the work site

- (a) are trained in the correct use of the ventilation system,
- (b) participate in the training, and
- (c) use the ventilation system properly.

Part 27

Violence and Harassment

Hazard assessment

389 Violence and harassment are considered hazards for the purposes of Part 2.

Violence prevention plan

390(1) An employer must develop and implement a violence prevention plan that includes a violence prevention policy and violence prevention procedures.

390(2) The employer must develop and implement the violence prevention plan in consultation with

- (a) the joint health and safety committee or the health and safety representative, if the employer is required to establish a committee or designate a representative, or
- (b) affected workers, if the employer is not required to establish a committee or designate a representative.

Violence prevention policy

390.1 An employer must ensure that a violence prevention policy under section 390(1) includes the following:

- (a) a statement that the employer is committed to eliminating or, if that is not reasonably practicable, controlling the hazard of violence;
- (b) a statement that the employer will investigate any incidents of violence and take corrective action to address the incidents;
- (c) a statement that the employer will not disclose the circumstances related to an incident of violence or the names of the complainant, the person alleged to have committed the violence and any witnesses, except
 - (i) where necessary to investigate the incident or to take corrective action, or to inform the parties involved in the incident of the results of the investigation and any corrective action to be taken to address the incident,
 - (ii) where necessary to inform workers of a specific or general threat of violence or potential violence, or
 - (iii) as required by law;
- (d) a statement that the employer will disclose only the minimum amount of personal information under clause (c)(ii) that is necessary to inform workers of a specific or general threat of violence or potential violence;
- (e) a statement that the violence prevention policy is not intended to discourage a worker from exercising the worker's rights pursuant to any other law.

Violence prevention procedures

390.2 An employer must ensure that the violence prevention procedures under section 390(1) include the following:

- (a) the measures the employer will take to eliminate or, if that is not reasonably practicable, control the hazard of violence to workers;
- (b) information about the nature and extent of the hazard of violence, including information related to specific or general threats of violence or potential violence;
- (c) the procedure to be followed by the employer when disclosing the information in clause (b), which must be in compliance with section 390.1(c) and (d);
- (d) the procedure to be followed by a worker to obtain immediate assistance when an incident of violence occurs;
- (e) the procedure to be followed by a worker when reporting violence;
- (f) the procedure to be followed by the employer when
 - (i) documenting and investigating an incident of violence, and
 - (ii) implementing any measures to eliminate or control the hazard of violence that have been identified as a result of the investigation;
- (g) the procedure to be followed by the employer when informing the parties involved in an incident of violence of
 - (i) the results of an investigation of the incident, and
 - (ii) any corrective action to be taken to address the incident.

Domestic violence

390.3 When an employer is aware that a worker is or is likely to be exposed to domestic violence at a work site, the employer must take reasonable precautions to protect the worker and any other persons at the work site likely to be affected.

Harassment prevention plan

390.4(1) An employer must develop and implement a harassment prevention plan that includes a harassment prevention policy and harassment prevention procedures.

390.4(2) The employer must develop and implement the harassment prevention plan in consultation with

- (a) the joint health and safety committee or the health and safety representative, if the employer is required to establish a committee or designate a representative, or
- (b) affected workers, if the employer is not required to establish a committee or designate a representative.

Harassment prevention policy

390.5 An employer must ensure that a harassment prevention policy under section 390.4(1) includes the following:

- (a) a statement that the employer is committed to eliminating or, if that is not reasonably practicable, controlling the hazard of harassment;
- (b) a statement that the employer will investigate any incidents of harassment and take corrective action to address the incidents;
- (c) a statement that the employer will not disclose the circumstances related to an incident of harassment or the names of the complainant, the person alleged to have committed the harassment and any witnesses, except
 - (i) where necessary to investigate the incident or to take corrective action, or to inform the parties involved in the incident of the results of the investigation and any corrective action to be taken to address the incident, or
 - (ii) as required by law;
- (d) a statement that the harassment prevention policy is not intended to discourage a worker from exercising rights pursuant to any other law, including the *Alberta Human Rights Act*.

Harassment prevention procedures

390.6 An employer must ensure that the harassment prevention procedures under section 390.4(1) include the following:

- (a) the procedure to be followed by a worker when reporting harassment;
- (b) the procedure to be followed by the employer when documenting, investigating and preventing harassment;
- (c) the procedure to be followed by the employer when informing the parties involved in an incident of harassment of
 - (i) the results of an investigation of the incident, and
 - (ii) any corrective action to be taken to address the incident.

Review of plans

390.7(1) An employer must review the violence prevention plan and the harassment prevention plan, and revise the plans if necessary.

390.7(2) The employer must carry out the review required by subsection (1) in consultation with

- (a) the joint health and safety committee or the health and safety representative, if the employer is required to establish a committee or designate a representative, or
- (b) affected workers, if the employer is not required to establish a committee or designate a representative.

390.7(3) With respect to the violence prevention plan, the review required by subsection (1) must take place on the earliest of the following:

- (a) when an incident of violence occurs;
- (b) if the joint health and safety committee or the health and safety representative, if applicable, recommends a review of the plan;
- (c) every 3 years.

390.7(4) With respect to the harassment prevention plan, the review required by subsection (1) must take place on the earliest of the following:

- (a) when an incident of harassment occurs;
- (b) if the joint health and safety committee or the health and safety representative, if applicable, recommends a review of the plan;
- (c) every 3 years.

Training of workers

391 An employer must ensure that workers are trained in

- (a) the recognition of violence and harassment,
- (b) the policies, procedures and workplace arrangements that the employer has developed and implemented to eliminate or control the hazards of violence and harassment,
- (c) the appropriate response to violence and harassment, including procedures for obtaining assistance, and
- (d) the procedures for reporting, investigating and documenting incidents of violence and harassment.

Investigation and reporting of incidents

391.1 Sections 33(6)(b) to (d), (7) and (8) and 36 of the Act apply to incidents of violence or harassment.

Treatment or referral

391.2 An employer must ensure that a worker reporting an injury or adverse symptom resulting from an incident of violence or harassment is advised to consult a health professional of the worker's choice for treatment or referral.

Entitlement to pay

392 When a worker is treated or referred by a physician under section 391.2 and if the treatment sessions occur during regular work hours, the employer at the work site where the incident occurred shall not make a deduction from the worker's pay or benefits for the time during which a worker attends the session.

Retail fuel and convenience store worker safety application

392.1 Sections 392.2 to 392.6 apply to gas stations, other retail fuelling outlets and convenience stores where workers are ordinarily present during business hours.

Additional requirements for violence prevention plan

392.2 An employer must ensure that the violence prevention plan contains the following procedures, policies and control measures, in addition to those required under sections 390, 390.1 and 390.2:

- (a) safe cash-handling procedures, including procedures that minimize the amount of money readily accessible to a worker at the work site;
- (b) where the work site is open to the public between the hours of 11:00 p.m. and 5:00 a.m.,
 - (i) a time lock safe at the work site that cannot be opened by a worker between, at minimum, those hours,
 - (ii) limiting the quantities of high-value items, including cash and lottery tickets, accessible at the work site between, at minimum, those hours, and
 - (iii) storing remaining high-value items in the time lock safe referred to in subclause (i) or securely elsewhere;
- (c) maintaining good visibility into and out of the work site;
- (d) limiting access by the public to the interior of any buildings at the work site;
- (e) monitoring the work site by video surveillance;
- (f) signs at the work site visible to the public indicating that
 - (i) where the work site is open to the public between the hours of 11:00 p.m. and 5:00 a.m.,
 - (A) the safe at the work site is a time lock safe that cannot be opened, and
 - (B) the quantity of high-value items such as cash and lottery tickets at the work site is limited,
 - and
 - (ii) the work site is monitored by video surveillance;
- (g) each worker working alone is provided with a personal emergency transmitter that is monitored by the employer or the employer's designate.

Additional training required

392.3 In addition to any training under section 391, the employer must ensure that a worker is trained in the violence prevention plan requirements listed in section 392.2.

Review of violence prevention plan and worker training

392.4 The employer must ensure that the violence prevention plan requirements under section 392.2 and corresponding worker training under section 392.3 are reviewed and, if necessary, revised every 3 years and whenever there is a change of circumstances that may affect the health and safety of workers.

Personal emergency transmitter

392.5 A worker working alone must at all times during the worker's work shift wear the personal emergency transmitter referred to in section 392.2(g).

Mandatory fuel prepayment

392.6(1) An employer must require that customers prepay for fuel sold at gas stations and other retail fuelling outlets.

392.6(2) In addition to the requirement in subsection (1), an employer may implement procedures or use equipment as approved by a Director for payment for or sale of fuel, or the dispensing of fuel, to ensure worker safety.

Part 28

Working Alone

Application

393(1) This Part applies if

- (a) a worker is working alone at a work site, and
- (b) assistance is not readily available if there is an emergency or the worker is injured or ill.

393(2) Working alone is considered a hazard for the purposes of Part 2.

Precautions required

394(1) An employer must, for any worker working alone, provide an effective communication system consisting of

- (a) radio communication,
- (b) landline or cellular telephone communication, or
- (c) some other effective means of electronic communication

that includes regular contact by the employer or designate at intervals appropriate to the nature of the hazard associated with the worker's work.

394(1.1) Despite subsection (1), if effective electronic communication is not practicable at the work site, the employer must ensure that

- (a) the employer or designate visits the worker, or
- (b) the worker contacts the employer or designate at intervals appropriate to the nature of the hazard associated with the worker's work.

394(2) and **394(3)** Repealed.

Part 29

Workplace Hazardous Materials Information System (WHMIS)

Definitions

394.1 In this Part,

“bulk shipment” means a shipment of a hazardous product contained in any of the following without intermediate containment or intermediate packaging:

- (a) a vessel with a water capacity equal to or greater than 450 litres;
- (b) a freight container, road vehicle, railway vehicle or portable tank;
- (c) the hold of a ship;
- (d) a pipeline;

“CAS Registry Number” means the identification number assigned to a chemical by the Chemical Abstracts Service division of the American Chemical Society;

“claim for disclosure exemption” means a claim filed under section 408;

“container” means a bag, barrel, bottle, box, can, cylinder, drum or similar package or receptacle, but does not include a storage tank;

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

“hazard class” means a hazard class listed in Schedule 2 of the *Hazardous Products Act* (Canada);

“hazard information” means information on the correct and safe use, storage, handling and manufacture of a hazardous product, including information relating to its health and physical hazards;

“hazardous product” means any product, mixture, material or substance classified in accordance with the regulations made under subsection 15(1) of the *Hazardous Products Act* (Canada) in a category or subcategory of a hazard class listed in Schedule 2 of that Act;

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

“label” means a group of written, printed or graphic information elements that relate to a hazardous product which group is designed to be affixed to, printed on or attached to the hazardous product or the container in which the hazardous product is packaged;

“laboratory sample” means a sample of a hazardous product that is packaged in a container that contains less than 10 kilograms of the hazardous product and is intended solely to be tested in a laboratory, but does not include a sample that is to be used

- (a) by the laboratory for testing other products, mixtures, materials or substances, or
- (b) for educational or demonstration purposes;

“manufactured article” means any article that is formed to a specific shape or design during manufacture, the intended use of which when in that form is dependent in whole or in part on its shape or design, and that, when being installed, if the intended use of the article requires it to be installed, and under normal conditions of use, will not release or otherwise cause an individual to be exposed to a hazardous product;

“mixture” means a combination of, or a solution that is composed of, 2 or more ingredients that, when they are combined, do not react with each other, but excludes any such combination or solution that is a substance;

“product identifier” with respect to a hazardous product, means the brand name, chemical name, common name, generic name or trade name;

“safety data sheet” means a document that contains information about a hazardous product, including information related to the hazards associated with any use, handling or storage of the hazardous product at a work site, in accordance with the regulations made under subsection 15(1) of the *Hazardous Products Act* (Canada);

“significant new data” means new data regarding the hazard presented by a hazardous product that

- (a) change its classification in a category or subcategory of a hazard class,
- (b) result in its classification in another hazard class, or
- (c) change the ways to protect against the hazard presented by the hazardous product;

“substance” means any chemical element or chemical compound that is in its natural state or that is obtained by a production process, whether alone or together with

- (a) any additive that is necessary to preserve the stability of the chemical element or chemical compound,
- (b) any solvent that is necessary to preserve the stability or composition of the chemical element or chemical compound, or
- (c) any impurity that is derived from the production process;

“supplier” means a person who, in the course of business, imports or sells a hazardous product;

“supplier label” means the label provided by the supplier of a hazardous product that meets the requirements set out in the regulations made under subsection 15(1) of the *Hazardous Products Act* (Canada);

“work site label” with respect to a hazardous product means a label that contains

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

Application

395(1) Subject to subsections (3), (4) and (5), this Part applies to hazardous products at a work site.

395(2) An employer must ensure that a hazardous product is used, stored, handled or manufactured at a work site in accordance with this Part.

395(3) This Part does not apply if the hazardous product is

- (a) wood or a product made of wood,
- (b) tobacco or a tobacco product governed by the *Tobacco and Vaping Products Act* (Canada),
- (c) a hazardous waste, or
- (d) a manufactured article.

395(4) Except for section 407, this Part does not apply if the hazardous product is a dangerous good under the *Dangerous Goods Transportation and Handling Act*, to the extent that its handling, offering for transport or transport is subject to that Act.

395(5) Sections 398, 403, 404, 405, 406, 407 and 408 do not apply if the hazardous product is

- (a) an explosive governed by the *Explosives Act* (Canada),
- (b) a cosmetic, device, drug or food governed by the *Food and Drugs Act* (Canada),
- (c) a product governed by the *Pest Control Products Act* (Canada),
- (d) a nuclear substance that is radioactive governed by the *Nuclear Safety and Control Act* (Canada), or
- (e) a product, material or substance packaged as a consumer product as defined in section 2 of the *Canada Consumer Product Safety Act* (Canada).

Hazardous waste

396 If a hazardous product is a hazardous waste generated at the work site, an employer must ensure that it is stored and handled safely using a combination of

- (a) an appropriate means of identification, and
- (b) instruction of workers on the safe handling of the hazardous waste.

Training

397(1) An employer must ensure that a worker who works with or near a hazardous product or performs work involving the manufacture of a hazardous product is trained in

- (a) the content required to be on a supplier label and a work site label and the purpose and significance of the information on the label,
- (b) the content required to be on a safety data sheet and the purpose and significance of the information on the safety data sheet,
- (c) procedures for safely storing, using and handling the hazardous product,
- (d) if applicable, the procedures for safely manufacturing the hazardous product,
- (e) if applicable, the methods of identification referred to in section 402,
- (f) the procedures to be followed if there are fugitive emissions, and
- (g) the procedures to be followed in case of an emergency involving the hazardous product.

397(2) An employer must develop and implement the procedures referred to in subsection (1) in consultation with the joint health and safety committee or health and safety representative, if there is one.

Label required

398(1) Subject to subsection (5), an employer must ensure that a hazardous product or its container at a work site has a supplier label or a work site label on it.

398(2) Subject to any labelling exemptions in the *Hazardous Products Regulations* (Canada), an employer must not remove, modify or alter a supplier label on a container in which a hazardous product is received from a supplier if any amount of the hazardous product remains in the container.

398(3) If significant new data is provided to the employer from the supplier regarding the label content, the employer must update the supplier label or work site label as soon as this information is received.

398(4) Subject to any labelling exemptions in the *Hazardous Products Regulations* (Canada), if the supplier label on a hazardous product or its container is illegible or is removed or detached, an employer must immediately replace the label with another supplier label or a work site label.

398(5) An employer may store a hazardous product that does not have a supplier label or a work site label on it for not more than 120 days if the employer

- (a) is actively seeking the supplier label or the information required for a work site label,
- (b) posts a placard that complies with section 401, and
- (c) ensures that a worker who works with or in proximity to the stored, hazardous product
 - (i) knows the purpose of the placard and the significance of the information on it,
 - (ii) is trained in the procedures to be followed if there are fugitive emissions, and
 - (iii) is trained in the procedures to be followed in case of an emergency involving the hazardous product.

398(6) If a hazardous product is imported and received at a work site without a supplier label, the employer must apply a work site label.

398(7) An employer who receives an unpackaged hazardous product or a hazardous product transported as a bulk shipment must apply a label containing the information required on a supplier label or a work site label to the container of the hazardous product or to the hazardous product at the work site.

Production or manufacture

399 If an employer produces or manufactures a hazardous product for use at a work site, the employer must ensure that the hazardous product or its container has, at a minimum, a work site label on it.

Decanted products

400(1) If a hazardous product is decanted at a work site into a container other than the container in which it was received from a supplier, the employer must ensure that a work site label is applied to the container.

400(2) Subsection (1) does not apply to a portable container that is filled directly from a container that has a supplier label or a work site label if all of the hazardous product is required for immediate use and the hazardous product is

- (a) under the control of and used exclusively by the worker who filled the portable container,
- (b) used only during the shift during which the portable container is filled, and
- (c) the contents of the portable container are clearly identified on the container.

Placards

401(1) Sections 398, 399 and 400 do not apply if an employer posts a placard respecting a hazardous product that

- (a) is not in a container,
- (b) is in a container or in a form intended for export from Canada, or
- (c) is in a container that
 - (i) is intended to contain the hazardous product for sale or other disposition, and
 - (ii) is labelled, or is about to be labelled, in an appropriate manner having regard to the intended disposition.

401(2) A placard referred to in subsection (1) must

- (a) have the information required to be on a work site label printed large enough to be read by workers,
- (b) be big enough to be conspicuous, and
- (c) be located in a conspicuous place at the work area where the hazardous product is stored.

Transfer of hazardous products

402 Sections 398, 399 and 400 do not apply to a hazardous product at a work site if

- (a) the hazardous product is contained or transferred in
 - (i) a piping system that includes valves,
 - (ii) a reaction vessel, or
 - (iii) a tank car, tank truck, ore car, conveyor belt or similar conveyance,and
- (b) the employer identifies the hazardous product by using colour coding, labels, placards or some other means of effective identification.

Laboratory samples

403(1) Section 398 does not apply to a hazardous product in a laboratory sample if

- (a) the hazardous product is the subject of an exemption under subsection 5(4), (5) or (6) of the *Hazardous Products Regulations* (Canada), and
- (b) the container of the laboratory sample is labelled with the information listed in subsection (2)(a) to (c) of this section in place of the information required by paragraph 3(1)(c) or (d) of the *Hazardous Products Regulations* (Canada).

403(2) With respect to laboratory samples that are the subject of an exemption under subsection 5(4), (5) or (6) of the *Hazardous Products Regulations* (Canada), an employer must ensure that when such a laboratory sample is brought into the laboratory, it is packaged in a container that has a label with the following information printed on it:

- (a) the chemical name or generic chemical name of any material or substance in the hazardous product that is classified in a category or subcategory of a health hazard class and is present above the relevant concentration limit or is present at a concentration that results or would result in the mixture being classified in a category or subcategory of any health hazard class, if the health hazard class is known to the supplier or the employer;
- (b) the emergency telephone number that will enable the caller to obtain hazard information on the hazardous product;
- (c) the statement “Hazardous Laboratory Sample. For hazard information or in an emergency call” followed by the emergency telephone number referred to in clause (b).

403(3) Where a hazardous product is in a container other than the container in which it was received from the supplier or the hazardous product is manufactured and used in a laboratory, the employer is exempt from section 400 if

- (a) the hazardous product
 - (i) is a laboratory sample,
 - (ii) is intended solely for the use of analysis, testing or evaluation in a laboratory, and
 - (iii) is clearly identified,and
- (b) the provisions of section 397 are complied with.

403(4) Where a hazardous product is produced at a work site and is in a container for the sole purpose of use, analysis, testing or evaluation in a laboratory, the employer is exempt from section 400 if

- (a) the hazardous product
 - (i) is not removed from the laboratory, and
 - (ii) is clearly identified,and
- (b) the provisions of section 397 are complied with.

Safety data sheet — supplier

404(1) An employer who acquires a hazardous product for use at a work site must obtain a supplier safety data sheet for that hazardous product unless the supplier is exempted from the requirement to provide a safety data sheet by the *Hazardous Products Regulations* (Canada).

404(2) An employer may store a hazardous product for which there is no supplier safety data sheet for not more than 120 days if the employer is actively seeking the supplier safety data sheet.

Safety data sheet — employer

405(1) An employer must prepare a safety data sheet for a hazardous product produced or manufactured at a work site.

405(2) Subsection (1) does not apply to a fugitive emission or an intermediate product undergoing reaction within a reaction vessel.

405(3) An employer may provide a safety data sheet in a format different from the supplier safety data sheet or containing additional hazard information if

- (a) the supplier safety data sheet is available at the work site, and
- (b) the safety data sheet, subject to section 408,
 - (i) includes the information required for a supplier safety data sheet, and
 - (ii) states that the supplier safety data sheet is available at the work site.

Information current

406(1) The employer must ensure that the safety data sheet for a hazardous product received at the time of purchase from the supplier is the most current version.

406(2) If significant new data are provided to the employer from the supplier regarding the safety data sheet content, the employer must update the safety data sheet referred to in subsection (1)

- (a) as soon as reasonably practicable, and, in any case,
- (b) not more than 90 days after significant new data are provided to the employer.

Availability of safety data sheet

407 An employer must ensure that the safety data sheet required by this Part is readily available at a work site to workers who may be exposed to a hazardous product and to the joint health and safety committee or health and safety representative, if there is one.

Claim for disclosure exemption

408 An employer may file a claim in accordance with the *Hazardous Materials Information Review Act* (Canada) that the following information is confidential business information and is exempt from disclosure on a label or a safety data sheet required under this Part:

- (a) in the case of a material or substance that is a hazardous product,
 - (i) the chemical name of the material or substance,

- (ii) the CAS registry number, or any other unique identifier, of the material or substance, and
 - (iii) the chemical name of any impurity, stabilizing solvent or stabilizing additive that is present in the material or substance that is classified in a category or subcategory of a health hazard class under the *Hazardous Products Act* (Canada) and that contributes to the classification of the material or substance in the health hazard class under that Act;
- (b) in the case of an ingredient that is in a mixture that is a hazardous product,
- (i) the chemical name of the ingredient,
 - (ii) the CAS registry number, or any other unique identifier, of the ingredient, and
 - (iii) the concentration or concentration range of the ingredient;
- (c) in the case of a material, substance or mixture that is a hazardous product, the name of any toxicological study that identifies the material or substance or any ingredient in the mixture;
- (d) the product identifier of a hazardous product, being its chemical name, common name, generic name, trade name or brand name;
- (e) information about a hazardous product, other than the product identifier, that constitutes a means of identification;
- (f) information that could be used to identify a supplier of a hazardous product.

Interim non-disclosure

409(1) Subject to subsection (2), an employer who claims an exemption referred to in section 408 in accordance with the *Hazardous Materials Information Review Act* (Canada) may

- (a) delete the information that is the subject of the claim for exemption from the safety data sheet for the hazardous product, and
- (b) remove a supplier label and replace it with a work site label that complies with this Part.

409(2) An employer may delete the confidential business information in respect of which a claim has been made under section 408 from the safety data sheet from the date the employer files the claim for exemption until the final disposition by Health Canada of the proceedings in relation to the claim, if the employer discloses on the safety data sheet and, where applicable, on the label of the product or its container

- (a) a statement that the claim for exemption was filed,
- (b) the date on which the claim was filed, and
- (c) the registry number assigned to the claim for exemption under the *Hazardous Materials Information Review Act* (Canada).

409(3) An exemption is valid for 3 years after the date of determination by Health Canada that the information is confidential business information.

Exemption from disclosure

410(1) If an employer is notified that a claim for exemption under section 408 is valid, the employer may, subject to subsection (2),

- (a) remove the supplier label and replace it with a work site label that complies with this Part, and
- (b) delete the confidential business information from the safety data sheet for the hazardous product.

410(2) An employer may delete confidential business information from a hazardous product's safety data sheet label if the employer includes on its safety data sheet and, if applicable, on its label or the container in which it is packaged,

- (a) a statement that an exemption from disclosure has been granted,
- (b) the date of the decision by Health Canada granting the exemption, and
- (c) the registry number assigned to the claim for exemption under the *Hazardous Materials Information Review Act* (Canada).

410(3) The information referred to in subsection (2) must be included for a period of 3 years beginning not more than 30 days after the final disposition of the claim for exemption.

Duty to disclose information

411(1) An employer who manufactures a hazardous product must give, as quickly as possible under the circumstances, the source of toxicological data used in preparing a safety data sheet on request to

- (a) an officer,
- (b) the joint health and safety committee or health and safety representative, or
- (c) if there is no joint health and safety committee or health and safety representative, a representative of concerned workers at the work site.

411(2) The *Hazardous Materials Information Review Act* (Canada) applies to the disclosure of information under subsection (1).

Information — confidential

412(1) If an officer or other official working under the authority of the *Hazardous Products Act* (Canada) obtains information under paragraph 46(2)(e) of the *Hazardous Materials Information Review Act* (Canada), the officer or other official

- (a) must keep the information confidential, and
- (b) must not disclose it to any person except in accordance with this Part and for the purposes of the administration or enforcement of the *Hazardous Products Act* (Canada) or the Act.

412(2) A person to whom information is disclosed under subsection (1)(b)

- (a) must keep the information confidential, and
- (b) must not disclose it to any person except in accordance with this Part and for the purposes of the administration or enforcement of the *Hazardous Products Act* (Canada) or the Act.

Information to medical professional

413(1) An employer must give information that the employer has, including confidential business information exempted from disclosure under this Part, to a medical professional for the purpose of making a medical diagnosis or treating a worker in an emergency.

413(2) A person to whom confidential business information is given under subsection (1) must not give the information to another person except for the purpose of treating a worker in an emergency.

413(3) A person to whom confidential business information is given under subsection (2) must keep the information confidential.

Limits on disclosure

414(1) A person must not use or disclose confidential business information exempted from disclosure under this Part except in accordance with sections 412 and 413.

414(2) Subsection (1) does not apply to a person who makes a claim for exemption or to a person acting with that person's consent.

Requirements Applicable to Specific Industries and Activities

Part 30 Demolition

Worker in charge

415 An employer must ensure that a competent worker designated by the employer is in charge of the demolition work at all times while work is in progress.

Location of equipment

416 An employer must ensure that temporary offices and tool boxes are outside of the range of falling materials.

Hazardous substances

417 Before demolition begins and while demolition work continues, an employer must ensure that

- (a) all chemical and biological substances that may be hazardous to workers during demolition are removed from the structure or the part of the structure that is being demolished, and
- (b) existing concrete at the work site is not disturbed or removed until any embedded facilities have been isolated or their location marked in accordance with section 447.

Use of explosives

418 If a structure is to be demolished using explosives, an employer must ensure that a competent person develops a demolition procedure to protect the health and safety of workers.

Disconnecting services

419 An employer must ensure that

- (a) all utilities are disconnected before demolition begins, and
- (b) written confirmation of the disconnection by the person who disconnects the utilities is available at the work site.

Materials chute

420(1) An employer must ensure that a materials chute that is at an angle of more than 45 degrees from the horizontal is totally enclosed.

420(2) An employer must ensure that

- (a) workers cannot enter an area into which material is dropped, thrown or conveyed by a materials chute, and
- (b) conspicuous warning signs in the area advise of the danger.

Dismantling buildings

421(1) An employer must ensure that if a building or structure is being demolished,

- (a) all glass and windows on the exterior walls of the building or structure and adjacent to a public walkway are removed before demolition begins,
 - (b) if the demolition may affect the stability of an adjoining building or structure, the demolition is carried out in accordance with procedures certified by a professional engineer that safeguard the stability of the adjoining structure,
 - (c) if tensioned steel cables or bars are known to be in the building or structure, demolition procedures are certified and supervised by a professional engineer,
 - (d) if there are workers in the building or structure during the demolition, the demolition is performed floor by floor from the top down,
 - (e) steel structures are dismantled column length by column length and tier by tier,
 - (f) a structural member that is being removed
 - (i) is not under stress, other than its own weight, and
 - (ii) is secured or supported to prevent unintentional movement,
- and
- (g) unless it is being demolished at the time, a wall or other part of the building or structure is not left unstable or in danger of collapsing unintentionally.

421(2) A person must not allow materials or debris to accumulate in a building or structure being demolished if the accumulation could result in the collapse of a part of the building or structure.

Building shaft demolitions

422 An employer must ensure that a free-standing scaffold is used in the demolition of a building shaft from the inside of the shaft.

Part 31

Diving Operations

Application

423(1) This Part applies to diving operations performed by workers who are diving at a work site.

423(2) This Part does not apply to sport or recreational diving or to a person instructing others in sport or recreational diving.

423(3) If the requirements of this Part conflict with a requirement under another Part, the requirements of this Part prevail.

Employer responsibilities

424 An employer must ensure that diving operations meet the requirements of

- (a) CSA Standard CAN/CSA Z275.1-05, *Hyperbaric Facilities*,
- (b) CSA Standard CAN/CSA Z275.2-04, *Occupational Safety Code for Diving Operations*, and
- (c) CSA Standard CAN/CSA Z275.4-02, *Competency Standard for Diving Operations*.

425 to 436 Repealed.

Intakes, pipes and tunnels

437 Despite Clause 3.5.3.4 of CSA Standard Z275.2-04, *Competency Standard for Diving Operations*, an employer must ensure that the flow through the intake of a pipe, tunnel, duct or similar installation in the vicinity of a dive

- (a) is stopped and the intake mechanism is locked out before the dive begins, and
- (b) is not restarted until after the diver leaves the water.

438 to 440 Repealed.

Part 32

Excavating and Tunnelling

Disturbing the ground

441 For the purpose of this Part, ground is disturbed if a work operation or activity on or under the existing surface results in a disturbance or displacement of the soil, but not if the disturbance or displacement is a result only of

- (a) routine, minor road maintenance,
- (b) agricultural cultivation to a depth of less than 450 millimetres below the ground surface over a pipeline, or
- (c) hand-digging to a depth of no more than 300 millimetres below the ground surface, so long as it does not permanently remove cover over a buried facility.

Classification of soil type

442(1) For the purpose of this Part, soil is classified as “hard and compact” if it closely exhibits most of the following characteristics:

- (a) it is hard in consistency and can be penetrated only with difficulty by a small, sharp object;
- (b) it is very dense;
- (c) it appears to be dry;
- (d) it has no signs of water seepage;
- (e) it is extremely difficult to excavate with hand tools;
- (f) it has not been excavated before.

442(2) For the purpose of this Part, soil is classified as “likely to crack or crumble” if

- (a) it has been excavated before but does not exhibit any of the characteristics of “soft, sandy or loose” soil, or
- (b) it closely exhibits most of the following characteristics:
 - (i) it is stiff in consistency and compacted;
 - (ii) it can be penetrated with moderate difficulty with a small, sharp object;
 - (iii) it is moderately difficult to excavate with hand tools;
 - (iv) it has a low to medium natural moisture content and a damp appearance after it is excavated;
 - (v) it exhibits signs of surface cracking;
 - (vi) it exhibits signs of localized water seepage.

442(3) For the purposes of this Part, soil is classified as “soft, sandy or loose” if it closely exhibits most of the following characteristics:

- (a) it is firm to very soft in consistency, loose to very loose;

- (b) it is easy to excavate with hand tools;
- (c) it is solid in appearance but flows or becomes unstable when disturbed;
- (d) it runs easily into a well-defined conical pile when dry;
- (e) it appears to be wet;
- (f) it is granular below the water table, unless water has been removed from it;
- (g) it exerts substantial hydraulic pressure when a support system is used.

442(4) If an excavation contains soil of more than one soil type, for the purposes of this Part an employer must operate as if all of it is the soil type with the least stability.

Soil stabilization

443(1) Subject to subsection (2), an employer must stabilize the soil in

- (a) an excavation by shoring or cutting back, or
- (b) a tunnel, underground shaft or pit by shoring.

443(2) An employer may stabilize the soil in an excavation, tunnel, underground shaft or pit using an artificial soil stabilization technique, including freezing soil by artificial means or grouting if the process used is

- (a) designed by a professional engineer to control soil conditions, and
- (b) performed in accordance with the professional engineer's specifications.

443(3) A person must not use natural freezing of the soil as an alternative or partial alternative to a temporary protective structure, or to stabilize the soil in an excavation, tunnel or underground shaft.

AR 191/2021 s443;242/2022

Marking an excavation

444 If there is a danger of a worker or equipment falling into an excavation, an employer must ensure that workers are made aware of the excavation through flagging, marking, safeguards or other appropriate and effective means.

Water hazard

445 An employer must ensure that an excavation that a worker may be required or permitted to enter is kept free of an accumulation of water that may pose a hazard to the worker.

Worker access

446(1) An employer must provide workers with a safe means of entering and leaving an excavation, tunnel or underground shaft.

446(2) An employer must ensure that a worker does not enter an excavation, tunnel or underground shaft that does not comply with this Part.

446(3) A worker must not enter an excavation, tunnel or underground shaft that does not comply with this Part.

Locating buried or concrete-embedded facilities

447(1) For the purposes of subsection (1.1) and section 448, an owner means an owner or the owner's designate of a pipeline that is within 30 metres of the work site or any other buried or concrete-embedded facility that may be affected by the ground disturbance or removal of existing concrete.

447(1.1) Before the ground is disturbed or existing concrete is removed at a work site, an employer must

- (a) contact the owner,
- (b) advise the owner of the proposed activities,
- (c) ask the owner to identify and mark the location of the buried or concrete-embedded facility, and
- (d) not begin disturbing the ground or removing the existing concrete until buried or concrete-embedded facilities have been identified and their locations marked.

447(2) An employer must ensure that workers are aware of locate marks for buried or concrete-embedded facilities.

447(3) An employer must ensure that steps are taken to re-establish the locate marks for buried or concrete-embedded facilities if activities at the work site move or destroy the locate marks.

447(4) Despite subsection (1.1), an employer may use as built record drawings of the buried or concrete-embedded facilities for locating the buried or concrete-embedded facilities if

- (a) the work does not require excavation or removal of the soil, ground or existing concrete, and
- (b) the ground is penetrated to a depth of 1 metre or less or the existing concrete is penetrated to a depth of 150 millimetres or less.

(5) The as-built record drawings referred to in subsection (4) must be certified by the owner of the buried or concrete-embedded facility as the most current drawings of record that indicate the constructed location of the buried or concrete-embedded facility.

Exposing buried facilities

448(1) An employer must ensure that work with mechanical excavation equipment is not permitted within the hand expose zone of a buried facility until the buried facility has been exposed to sight

- (a) by hand digging,
- (b) by a non-destructive technique acceptable to the owner of the buried facility, or
- (c) by a method equivalent to clause (a) or (b).

448(2) Despite subsection (1), an employer may use mechanical excavation if doing so does not present a hazard and

- (a) if the buried facility is an electrical cable or conduit, the employer must ensure that
 - (i) it is grounded and isolated so that its disconnection is visible, and
 - (ii) the owner of the electrical cable or conduit is notified of the operation before it begins,

or

- (b) if the buried facility is not an electrical cable or conduit, the employer ensures that
 - (i) it is no longer in use, and
 - (ii) the owner of the buried facility gives the employer written consent to excavate or remove the facility.
- (c) - (e) Repealed.

448(3) An employer may reduce the width of a hand expose zone for a high pressure pipeline to within 1 metre on each side of the pipeline locate marks if

- (a) the high pressure pipeline is not governed by the *Pipeline Act*, and
- (b) the employer obtains written approval from the owner of the high pressure pipeline.

448(4) If the ground that will be disturbed lies within a pipeline right of way, an employer must

- (a) contact the operator or licensee of the pipeline, and
- (b) get their consent to disturb the ground.

448(5) An employer must not allow the use of mechanical excavation equipment within 600 millimetres of a buried pipeline unless the use of the equipment is under the direct supervision of a representative of the owner of the buried pipeline.

448(5.1) If an employer, on behalf of an electric utility, undertakes emergency work that

- (a) involves ground disturbance to a depth of no more than 500 millimetres below the ground surface,
- (b) is on the horizontal alignment or right of way of an electric utility structure, and
- (c) is determined by the employer to be in a location where no buried facilities are present in the area affected by the work,

the employer is exempt from the requirements of subsections (1) to (5).

448(6) An employer must ensure that any exposed buried facilities are protected and supported so that workers are not injured.

448(7) If a pipeline is exposed during a work operation, an employer must notify the pipeline operator or licensee before backfilling the excavation.

Exemption

449 Sections 450 to 459 and sections 461 to 464 do not apply to an excavation if a professional engineer certifies that the ground formation is and will remain stable, free from cave-ins, sliding or rolling materials and other hazards associated with the workings that may compromise worker safety.

Methods of protection

450(1) Before a worker begins working in an excavation that is more than 1.5 metres deep and closer to the wall or bank than the depth of the excavation, an employer must ensure that the worker is protected from cave-ins or sliding or rolling materials by

- (a) cutting back the walls of the excavation to reduce the height of the remaining vertical walls, if any, to no more than 1.5 metres for “hard and compact soil” and “likely to crack or crumble soil”,
- (b) installing temporary protective structures, or
- (c) using a combination of the methods in clauses (a) and (b).

450(2) Subsection (1) does not apply if a trench is constructed in solid rock throughout the entire trench.

Cutting back walls

451 If the walls of an excavation are cut back, an employer must ensure that

- (a) if the soil is classified as “hard and compact soil”, the walls are sloped to within 1.5 metres of the bottom of the excavation at an angle of not less than 30 degrees measured from the vertical,
- (b) if the soil is classified as “likely to crack or crumble soil”, the walls are sloped to within 1.5 metres of the bottom of the excavation at an angle of not less than 45 degrees measured from the vertical, and
- (c) if the soil is classified as “soft, sandy or loose soil”, the walls are sloped from the bottom of the excavation at an angle of not less than 45 degrees measured from the vertical.

Loose materials

452 An employer must ensure that loose materials are scaled and trimmed from the sides of an excavation if workers may be on or near the sides.

Spoil piles

453 An employer must ensure that a spoil pile is piled so that

- (a) the leading edge of the pile is at least 1 metre away from the edge of the excavation,
- (b) the slope of a spoil pile adjacent to the excavation is at an angle of not more than 45 degrees from the horizontal, and
- (c) loose materials are scaled and trimmed from the spoil pile.

Power pole support

454 An employer must ensure that work that disturbs the ground in the vicinity of an overhead power line is performed in a manner that does not reduce the original support provided for power line poles.

Safe entry and exit

455(1) An employer must ensure that if a worker is required to enter a trench that is more than 1.5 metres deep, a safe point of entering and leaving is located not more than 8 metres from the worker.

455(2) An employer must ensure that if a worker is in a trench that is more than 1.5 metres deep, the trench is supported or sloped so that the worker can reach the safe point in order to enter and leave.

Temporary protective structures

456(1) An employer must ensure that temporary protective structures in an excavation

- (a) 3 metres deep or less are of sufficient strength to prevent the walls of the excavation from caving in or otherwise moving into the excavation, and
- (b) more than 3 metres deep are designed, constructed and installed in accordance with the specifications of a professional engineer.

456(2) The specifications of a professional engineer for subsection (1)(b) must include

- (a) the size and specifications of the structure, including the type and grade of materials used in its construction, and
- (b) the loads for which the structure is designed.

456(3) An employer must ensure that, before beginning an excavation, a foundation that may be affected by the excavation is supported by a temporary protective structure designed, constructed and installed in accordance with the specifications of a professional engineer.

Alternatives to temporary protective structures

457(1) Despite section 456, an employer may install the following as temporary protective structures in trenches:

- (a) if the trenches vary in depth from 1.5 metres to 6 metres, shoring, stringers and bracing constructed of lumber that complies with Schedule 9, or a material that has equal or greater properties to those of the lumber;
- (b) exterior grade plywood as a substitute for 38 millimetre shoring elements if
 - (i) the plywood meets the requirements of CSA Standard O121-08, *Douglas Fir Plywood* or CSA Standard O151-04, *Canadian Softwood Plywood*,
 - (ii) the plywood is at least 19 millimetres thick,
 - (iii) the trench is not more than 2.7 metres deep,
 - (iv) uprights are installed at intervals of not more than 600 millimetres centre-to-centre,
 - (v) cross braces do not bear directly on the plywood, and
 - (vi) cross braces bearing on uprights or walers are located at all joints in the plywood sheathing.

457(2) Despite subsection (1)(a), screw jacks, hydraulic equipment or other apparatus may be used as shoring, stringers or bracing if they are at least equivalent in strength and reliability to the shoring, stringers or bracing described in Schedule 9.

457(3) Despite subsection (1)(a) if the trench is less than 2.4 metres deep and in soil classified as “hard and compact” an employer does not have to use stringers.

457(4) Despite section 456, an employer may install additional protection certified by a professional engineer in trenches to compensate for passing vehicular traffic, working machinery or a heavy object placed within a distance equal to the depth of the trench, measured from the near edge of the bottom of the trench to the traffic, machinery or heavy object.

457(5) Despite section 456, an employer may install additional protection certified by a professional engineer in a trench to compensate for the stress created because the trench is adjacent to or abuts a building or other structure.

Installation of shoring, stringers or bracing

458(1) An employer must ensure that a worker who installs shoring, stringers or bracing uses a ladder and works down from the top of the trench, installing each brace in descending order.

458(2) An employer must ensure that a worker who removes shoring, stringers or bracing uses a ladder and works upward from the bottom of the trench, removing each brace in ascending order.

458(3) A worker must install shoring, stringers or bracing in accordance with subsection (1) and remove them in accordance with subsection (2).

458(4) Despite subsections (2) and (3), if the quality of the ground in which a trench has been dug has deteriorated during operations to the extent that it is unsafe to use the method of removal required by subsection (2), an employer must ensure that the shoring, stringers or bracing are removed using a method that does not require the worker to be in the trench.

Access for powered mobile equipment

459 An employer must ensure that the open side of an excavation or a route used by powered mobile equipment to gain access to an excavation has a barrier high enough to stop the equipment from sliding or rolling into the excavation.

Dumping block

460 An employer must ensure that if powered mobile equipment may go over a bank or enter a dump opening while it is discharging its load, the equipment is effectively stopped or controlled by

- (a) an anchored block,
- (b) a ridge of material acting as a backstop, or
- (c) a designated signaller with a stop signal.

Underground shafts

461(1) An employer must ensure that, during the excavation of an underground shaft that is between 1.5 metres and 6 metres deep, the walls of the shaft from the top down are retained by temporary protective structures strong enough to prevent the walls from collapsing or caving in.

461(2) An employer must ensure that, during the excavation of an underground shaft 6 metres or more deep, the walls of the shaft from the top down are retained by temporary protective structures certified by a professional engineer as strong enough to prevent the walls from collapsing or caving in.

461(3) An employer must ensure that

- (a) a solid fence or equally effective means of preventing workers, materials and equipment from falling into the shaft is provided around an underground shaft opening, and
- (b) gates not less than 1 metre high are installed at each entrance of an underground shaft and are kept closed when they are not being used.

461(4) Workers must keep a gate to the entrance of an underground shaft closed when it is not being used.

461(5) An employer must ensure that an underground shaft is provided with suitable and efficient machinery or another device for keeping the shaft free of accumulations of water.

Drilled or bored underground shaft

462(1) An employer must ensure that

- (a) a worker who is required to enter a drilled or bored underground shaft is protected by a casing or temporary protective structure, and
- (b) the casing or temporary protective structure extends and remains at least 300 millimetres above surface of the ground where the shaft is drilled or bored.

462(2) An employer must ensure that a casing or temporary protective structure referred to in subsection (1) is certified by a professional engineer as having sufficient strength to resist the shifting of the surrounding materials.

462(3) Subject to subsection (4), if a worker in a belled area of an underground shaft is exposed to falling materials and is unable to stand clear of the area, an employer must ensure that the worker precedes each load of excavated material to the surface.

462(4) If a worker referred to in subsection (3) cannot precede each load to the surface, an employer must ensure that

- (a) the worker accompanies each load if the equipment is designed to safely transport both the worker and the excavated material simultaneously, and
- (b) safe work procedures are prepared that include the procedures to be followed when the worker and the excavated material are moved simultaneously.

Prohibition

463 A worker must not enter a belled area of a drilled or bored underground shaft if the worker is not protected by temporary protective structures.

Tunnel

464(1) An employer must ensure that, during the excavation of a tunnel, the walls of the tunnel from the top down are retained by temporary protective structures certified by a professional engineer as strong enough to prevent the walls from collapsing or caving in.

464(2) An employer must ensure that a tunnel is provided with suitable and efficient machinery or another device for keeping the tunnel free from accumulations of water.

Part 33 Explosives

465 Repealed AR 242/2022 s28.

Burning material

466(1) An employer must ensure that no person engages in an activity that may create an ignition source within 15 metres of an explosive at a work site.

466(2) A person must not engage in an activity that may create an ignition source within 15 metres of an explosive at a work site.

466(3) Subsections (1) and (2) do not apply to activities where workers are working with explosives that require the use of an ignition source and where any hazards created by an ignition source are controlled.

AR 191/2021 s466;242/2022

467 Repealed AR 242/2022 s30.

Blasters

468(1) An employer and a blaster must ensure that a worker who uses, handles, prepares, loads, fires, burns or destroys an explosive or detonator or performs other work directly with an explosive or detonator is

- (a) a blaster, or
- (b) under the direct supervision of a blaster.

468(2) Subsection (1) does not apply to the transportation of explosives in a vehicle.

468(3) An employer must ensure that a blasting area and all explosives, supplies and equipment in the blasting area are under the direction and control of a blaster before blasting activities are allowed to begin and during blasting activities.

468(4) If there are 2 or more blasters working at a blasting area, an employer must designate the responsibility under subsection (3) to one of them.

468(5) A worker who is not referred to in subsection (1) must not use, handle, prepare, load, fire, burn or destroy an explosive or detonator or perform other work directly with an explosive or detonator.

AR 191/2021 s468;242/2022

Certification of blasters

468.1(1) A blaster's certificate may be issued by

- (a) a Director, or
- (b) an organization approved by a Director.

468.1(2) A person may apply for a blaster's certificate in a manner authorized by a Director.

468.1(3) A Director may establish the qualifications and minimum standards that a Director considers necessary for a person making an application under subsection (2).

468.1(4) A Director may compel a person who applies under subsection (2) to provide a Director or any organization under subsection (1) with any information that a Director determines is necessary for considering whether to issue a blaster's certificate.

468.1(5) A Director, at any time, may impose any terms and conditions that the Director considers necessary on the blaster's certificate, and those terms and conditions are part of the blaster's certificate.

468.1(6) A person who is issued a blaster's certificate must comply with the blaster's certificate.

AR 191/2021 s468.1;242/2022

468.2 Repealed AR 242/2022 s32.

Suspension and cancellation

468.3(1) A Director, by notice in writing, may cancel a blaster's certificate or suspend it for the period specified in the notice if

- (a) the blaster has failed to comply with a term or condition of the blaster's certificate, or
- (b) for any other reason that, in the opinion of the Director, warrants the cancellation or suspension of the blaster's certificate.

468.3(2) When a Director suspends a blaster's certificate, the Director may impose any terms and conditions that the Director considers necessary.

468.3(3) The terms and conditions under subsection (2) must be complied with or performed before the suspension may be lifted.

468.3(4) A person whose blaster's certificate has been suspended or cancelled must surrender the certificate immediately to an officer on request.

AR 191/2021 s468.3;242/2022

468.4 Repealed AR 242/2022 s34.

Employer report of blaster certificates

468.5 An employer must ensure that a report is made of the current blasters who work at the work site, including each blaster's name and the certificate number, expiry date and the name of the issuer for each blaster's certificate.

AR 191/2021 s468.5;242/2022

Blaster's report

468.51 An employer and a blaster must ensure that the blaster makes a report in a log book at the end of the blaster's shift showing the following:

- (a) the number of bore holes loaded with explosives;
- (b) the number of detonators used;
- (c) the number of explosives detonated;

- (d) the kind and amount of explosives used;
- (e) the kind and quantity of explosives removed from a magazine;
- (f) the number and location of misfires;
- (g) the kind and quantity of explosives returned to a magazine;
- (h) the number and location of any explosives left undetonated;
- (i) the name of the blaster who entered the information into the report;
- (j) the date on which the information was entered into the report.

AR 242/2022 s35

Loss or theft of explosives

468.52(1) A blaster must immediately report to an employer

- (a) the suspected, attempted or known unauthorized entry into a magazine, or
- (b) the loss or theft of explosives or detonators from a work site.

468.52(2) If a worker becomes aware of an unauthorized entry into a magazine or the loss or theft of explosives or detonators from a work site, the worker must report the unauthorized entry, loss or theft to a blaster or an employer as soon as possible.

468.52(3) An employer must ensure that the loss or theft of explosives from a work site is immediately reported to a police officer.

AR 242/2022 s35

468.6 to 469 Repealed AR 242/2022 s36.

Storage and Handling of Explosives

Canadian guidelines

470 An employer and a blaster must ensure that a blaster complies with *Blasting Explosives and Detonators — Storage, Possession, Transportation, Destruction and Sale* (M82-8/1983), Revised 1993, published by Natural Resources Canada.

AR 191/2021 s470;242/2022

Magazines

470.1(1) An employer must ensure that a magazine is constructed, used, operated and maintained in accordance with National Standard of Canada CAN/BNQ 2910-500/2015, *Explosives — Magazines for Industrial Explosives*.

470.1(2) An employer must ensure that the lighting used in a magazine does not create a fire or explosion hazard.

AR 242/2022 s38

Storage and disposal of explosives, fuse assemblies and detonators

470.2(1) An employer and a blaster must ensure that explosives, fuse assemblies or detonators that are not used in a blasting activity

- (a) are stored in accordance with this Code, or
- (b) are destroyed or disposed of
 - (i) in accordance with manufacturer specifications, or
 - (ii) safely by a blaster if there are no manufacturer's specifications and despite section 12(e).

470.2(2) An employer and a blaster must ensure that all explosives at a work site are stored in a magazine.

470.2(3) An employer and a blaster must ensure that any unused explosives are returned to a magazine between periods of work.

AR 242/2022 s38

Access to explosives

470.3 An employer and a blaster must ensure that no worker, except a blaster or a worker under the direct supervision of a blaster, has access to

- (a) a blasting machine, or
- (b) a case, canister, container, day box, magazine or any other place where explosives or detonators are located.

AR 242/2022 s38

Removal from magazine

470.4 An employer and a blaster must ensure that explosives removed from a magazine are secured or used as soon as reasonably practicable.

AR 242/2022 s38

471 and **472** Repealed AR 242/2022 s39.

Transporting explosives

473(1) An employer must comply with the *Dangerous Goods Transportation and Handling Act* and the *Explosives Act* (Canada) when transporting explosives.

473(2) An employer must ensure that explosives being transported are

- (a) protected from damage, and
- (b) transported in their original packaging.

473(3) An employer and a blaster must ensure that the leg wires of electric detonators are shunted and folded before being transported and remain shunted and folded while they are being transported.

AR 191/2021 s473;242/2022

Vehicle requirements

473.1(1) An employer must ensure that when a vehicle is used to transport explosives, the following requirements are met:

- (a) the explosives and detonators are kept in separate compartments that

- (i) prevent the explosives and detonators from coming into contact with any metals or with each other,
 - (ii) are made of non-conductive material,
 - (iii) are weatherproof, and
 - (iv) are secured against unintended movement and unauthorized access;
- (b) the explosives cannot fall from the vehicle.

473.1(2) An employer must ensure that a vehicle used to transport explosives is operated by a competent worker.

473.1(3) An employer must ensure that a vehicle used to transport more than 25 kilograms of explosives has clearly visible signage indicating the vehicle contains explosives.

473.1(4) An employer must ensure that a vehicle used to transport explosives is equipped with 2 easily accessible fire extinguishers with a rating of at least 4-A:40-B:C.

AR 242/2022 s40

Vehicle breakdown

473.2(1) An employer must ensure that, if a vehicle transporting explosives breaks down, the explosives are transferred to another vehicle or removed from the vehicle unless, in the opinion of the worker operating the vehicle,

- (a) the repairs are minor,
- (b) the repairs can be made without creating a hazard, and
- (c) the repairs will be performed in a reasonable time.

473.2(2) An employer must ensure that, if explosives are removed from a vehicle that has broken down, the explosives are

- (a) placed under proper security,
- (b) located at a safe distance from the track, road or highway, and
- (c) located at least 300 metres from an inhabited building or a work area.

AR 242/2022 s40

Oldest explosives used first

474 An employer and a blaster must ensure that the explosives with the earliest manufacturing date are removed from a magazine first and used first.

AR 191/2021 s474;242/2022

Deteriorated, damaged or unsafe explosives

475 An employer and a blaster must ensure that

- (a) stored explosives are inspected at reasonably practicable intervals to ensure that no hazards to workers exist because an explosive is damaged, has deteriorated or is otherwise unsafe,
- (b) deteriorated, damaged or otherwise unsafe explosives are removed from storage,

- (c) deteriorated, damaged or otherwise unsafe explosives are not used in any blasting activities, and
- (d) deteriorated, damaged or otherwise unsafe explosives
 - (i) are destroyed, removed for destruction or otherwise made safe in accordance with the manufacturer specifications, or
 - (ii) are destroyed, removed for destruction or otherwise made safe by a blaster if there are no manufacturer specifications and despite section 12(e).

AR 191/2021 s475;242/2022

476 Repealed AR 242/2022 s42.

Appropriate explosive strength and quantities

477(1) An employer and a blaster must ensure that the explosives at a work site

- (a) are of explosive strengths appropriate to the blasting activities at the work site, and
- (b) are removed from a magazine in quantities of not more than what is required to complete the blasting activities.

477(2) An employer and a blaster must ensure that an explosive removed from a magazine is sectioned or cut only if there is no reasonable alternative available to obtain the appropriate size or strength of the explosive.

477(3) An employer and a blaster must ensure that, if an explosive is required to be sectioned, cut or pierced, it is sectioned, cut or pierced only on a clean, non-sparking surface.

AR 191/2021 s477;242/2022

478 Repealed AR 242/2022 s44.

Cartridge explosives

479(1) An employer and a blaster must ensure that cartridge explosives are not removed from their original outer cover.

479(2) A worker must not remove a cartridge explosive from its original outer cover.

AR 191/2021 s479;242/2022

Tools

480(1) An employer and a blaster must ensure that only tools made of non-sparking material are used for

- (a) opening containers or packages of explosives,
- (b) preparing explosives,
- (c) loading bore holes with explosives, and
- (d) any other work performed directly with explosives.

480(2) An employer and a blaster must ensure that, when detonators are crimped to detonating cords and fuses are cut,

- (a) standard crimping tools are used, and
- (b) the work is performed in a safe location.

AR 191/2021 s480;242/2022

Priming**481(1)** An employer and a blaster must ensure that

- (a) an explosive is primed as close to the location of the blasting activity as reasonably practicable, and
- (b) only workers required to prime the explosives are present in the blasting area.

481(2) An employer and a blaster must ensure that an explosive is not primed in a location that would create a risk of ignition of stored explosives.**481(3)** If drilling is being performed in blasting activities, an employer and a blaster must ensure that primed explosives are not assembled before the drilling is complete.**481(4)** An employer and a blaster must ensure that

- (a) only a sufficient number of explosives are primed for the specific blasting activity, and
- (b) explosives are prepared and loaded into only one bore hole at a time.

481(5) An employer and a blaster must ensure that before an explosive is detonated, explosives not required for the blasting activities are removed and located at a safe distance from the blasting area.

AR 191/2021 s481;242/2022

482 Repealed AR 242/2022 s47.**Detonators****483(1)** An employer and a blaster must ensure that the leg wires of electric detonators are shunted and folded until immediately before the detonator is connected to the blasting circuit.**483(2)** An employer and a blaster must ensure that electric detonators used together in a single blasting circuit are made by the same manufacturer.

AR 191/2021 s483;242/2022

Adverse weather conditions**484** An employer and a blaster must ensure that, if weather conditions may detonate an explosive or otherwise create a hazard to workers,

- (a) all blasting activities are stopped, and
- (b) workers are withdrawn to a safe distance from the blasting area until the weather conditions subside.

AR 191/2021 s484;242/2022

Drilling

Excavating and drilling

485(1) Subject to sections 510.1 and 517.93, an employer must ensure that no drilling or excavation is performed within 5 metres of a blast hole.

485(2) When an explosive has been detonated, an employer and a blaster must ensure that no drilling or excavation is performed until the area to be drilled or excavated is inspected by a blaster for misfires.

AR 191/2021 s485;242/2022

Bootleg

486(1) An employer and a blaster must ensure that a bootleg is inspected to determine whether any explosives remain.

486(2) An employer and a blaster must ensure that, if any explosives are identified under subsection (1), the explosives are washed out, blown out, destroyed or otherwise made safe before drilling occurs in the area of the bootleg.

AR 191/2021 s486;242/2022

Water damage

486.1 An employer and a blaster must ensure that explosives in a blast hole are protected from water damage if water may enter the blast hole before the explosive is detonated.

AR 242/2022 s49

Size of bore hole

487 An employer and a blaster must ensure that a bore hole is of sufficient size to allow an explosive and sufficient stemming material to be safely loaded.

AR 191/2021 s487;242/2022

Safe positioning

488 An employer and a blaster must ensure that workers are safely positioned away from the blast hole during a blasting activity.

AR 191/2021 s488;242/2022

Loading

Quantity of explosives

488.1 An employer and a blaster must ensure the quantity of explosive loaded in each bore hole does not exceed what is necessary to perform the blasting activity.

AR 242/2022 s51

Unwinding leg wires

489 An employer and a blaster must ensure that leg wires are unraveled, unwound or otherwise handled in a manner that does not damage the leg wires.

AR 191/2021 s489;242/2022

Electrical energy

490 An employer and a blaster must ensure that no unintended detonation of an explosive or detonator is caused or may be caused by any electrical energy, including static electricity.

AR 191/2021 s490;242/2022

Tamping explosives

491(1) An employer and a blaster must ensure that loading poles, tamping poles and pole extension fittings are made of non-sparking, anti-static material.

491(2) A blaster must ensure that a worker does not use excessive force when tamping explosives.

AR 191/2021 s491;242/2022

Sequential firing

492 An employer and a blaster must ensure that detonating connectors used to provide sequential detonation are delayed to minimize misfires.

AR 191/2021 s492;242/2022

493 Repealed AR 242/2022 s54.

Stemming and leg wires

494(1) An employer and a blaster must ensure that leg wires in blast holes are

- (a) not more than 600 millimetres above ground level, and
- (b) wrapped on a wooden or plastic lath or a wire pin flag.

494(2) An employer and a blaster must ensure that the position of a blast hole is marked by setting the base of the wooden or plastic lath or wire pin flag in the blast hole.

AR 191/2021 s494;242/2022

Testing detonators, circuits and blasting machines

495(1) An employer and a blaster must ensure that

- (a) electric detonators, blasting circuits and blasting machines are tested with a galvanometer or circuit tester equipment before detonation, and
- (b) all workers are at a safe distance from the blasting area or are protected by suitable cover before an electric detonator, blasting circuit or blasting machine is tested.

495(2) An employer and a blaster must ensure that a blasting machine is clearly marked with its capacity.

AR 191/2021 s495;242/2022

496 Repealed AR 242/2022 s56.

Connecting down lines to trunk cords

497 An employer and a blaster must ensure that detonating cords are not connected or attached to down lines and trunk cords until all the bore holes are loaded.

AR 191/2021 s497;242/2022

Ignition precautions

497.1 An employer and a blaster must ensure that no equipment, other than equipment directly involved in blasting activities, is operated within 8 metres of either a bore hole being loaded with explosives or a blast hole.

AR 242/2022 s57

Firing

Community protection

498 An employer and a blaster must ensure that roads, trails, paths and other approaches in proximity to a blasting area are accessible only to workers who work at the work site if the work site is located in or near

- (a) a populated area, or
- (b) a place where blasting activities may create a hazard to other persons.

AR 191/2021 s498;242/2022

Signs

498.1 An employer and a blaster must ensure that a blasting area is clearly identified by posted signs or flagging.

AR 242/2022 s58

Blast protection

499 When blasting activities are being conducted, an employer and a blaster must ensure that

- (a) only workers involved in the blasting activities are present in the blasting area,
- (b) workers are warned prior to an explosive being detonated,
- (c) no explosive is detonated until workers are at a safe distance from the blasting area or are protected by suitable cover, and
- (d) all workers remain at a safe distance from the blasting area or are protected by suitable cover until the requirements of section 509 are met.

AR 191/2021 s499;242/2022

Burning explosives

499.1 If a blaster has reason to believe that explosives are burning in a blast hole, an employer and a blaster must ensure that workers are at a safe distance from the blasting area or are protected by suitable cover until a blaster determines it is safe to return.

AR 242/2022 s58

500 Repealed AR 242/2022 s59.

Electromagnetic radiation

501(1) An employer and a blaster must ensure that sources of electromagnetic radiation do not interfere with blasting activities.

501(2) An employer and a blaster must ensure that electrical cables do not interfere with blasting activities.

501(3) If explosives are being detonated within 60 metres of an overhead power line, an employer and a blaster must ensure that

- (a) detonating cord is used as a down line to the explosive,
- (b) a leg wire detonator that is shorter than the distance from the overhead power line to the nearest ground level in the vicinity of the blasting activity is used to detonate the detonating cord, and
- (c) precautions are taken to prevent damage to the overhead power line.

AR 191/2021 s501;242/2022

Above-ground explosive

502 An employer and a blaster must ensure that, before an explosive is detonated on the surface of the ground,

- (a) a blasting mat is placed over the detonator and explosive, or
- (b) other suitable protection is used over the detonator and explosive to prevent earth, rock and debris from being thrown in the air by the detonated explosive.

AR 191/2021 s502;242/2022

Radiofrequency transmitters

503(1) Subject to subsection (2), an employer and a blaster must ensure that

- (a) no explosive is loaded, primed or detonated using an electric detonator in the vicinity of a radiofrequency transmitter, unless the radiofrequency transmitter is farther than the applicable minimum separation distance listed in Schedule 10, Table 1 and Table 2, and
- (b) transmitters and other power devices that may interfere with blasting activities are turned off.

503(2) An employer and a blaster must ensure that detonator leg wires are shunted directly or through a blasting machine if a radiofrequency transmitter is used within the applicable minimum separation distance listed in Schedule 10, Table 1 and Table 2.

503(3) An employer and a blaster must ensure that no electric detonators are placed in or removed from the containment area of a vehicle if a radiofrequency transmitter in the vehicle is actively transmitting.

AR 191/2021 s503;242/2022

Length of fuse assembly

504 An employer and a blaster must ensure that all safety fuse assemblies are long enough to

- (a) protrude from the collar of the blast hole, and
- (b) allow the blaster to reach a safe location after the blaster ignites the safety fuse.

AR 191/2021 s504;242/2022

Blasting machine

505(1) An employer and a blaster must ensure that blasting machines are used for all electric blasting activities.

505(2) Despite subsection (1), an employer and a blaster must ensure that a battery system is not used for electric blasting activities.

505(3) An employer and a blaster must ensure that after blasting cables are connected to the detonator, workers are at a safe distance from the blasting area or are protected by suitable cover before the blasting cables are connected to the blasting machine.

AR 191/2021 s505;242/2022

Shunting the blasting cable

506 Before and after an explosive is detonated, an employer and a blaster must ensure that

- (a) if the firing line is not connected to a blasting machine, the firing line is shunted, or
- (b) if the firing line is connected to a blasting machine, the blasting machine is set so it cannot detonate the explosive.

AR 191/2021 s506;242/2022

507 Repealed AR 242/2022 s63.

Destroying Explosives

508 Repealed AR 242/2022 s64.

Waiting period

509(1) An employer and a blaster must ensure that no worker exits suitable cover or returns to the blasting area until

- (a) the end of the longer of the following periods:
 - (i) 10 minutes after the last explosive was detonated or should have detonated;
 - (ii) the period specified in the manufacturer's specifications of the explosive or any equipment used in the blasting activity;
 - (iii) the period determined by a blaster,
- (b) a blaster performs an inspection of the blasting area, and
- (c) a blaster takes whatever action is necessary to ensure that work is safe to resume.

509(2) If a blaster suspects a misfire when an explosive is detonated using a safety fuse assembly and delay detonators, an employer and a blaster must ensure that no worker exits suitable cover or returns to the blasting area before the end of the longer of the following periods:

- (a) 30 minutes after the last explosive was detonated or should have detonated;
- (b) the period specified in the manufacturer's specifications of the explosive or any equipment used in the blasting activity;
- (c) the period determined by a blaster.

509(3) If a blaster suspects a misfire when an explosive is detonated using electric detonators, an employer and a blaster must ensure that no worker exits suitable cover or returns to the blasting area before the end of the longer of the following periods:

- (a) 10 minutes after the last explosive was detonated or should have detonated;
- (b) the period specified in the manufacturer's specifications of the explosive or any equipment used in the blasting activity;
- (c) the period determined by a blaster.

509(4) Despite subsections (2) and (3), an employer and a blaster must ensure that no worker exits suitable cover or returns to the blasting area until

- (a) the blasting cable is disconnected from the blasting machine,
- (b) the blasting cable ends are shunted, and
- (c) a blaster conducts an inspection to determine the cause of the misfire or suspected misfire.

509(5) Subsection (4)(c) does not apply to a blaster when conducting an inspection under subsection (4)(c).

509(6) Despite subsection (1), if electric blasting is performed with delay detonators at a mine or mine site, an employer and a blaster must ensure that no worker returns to the blasting area or exits suitable cover until a blaster determines it safe to do so.

AR 191/2021 s509;242/2022

Withdrawing a misfire

510(1) An employer and a blaster must ensure that a misfire or a detonator connected to a misfire is not withdrawn.

510(2) Subsection (1) does not apply to a misfire that occurs during oil well blasting activities, perforating activities or underground mine blasting.

AR 191/2021 s510;242/2022

Working around a misfire

510.1(1) If an excavator is being used to remove a misfire, an employer and a blaster must ensure that only a blaster and the worker operating the excavator are in the area that may be impacted by an explosion.

510.1(2) If a hole is drilled to load explosives to detonate or disperse a misfire, an employer and a blaster must ensure that

- (a) the drilling is performed under the direction of a blaster,
- (b) only the blaster and the workers directly involved in the drilling activity are in the area that may be impacted by an explosion, and

- (c) the drilling does not cause the misfire to detonate.

AR 242/2022 s65

Undetonated explosives and misfires

511(1) An employer and a blaster must ensure that an undetonated explosive or misfire in a blast hole is detonated or otherwise made safe immediately.

511(2) If an undetonated explosive or misfire cannot be detonated or otherwise made safe immediately, an employer and a blaster must ensure that

- (a) clearly visible signs are posted in the location of the undetonated explosive or misfire warning of the presence of the undetonated explosive or misfire, and
- (b) the undetonated explosive or misfire is detonated or otherwise made safe as soon as reasonably practicable.

511(3) If a blaster suspects an undetonated explosive or misfire that has not been made safe, the blaster must report the location of the suspected undetonated explosive or misfire to the employer as soon as possible.

511(4) If a worker suspects an undetonated explosive or misfire, the worker must

- (a) take reasonable steps to ensure workers who may be exposed to the suspected undetonated explosive or misfire are made aware of the location of the undetonated explosive or misfire, and
- (b) report the location of the suspected undetonated explosive or misfire to the employer and to a blaster as soon as possible.

511(5) An employer or a blaster who becomes aware of a suspected undetonated explosive or misfire must ensure that workers are protected from the hazards associated with the undetonated explosive or misfire.

511(6) After the undetonated explosive or misfire is detonated or otherwise made safe, an employer and a blaster must ensure that

- (a) the area is inspected for undetonated explosives, misfires, cartridges, detonators and any associated parts,
- (b) any remaining undetonated explosives or misfires are detonated or otherwise made safe in accordance with this section, and
- (c) all cartridges, detonators and any associated parts are collected and destroyed.

AR 191/2021 s511;242/2022

512 Repealed AR 242/2022 s67.

Removal of waste

513 Once a blasting activity has been completed, an employer and a blaster must ensure that all waste from the blasting activity is collected and destroyed or removed for destruction.

AR 191/2021 s513;242/2022

514 Repealed AR 242/2022 s69.

Specific Blasting Activities

Avalanche control

515(1) This section applies to explosives used to control avalanches.

515(2) Despite section 481, during avalanche control activities involving the hand deployment of explosives an employer and a blaster may permit

- (a) explosives to be primed away from the location of the blasting activity, and
- (b) more than one explosive at a time to be primed.

515(3) An employer and a blaster must ensure that explosives are primed

- (a) as close to the control route as reasonably practicable, and
- (b) in a safe, sheltered location where only the blaster and workers required to perform the priming activities are present.

515(4) An employer and a blaster must ensure that primed explosives are kept in separate containers from pull-wire fuse lighters or other ignition sources.

515(5) An employer and a blaster must ensure that a pull-wire fuse lighter is not connected to the safety fuse assembly of a primed explosive until immediately before the blasting activity.

AR 191/2021 s515;242/2022

Oil well blasting and oil well perforating

516(1) This section applies to oil well blasting and oil well perforating.

516(2) An employer must ensure that oil well perforating is performed in accordance with API RP 67, *Recommended Practice for Oilfield Explosives Safety*, 3rd Edition, October 2019.

516(3) Despite section 468, a competent worker who is not a blaster or under the direct supervision of a blaster may load perforating explosives, other than detonators, into a perforating gun or a down hole tool if an employer ensures that a blaster is readily available to provide assistance when required by the worker.

516(4) An employer and a blaster must ensure that a blaster

- (a) detonates perforating explosives, including using a drop bar in a tubing-conveyed perforating firing system, and
- (b) retrieves the perforating firing system from the well bore.

516(5) If a primed explosive is at the surface, an employer and a blaster must ensure that all power and electronic transmitting devices within 20 metres of the primed explosive are turned off.

AR 191/2021 s516;242/2022

Seismic blasting

517(1) This section applies to seismic blasting.

517(2) Despite section 466, an employer may permit the use of an open flame to warm water on a seismic drill if

- (a) the flame is used by a blaster or a worker under the direct supervision of a blaster,

- (b) propane is the fuel source of the open flame, and
- (c) the propane compressed gas cylinder used has a regulator.

517(3) Before a worker uses an open flame to warm water on a seismic drill, a blaster must ensure that

- (a) explosives not used in the particular seismic activity are returned to a magazine on the drill,
- (b) magazines are closed and locked,
- (c) the water tank, piping or valve being heated and the open flame are kept a safe distance from the closest magazine,
- (d) compressed gas cylinders are secured and kept a safe distance from the closest magazine,
- (e) combustible materials that may create a hazard to workers are removed from the immediate vicinity of the magazines and the open flame, and
- (f) a fire extinguisher with a rating of at least 4-A:40-B:C is easily accessible.

AR 191/2021 s517;242/2022

Display fireworks and pyrotechnic special effects operations

517.1(1) An employer must ensure that all work related to fireworks is performed in accordance with *Display Fireworks Manual*, 2010, published by Natural Resources Canada.

517.1(2) An employer must ensure that all work related to pyrotechnics is performed in accordance with *Special Effects Pyrotechnics Manual*, Edition 3, 2014, published by Natural Resources Canada.

AR 242/2022 s70

Secondary blasting

517.2(1) When conducting secondary blasting, an employer and a blaster must ensure that

- (a) bore holes are used, and
- (b) if multiple explosives are used on a single rock mass, the explosives are detonated simultaneously.

517.2(2) Despite subsection (1), if it is not reasonably practicable to use bore holes when conducting secondary blasting, an employer and a blaster must ensure that

- (a) explosives are placed directly on top of the material being blasted, and
- (b) each explosive is covered with a quantity of non-combustible material sufficient to control the force of the explosion.

AR 242/2022 s70

Explosives at Mines and Mine Sites

Application

517.3 Sections 517.4 to 517.91 apply to work related to explosives at mines and mine sites.

AR 242/2022 s70

Removal from magazine

517.4(1) An employer and a blaster must ensure that, until an explosive is about to be primed, explosives and detonators that are removed from a magazine are kept in separate day boxes or containers and the day boxes or containers are separated by a distance of at least 8 metres.

517.4(2) An employer and a blaster must ensure that

- (a) explosives in a day box or container are arranged, protected and located to ensure that they do not come into contact with anything that may cause unintended detonation, and
- (b) day boxes and containers are identified by clearly visible signage reading “Danger Explosives”.

AR 242/2022 s70

Circuit requirements for blasting machines

517.5(1) An employer and a blaster must ensure that blasting circuits used for blasting activities meet the requirements of clause 4.7 of CSA Standard M421-16, *Use of electricity in mines*.

517.5(2) An employer and a blaster must ensure that lead wires that run from the blasting machine through the blasting area

- (a) are waterproof,
- (b) consist of 2 insulated conductors, and
- (c) are used only for blasting activities.

AR 242/2022 s70

Electrical cables and wires

517.6 An employer and a blaster must ensure that the blasting cable assembly and any splice connections between detonator wires and the blasting cable are not grounded.

AR 242/2022 s70

Detonating cord

517.7(1) An employer and a blaster must ensure that, when detonating cords are used to prime explosives in blast holes,

- (a) the detonating cord reel is kept a safe distance from other explosives,
- (b) the detonating cords extend at least 1 metre from the blast hole, and
- (c) the detonating cords are secured at the top of the blast hole.

517.7(2) An employer and a blaster must ensure that inserting detonating cords, loading the bore hole and stemming are as continuous of an activity as reasonably practicable.

517.7(3) An employer and a blaster must ensure that

- (a) splices in detonating cords are not inserted in a blast hole,
- (b) detonating cords are not coupled to a blasting cable, explosives in a blast hole or delay or relay until final blast preparation,
- (c) the main or trunk lines are spliced

- (i) in accordance with manufacturer's specifications, or
- (ii) using a tight square knot if there are no manufacturer's specifications,
- (d) the blasting cables are free from kinks or coils when laid out,
- (e) the blasting cables are not laid out from a moving vehicle unless under the direct supervision of a blaster,
- (f) all connections in the blasting cable, other than splices, are tight and at 90-degree angles, and
- (g) detonators are only attached to the detonating cord immediately before detonation.

AR 242/2022 s70

Blast holes

517.8(1) An employer and a blaster must ensure that blast holes are stemmed sufficiently to control the explosion.

517.8(2) Subsection (1) does not apply to controlled blasting.

AR 242/2022 s70

Blasting warnings

517.9 Before an electric blasting system is connected, an employer and a blaster must ensure that signs are posted around the blasting area warning that mobile radio transmitters must be turned off within 20 metres of the blasting area.

AR 242/2022 s70

Unattended blast holes

517.91 An employer and a blaster must ensure that a blast hole is not left unattended unless

- (a) the ends of any electric detonator wires are shunted, and
- (b) a warning sign is posted that indicates the presence of a blast hole.

AR 242/2022 s70

Explosives at Underground Mines

Application

517.92 Sections 517.93 to 517.9991 apply to work related to explosives at an underground mine.

AR 242/2022 s70

Drilling distances

517.93 An employer must ensure that a worker does not drill a hole within 300 millimetres of any hole that has contained explosives.

AR 242/2022 s70

Storage

517.94 An employer must ensure that magazines are designed, constructed and located in accordance with and otherwise meet specifications certified by a professional engineer.

AR 242/2022 s70

Electric conveyance

517.95 An employer and a blaster must ensure that explosives are transported in closed containers designed to protect against unintended detonation, dangerous movement and sparking and induction from electrical sources during transportation.

AR 242/2022 s70

Handling explosives underground

517.96(1) An employer and a blaster must ensure that a day box

- (a) is kept closed until immediately before the bore hole is loaded, and
- (b) is closed immediately after the bore hole is loaded.

517.96(2) If there are 2 or more day boxes containing explosives at a working face, an employer and a blaster must ensure the day boxes are kept as far apart as reasonably practicable.

AR 242/2022 s70

Mine shaft conveyance

517.97 An employer must ensure that no explosives are transported on a hoist in a mine shaft unless procedures are developed by a competent person to ensure the safe transport of the explosives.

AR 242/2022 s70

Priming explosives

517.98 Despite section 468(1)(b), an employer and a blaster must ensure that only a blaster primes explosives.

AR 242/2022 s70

Explosive atmospheres

517.99(1) An employer and a blaster must ensure that tests are performed for the presence of flammable gas immediately

- (a) before a bore hole is loaded,
- (b) before an explosive is detonated,
- (c) after an explosive is detonated, and
- (d) before workers are permitted to return to the working face.

517.99(2) An employer and a blaster must ensure that explosives are not loaded or detonated if, within 25 metres of a bore hole or blast hole,

- (a) the atmosphere contains more than 1 percent of methane or 20 percent of the lower explosive limit of a flammable gas,

- (b) there is combustible dust that has not been treated with incombustible dust in a quantity sufficient to suppress the combustible dust, or
- (c) the area has not been thoroughly wetted.

517.99(3) If the atmosphere within 25 metres of a blast hole contains more than 1 percent of methane or 20 percent of the lower explosive limit of a flammable gas, an employer and a blaster must ensure that the blast hole is filled with stemming material.

517.99(4) Before detonating an explosive, an employer and a blaster must designate workers and position them at least 75 metres from the blasting area to prevent workers from approaching the blasting area for the duration of the blasting activities.

AR 242/2022 s70

Blasting cable

517.991 An employer and a blaster must ensure that any blasting cables used

- (a) have a resistance adequate to supply sufficient current to initiate the detonator,
- (b) are of sufficient length to reach
 - (i) from the detonator to a safe distance from the blasting area, or
 - (ii) a location where the blaster is protected by suitable cover,
- (c) are disconnected, short-circuited and remain short-circuited at the blasting machine end until ready to attach the blasting machine, and
- (d) are staggered in length at the detonator end to prevent short-circuiting.

AR 242/2022 s70

Use of detonators

517.992 An employer and a blaster must ensure that explosives in blast holes are detonated from the bottom of the blast hole or as far down the blast hole as reasonably practicable.

AR 242/2022 s70

Series connection

517.993 An employer and a blaster must ensure that all explosives to be detonated in the same round are connected in series, except in mine shaft excavation work.

AR 242/2022 s70

Firing in the same round

517.994 An employer and a blaster must ensure that only explosives to be detonated are loaded into a bore hole in the same round.

AR 242/2022 s70

Misfires

517.995(1) An employer and a blaster must ensure that misfires are removed from a blast hole only by using a jet of water.

517.995(2) An employer and a blaster must ensure that a detonator lead wire is not pulled from a blast hole.

AR 242/2022 s70

Misfire detonation and deactivation

517.996(1) When a misfire is being detonated, an employer and a blaster must ensure that no other blasting activities are performed at the same time, including detonating other misfires.

517.996(2) If the misfire cannot be removed or detonated, an employer and a blaster must ensure the misfire is deactivated.

517.996(3) When deactivating a misfire, an employer and a blaster must

- (a) remove the minimum amount of stemming material from the blast hole required to establish the true direction of the blast hole, and
- (b) fire a separate explosive parallel to the misfire and no closer to it than 300 millimetres.

517.996(4) If a blaster has reason to believe that an electric detonator is faulty, an employer and a blaster must ensure that the electric detonator's leg wires are short-circuited.

AR 242/2022 s70

Shock blasting

517.997 If an area of an underground mine is subject to sudden outbursts of gas or coal, an employer and a blaster must ensure that shock blasting is only performed in accordance with procedures certified by a professional engineer.

AR 242/2022 s70

Explosives detonated from the surface

517.998 An employer and a blaster must ensure that no worker is in an underground mine at the time an explosive is detonated from the surface.

AR 242/2022 s70

Permanent underground firing station

517.999 When explosives are detonated from a permanent underground firing station, an employer and a blaster must ensure that

- (a) only the blaster and workers required to perform the blasting activities are present in the permanent underground firing station, and
- (b) the blaster and workers referred to in clause (a) are upwind from the blasting activities.

AR 242/2022 s70

Secondary blasting in underground mines

517.9991(1) An employer and a blaster conducting secondary blasting activities must ensure that explosives placed directly on top of the material being blasted are not detonated if the methane content in the atmosphere is more than 6 percent of the lower explosive limit.

517.9991(2) An employer and a blaster conducting secondary blasting activities must ensure that, if explosives are placed directly on top of the material being blasted, a refuge or shelter for the blaster is located at least 150 metres away from the explosives.

517.9991(3) An employer and a blaster conducting secondary blasting activities where explosives are placed directly on top of the material being blasted must ensure that only instantaneous detonators are used.

AR 242/2022 s70

Part 34 Forestry

Felling and bucking

518(1) Before a tree is felled, a faller must ensure that there is a clear path of retreat and sufficient space to work for the faller and the faller's trainee, if any.

518(2) An employer must ensure that workers, except a hand faller and the hand faller's trainee, if any, remain a distance of not less than twice the height of the tallest tree away from the immediate area in which the felling is taking place.

518(3) If a self propelled mechanized feller is operating, an employer must ensure that workers remain at least the minimum distance prescribed by the manufacturer of the feller away from the immediate area in which felling is taking place.

518(4) A worker cutting timber must

- (a) fall or remove snags and trees that create a danger to workers as the cutting progresses,
- (b) when felling a tree, make a correct notch not less than 1/4 and not more than 1/3 of the diameter of the tree at the butt,
- (c) ensure that the undercut is complete and cleaned out,
- (d) leave sufficient uncut wood in the felling cut to control the direction in which the tree falls,
- (e) not work on hillsides immediately below another worker if skidding, sliding or rolling trees or logs may be dangerous,
- (f) carry and use wedges for hand felling, and
- (g) closely trim logs before they are put onto a truck, log deck or rollway.

518(5) A worker who is bucking must

- (a) take measures to protect other workers from the movement of trees during bucking,
- (b) clear away all brush and other objects that may catch the saw before starting the bucking, and
- (c) work on the upper side of logs lying on inclines.

518(6) An employer must ensure that a worker complies with subsections (4) and (5).

Hand felling

519 An employer must ensure that workers do not do hand felling during environmental conditions that may be hazardous to workers.

Mechanized feller or limber

520 An employer must ensure that a mechanized feller or limber

- (a) has a cab for the operator with 2 exits through which the operator can readily escape, and
- (b) is designed and equipped to direct the fall of the tree away from the mechanized feller.

Operator protective structures

521 An employer must ensure that skidders, grapple skidders and crawlers used in the harvesting of trees meet the requirements of SAE Recommended Practice J1084 APR80 (R2002), *Operator Protective Structure Performance Criteria for Certain Forestry Equipment*.

Road warnings

522 A worker must not fell a tree within the range of a road travelled by other workers or the public unless

- (a) a designated signaller is on the road to warn those approaching and to stop traffic until the tree is down and it is safe to continue, or
- (b) there are 2 flags or warning signs at the side of the road at a distance of 30 metres to 90 metres from each approach to the place where the tree is to be felled.

Partially cut trees

523 An employer must ensure that a partially cut tree is not left standing.

Logging trucks

524(1) Repealed.

524(2) Repealed.

524(3) An employer may operate a logging truck with a load that exceeds the manufacturer's specifications for the maximum weight of the load if the employer

- (a) prepares a written assessment of the hazards relating to the operation of the logging truck, and
- (b) implements controls that ensure the safe operation of the truck.

Traffic safety

525(1) An employer must ensure that bridges, elevated platforms and other structures used by vehicles transporting workers, logs or other forest products in forestry operations are constructed and maintained to permit safe transit.

525(2) If 2 or more vehicles may simultaneously use a section of road that is too narrow to permit them to pass each other, an employer must ensure that a traffic control system is installed on the road.

525(3) A traffic control system under subsection (2) must use

- (a) turnouts if they are necessary for safety,
- (b) warning signs at locations where they are needed, and
- (c) instructional signs giving
 - (i) the kilometre markings,
 - (ii) the road names or number markings, and
 - (iii) the radio frequency, if any, used for traffic control.

525(4) The traffic control system under subsection (2) must require vehicles to operate with their headlights turned on at all times.

Part 35

Health Care and Industries with Biological Hazards

Exposure control

525.1 An employer must ensure that a worker's exposure to blood-borne pathogens or other biohazardous material is controlled in accordance with section 9.

Medical sharps

525.2(1) Subsections (2) and (3) come into effect on July 1, 2010.

525.2(2) An employer must provide and ensure that any medical sharp is a safety engineered medical sharp.

525.2(3) Subsection (2) does not apply if

- (a) use of the required safety engineered medical sharp is not clinically appropriate in the particular circumstances, or
- (b) the required safety engineered sharp is not available in commercial markets.

525.2(4) An employer must develop and implement safe work procedures for the use and disposal of medical sharps if a worker is required to use or dispose of a medical sharp.

525.2(5) An employer must ensure that a worker who is required to use and dispose of a medical sharp is trained in the safe work procedures required by subsection (4), and such training must include

- (a) the hazards associated with the use and disposal of medical sharps,
- (b) the proper use and limitations of safety engineered medical sharps,
- (c) procedures to eliminate accidental contact with medical sharps, and
- (d) any other relevant information.

525.2(6) A worker must use and dispose of a medical sharp in accordance with the training provided by the employer.

Sharps containers

526(1) An employer must provide sharps containers and ensure that they are located as close as is reasonably practicable to where sharps are used.

526(2) A worker must use the sharps container provided.

526(3) An employer must ensure that a sharps container has a clearly defined fill line and is sturdy enough to resist puncture under normal conditions of use and handling.

Recapping needles

527 A person must not recap waste needles.

527.1 Repealed.

Policies and procedures

528(1) An employer must establish policies and procedures dealing with storing, handling, using and disposing of biohazardous materials.

528(2) An employer must ensure that workers are informed of the health hazards associated with exposure to the biohazardous material.

Limited exposure

529 An employer must ensure that worker exposure to biohazardous materials is kept as low as reasonably practicable.

Post exposure management

530 An employer must establish policies and procedures for the post exposure management of workers exposed to biohazardous material.

Part 36

Mining

Division 1

General

Application

531 This Part applies to mines and mine sites.

Building safety

532 An employer must ensure that a processing plant, other facility or building is

- (a) kept as free as is reasonably practicable of dust, and
- (b) cleaned at reasonably practicable intervals to prevent any dust from becoming a hazard to workers.

AR 191/2021 s532;242/2022

Mine plan

533(1) An employer must make and maintain a mine plan that includes

- (a) the workings surveyed, current to within 3 months of the previous survey,
- (b) extensions to the workings sketched in, current to within one month of the previous survey,
- (c) the general direction and inclination of the strata and thickness of the bed or strata being worked,
- (d) the legal description of the land making up the mine and mine site,
- (e) any right of way on the land for a pipeline or other utility corridor, and
- (f) the locations of exploration drill holes drilled for any purpose.

533(2) An employer must ensure that the mine plan is reviewed and updated at reasonably practicable intervals.

AR 191/2021 s533;242/2022

Specifications or procedures

533.1 Where this Part requires specifications or procedures, or both, certified by a professional engineer, an employer must ensure that those specifications or procedures, or both, are implemented and followed.

AR 242/2022 s72

Reports

534(1) An employer must ensure that a report is made for any training, inspection, test, examination, review, maintenance, installation, re-installation, repairs, modification or monitoring required by this Part.

534(2) An employer must ensure that a report made under subsection (1) is kept for at least 2 years from the date the report is made.

AR 191/2021 s534;242/2022

Excavation

535 An employer must ensure that the walls of excavations are designed by a competent person and constructed and located to ensure safe distances are maintained from any

- (a) boundary of a mine or mine site,
- (b) right of way for a highway or thoroughfare,
- (c) oil or gas well, and
- (d) right of way for a pipeline or other utility.

AR 191/2021 s535;242/2022

Mine material and discards

536 An employer must ensure that mine material and discards that are open to the atmosphere or accessible to workers are

- (a) stored in such a way that the mine material and discards do not create a hazard to workers, and
- (b) marked to identify any hazards to workers that may exist.

AR 191/2021 s536;242/2022

Dust from drilling

537 An employer must ensure that any dust released from drilling activities does not create a hazard to workers.

AR 191/2021 s537;242/2022

538 Repealed AR 242/2022 s73.

Haul roads

539(1) An employer must ensure that a haul road is constructed and maintained so that vehicles and equipment can travel safely into or out of a work area.

539(2) An employer must ensure that a haul road with a gradient of more than 5 percent has emergency escape routes that

- (a) are spaced throughout the length of the haul road, and
- (b) allow a runaway vehicle or equipment to be stopped safely.

539(3) An employer must ensure that

- (a) any portion of a haul road that exposes vehicles and equipment to a vertical fall of greater than 3 metres is protected by a berm that is equivalent to at least 1/2 the height of the largest tire of any equipment, powered mobile equipment or vehicle in use on that haul road, and

- (b) any breaks in the berms of a surface haul road must not be greater than the width of the smallest powered mobile equipment or vehicle in use on that haul road.

AR 191/2021 s539;242/2022

540 Repealed AR 242/2022 s75.

Mine walls

541(1) An employer must develop specifications and procedures, certified by a professional engineer, that include the measures to be taken to ensure the stability of mine walls.

541(2) Despite subsection (1), an employer at a pit must develop and implement specifications and procedures, verified by a competent person, that include the measures to be taken to ensure the stability of the pit walls.

541(3) An employer must ensure that

- (a) undermining is not carried out in unconsolidated mine material and discards,
- (b) the working face is less than 1.5 metres above the maximum height that the excavation equipment can reach,
- (c) unconsolidated mine material lying within 2 metres of the crest of a working face is removed,
- (d) unconsolidated mine material lying more than 2 metres from the crest of a working face is stabilized so that it does not create a hazard to workers, and
- (e) accumulation of loose rock or other mine material does not create a hazard to workers.

AR 191/2021 s541;242/2022

Dumping block

542 An employer must ensure that if powered mobile equipment may go over a bank or enter a dump opening while it is discharging its load, the equipment is effectively stopped or controlled by

- (a) an anchored block,
- (b) a ridge of material acting as a backstop, or
- (c) a designated signaller with a stop signal.

543 Repealed AR 242/2022 s77.

Reporting dangerous occurrences

544 The following are incidents for the purposes of section 33(3) of the Act:

- (a) an unexpected major ground fall or subsidence that endangers or may endanger workers, equipment or facilities;
- (b) an unplanned stoppage of the main underground ventilation system, if it lasts more than 30 minutes;
- (c) emergency conditions that result in workers being withdrawn from a hazardous location;
- (d) electrical equipment failures or incidents that cause, or threaten to cause, injury to workers or damage to equipment or facilities;

- (e) outbursts and inrushes;
- (f) an incident involving a hoist, sheave, hoisting rope, shaft conveyance, shaft, shaft timbering or headframe structure;
- (g) the integrity of a dam or dike is affected by
 - (i) cracking or evidence of weakening or subsidence of a dam or dike,
 - (ii) unexpected seepage or the appearance of springs on the outer face of a dam or dike,
 - (iii) the freeboard of a dam or dike being inadequate, or
 - (iv) a washout or significant erosion to a dam or dike.

AR 191/2021 s544;242/2022

Fire Prevention and Emergency Response

545 Repealed AR 242/2022 s79.

Emergency response

546(1) In addition to the requirements in Part 7, an employer must ensure that designated rescue and emergency workers

- (a) at minimum, qualify as basic first aiders,
- (b) have completed training approved by a Director, and
- (c) are familiar with the complete mine and mine site layout and the location of entrances and exits to work areas so an effective rescue or evacuation can be carried out.

546(2) This section does not apply to a pit.

AR 191/2021 s546;242/2022

Firefighting training

547 An employer must ensure that workers are trained in the use of firefighting equipment.

AR 191/2021 s547;242/2022

548 to 559 Repealed AR 242/2022 s81.

Electrical Systems

Electrical standards

560(1) An employer must ensure that the installation, maintenance and operation of electrical equipment meets the requirements of CSA Standard M421-16, *Use of electricity in mines*, for equipment installed on or after March 31, 2023.

560(2) An employer must ensure that the electrical system is designed to and otherwise meets specifications certified by a professional engineer.

560(3) An employer must ensure that electrical equipment and systems are installed, repaired, serviced, maintained and tested by an electrician or a worker under the direct supervision of an electrician.

560(4) An employer must ensure testing under subsection (3) is performed at reasonably practicable intervals and includes testing to verify

- (a) the effectiveness of the ground fault tripping and ground conductor monitoring circuits,
- (b) the integrity of ground electrodes at a surface mine and at the surface of an underground mine for electrical current continuity, and
- (c) ground electrodes at a surface mine and at the surface of an underground mine for adequate capacity to ground electrical current.

560(5) Subsection (2) does not apply to portable or temporary electrical power equipment at a mine or mine site where an employer has ensured the portable or temporary electrical power equipment has been properly installed and grounded.

AR 191/2021 s560;242/2022

561 to 571 Repealed AR 242/2022 s83.

Hand-held electrical drills

572 An employer must ensure that if the power switch is released on a hand-held drill used by a worker in a mine,

- (a) the power to the drill is interrupted, and
- (b) the drill stops operating.

Rubber-Tired, Self-Propelled Equipment

573 Repealed AR 242/2022 s85.

Rubber-tired, self-propelled equipment

574(1) An employer at an underground mine must ensure that rubber-tired, self-propelled equipment used in an underground mine meets the requirements of CSA Standard M424.3-M90 (R2020), *Braking Performance — Rubber-Tired, Self-Propelled Underground Mining Machines*.

574(2) An employer must ensure that the brake system of rubber-tired, self-propelled equipment used in a surface mine meets the requirements of ISO 3450:2011, *Earth-moving machinery — Wheeled or high-speed rubber-tracked machines — Performance requirements and test procedures for brake systems*.

574(3) An employer must ensure that all accumulators used in braking and steering systems of rubber-tired, self-propelled equipment having GVW of more than 32 000 kilograms have a Canadian Registration Number for a pressure vessel as defined by CSA Standard B51:19, *Boiler, pressure vessel, and pressure piping code*.

574(4) This section does not apply to any vehicle or powered mobile equipment that would be permitted to be used under the *Traffic Safety Act*.

AR 191/2021 s574;242/2022

Autonomous equipment

574.1 An employer must ensure that autonomous and semi-autonomous powered mobile equipment meets the requirements of ISO 17757:2019, *Earth-moving machinery and mining — Autonomous and semi-autonomous machine system safety*.

AR 242/2022 s86

575 and **576** Repealed AR 242/2022 s87.

Emergency energy

577(1) An employer must ensure that rubber-tired, self-propelled equipment fitted with an air or air over hydraulic braking system has an emergency source of energy that can

- (a) apply the service brake, and
- (b) safely stop and hold the equipment on all grades over which it may operate.

577(2) This section does not apply to a pit.

AR 191/2021 s577;242/2022

Hydraulic brakes

578(1) An employer must ensure that rubber-tired, self-propelled equipment with hydraulically activated service brakes has a hydraulic system divided into 2 or more separate circuits that are independently activated.

578(2) This section does not apply to a pit.

AR 191/2021 s578;242/2022

Dual-brake systems

579(1) An employer must ensure that rubber-tired, self-propelled equipment fitted with a divided or dual-braking system has a visible or audible warning device that effectively alerts the worker who is operating the equipment when a part of the system stops working.

579(2) This section does not apply to a pit.

AR 191/2021 s579;242/2022

580 to **584** Repealed AR 242/2022 s90.

Periodic service brake testing

585(1) An employer must ensure that the service brakes on rubber-tired, self-propelled equipment that has a GVW of more than 32 000 kilograms and travels at a speed of more than 10 kilometres per hour in normal operations are tested at reasonably practicable intervals

- (a) at the equipment's normal operation speed, and
- (b) without using auxiliary retarding devices.

585(2) An employer must ensure that the following are measured when service brakes are tested under subsection (1):

- (a) the distance travelled by the equipment from the initial point of application of the service brakes to the final stopping position;

(b) the forward speed of the equipment at the time the service brakes are applied.

585(3) An employer must ensure that the service brakes of all rubber-tired, self-propelled equipment referred to in subsection (1) in the employer's fleet are tested within a 3-year period.

585(4) If rubber-tired, self-propelled equipment does not meet the minimum brake performance requirements, an employer must remove the equipment from service until it meets the requirements.

AR 191/2021 s585;242/2022

586 and 587 Repealed AR 242/2022 s92.

Auxiliary steering

588 An employer must ensure that rubber-tired, self-propelled equipment has an auxiliary power source that enables the worker who is operating the equipment to steer the equipment to a safe stop if the equipment depends on hydraulic power for steering.

AR 191/2021 s588;242/2022

Auxiliary pump

589 An employer must ensure that the hydraulic fluid supply to an auxiliary hydraulic pump used to provide the emergency steering capability on rubber-tired, self-propelled equipment comes from a separate reservoir or from an isolated section of the main reservoir.

AR 191/2021 s589;242/2022

Auxiliary steering standards

590 An employer must ensure that an auxiliary steering system on rubber-tired, self-propelled equipment meets the requirements of SAE Standard J1511 FEB94/ISO 5010:2007, *Steering for Off-Road, Rubber-Tired Machines*.

AR 191/2021 s590;242/2022

Design safety factors

591(1) An employer must ensure that rubber-tired, self-propelled equipment has

- (a) shock absorbing seats,
- (b) a fail-safe means of preventing unintended movement when the machine is parked, and
- (c) an interlock system that prevents the engine from starting when the transmission is engaged.

591(2) An employer must ensure that all equipment, powered mobile equipment or vehicles fitted with rear dump boxes

- (a) have a calculated centre of gravity, and
- (b) will maintain all wheels in contact with the ground during normal operation when loaded to the manufacturer's specified maximum load weight.

591(3) Repealed AR 242/2022 s96.

AR 191/2021 s591;242/2022

Clearance lights

592(1) An employer must ensure that rubber-tired, self-propelled equipment has clearance lights that

- (a) indicate clearly from both the front and rear of the equipment the overall width of the equipment, and
- (b) meet the requirements of SAE Standard J2042 July 2006, *Clearance, Sidemarker, and Identification Lamps for Use on Motor Vehicles 2032 mm or More in Overall Width*.

592(2) For the purposes of subsection (1), the overall width does not include

- (a) blades on motor graders or rubber-tired dozers, or
- (b) buckets on front-end loaders.

592(3) An employer must ensure that the clearance lights under subsection (1) are on when the equipment's engine is on.

AR 191/2021 s592;242/2022

Line of sight

593 An employer must ensure that a worker who is operating rubber-tired, self-propelled equipment has an unimpeded line of sight.

AR 191/2021 s593;242/2022

Lights

594 An employer must ensure that rubber-tired, self-propelled equipment meets the requirements of ISO 12509:2004, *Earth-moving machinery — Lighting, signaling and marking lights, and reflex reflector devices*.

AR 191/2021 s594;242/2022

595 and **596** Repealed AR 242/2022 s98.

597 Repealed AR 242/2022 s99.

Conveyors

Fire resistance

598(1) An employer must ensure that a conveyor belt

- (a) meets the requirements of CSA Standard M422:14 (R2019), *Fire-performance and antistatic requirements for conveyor belting*,
- (b) has fire-resistant belting approved by the United States Mine Safety and Health Administration, or
- (c) is certified by a professional engineer as meeting another international standard.

598(2) An employer must ensure the conveyor belt system is fitted with an automatic fire suppression system that is designed to and otherwise meets specifications certified by a professional engineer.

AR 191/2021 s598;242/2022

Stopping

599(1) An employer must ensure that each conveyor belt system has

- (a) an emergency stopping system capable of being activated by a worker from any point along the length of the conveyor belt system where workers have access, and
- (b) controls that must be reset manually before the conveyor belt system can be restarted after an emergency stop.

599(2) An employer must ensure that a conveyor belt system is equipped with a belt-slip detection device to stop the drive motor in the event of belt blockage or slippage.

AR 191/2021 s599;242/2022

Distance surrounding conveyor belts

600 An employer must ensure there is sufficient horizontal and vertical distance surrounding conveyor belts to

- (a) prevent unintended contact with vehicles, equipment and workers,
- (b) provide adequate room for cleaning, and
- (c) provide adequate room for material movement.

AR 191/2021 s600;242/2022

Combustible dust

601(1) An employer must ensure that, in hazardous locations, no combustible dust accumulates at or near the conveyor belt, the belt support rollers, the conveyor belt drive and tail, the belt take up drums or any other component of the conveyor system that creates or may create an ignition hazard.

601(2) An employer must ensure that a belt conveyor discharge is constructed to keep the amount of dust spilled or dispersed into the air at as low a level as reasonably practicable to minimize the hazard to workers.

AR 191/2021 s601;242/2022

602 Repealed AR 242/2022 s102.

Riding conveyor belts prohibited

603(1) An employer must ensure that no worker rides on a conveyor belt.

603(2) A worker must not ride on a conveyor belt.

AR 191/2021 s603;242/2022

Inspecting conveyor

604 An employer must ensure that a conveyor is inspected at reasonably practicable intervals to identify any hazards to workers.

AR 191/2021 s604;242/2022

605 and **606** Repealed AR 242/2022 s105.

Division 2 Repealed AR 242/2022 s106.

Division 3 Underground Mines

Application

680 This Division applies to underground mines.

AR 191/2021 s680;242/2022

Annual plan

681 An employer must ensure that a mine plan required by section 533 is certified by a professional engineer, is submitted to a Director before the last day in September in each year and includes

- (a) a proposed underground operations working plan for the next year of operation,
- (b) a ventilation plan for the next year of operation, and
- (c) the locations of all firefighting pipelines, water control valves, fire stations and fire cabinets.

AR 191/2021 s681;242/2022

682 Repealed AR 242/2022 s110.

Mine Workers

Supervision

683 An employer must ensure that workers working underground are supervised by a supervisor who is an underground mine manager or an underground mine foreman.

AR 191/2021 s683;242/2022

684 Repealed AR 242/2022 s112.

Underground mine manager

685(1) An employer must appoint an underground mine manager to supervise workers and oversee daily activities at a mine or mine site.

685(2) An employer may appoint an underground mine foreman as a temporary underground mine manager.

AR 191/2021 s685;242/2022

Combined operations

686 An employer must ensure that surface mining operations and underground mining operations are coordinated if

- (a) surface mining operations and underground mining operations take place simultaneously, and
- (b) those operations are in such proximity that mining in one may affect the health and safety of workers in the other.

AR 191/2021 s686;242/2022

Working alone where coal is mined

687(1) An employer must ensure that no worker works alone at a working face where coal is mined.

687(2) Despite subsection (1), an employer may allow a worker who is sampling, testing or inspecting at a working face where coal is mined to work alone.

AR 191/2021 s687;242/2022

688 Repealed AR 242/2022 s115.

Unsafe areas

689 An employer must ensure that entrances to any area determined to be unsafe are signed at sufficient distances and fenced, cordoned or taped off to prevent workers from entering the area.

AR 191/2021 s689;242/2022

Work shift report and inspection

690(1) During each work shift, an employer must ensure that a report is made and updated that includes

- (a) the locations of any workers working underground at any given time,
- (b) the times at which each worker checked in and out of the underground mine,
- (c) the name of each worker who remains in the underground mine beyond the end of the work shift, and
- (d) any hazards identified during the work shift.

690(2) An employer must ensure that

- (a) underground work areas are inspected before each work shift, and
- (b) the report required in subsection (1) in respect of a work shift is
 - (i) updated to include the results of an inspection under clause (a), and
 - (ii) reviewed by the supervisor at the beginning of the subsequent work shift.

AR 191/2021 s690;242/2022

691 and **692** Repealed AR 242/2022 s117.

Fire Prevention

Ignition source restricted

693(1) An employer must ensure a worker does not bring an ignition source into an underground mine.

693(2) A worker must not bring an ignition source into an underground mine.

693(3) Despite subsections (1) and (2), a worker may bring an ignition source into an underground mine if it is required to perform the work and authorized by an employer.

AR 191/2021 s693;242/2022

Light metal alloys

693.1 An employer must ensure that nothing made of or containing aluminum, magnesium, titanium, a light metal alloy or any other reactive metal is brought into an underground mine if it may create a spark or ignition source.

AR 242/2022 s118

Monitoring of flammability hazards

693.2(1) An employer must ensure that appropriate gas monitors

- (a) are installed in any hazardous location,
- (b) are continuously monitored, and
- (c) will warn workers if the content of the atmosphere exceeds 20 percent of the lower explosive limit of the gas being monitored.

693.2(2) An employer must ensure that any equipment used for testing and measuring where flammable and combustible conditions exist or may exist is intrinsically safe.

AR 242/2022 s118

Fire precautions

693.3(1) An employer must ensure that

- (a) all flammable liquid is stored in a fireproof receptacle or chamber,
- (b) flammable or combustible material does not accumulate in any working part of the underground mine,
- (c) mine material likely to cause a fire is kept in fireproof containers that are removed and disposed of at reasonably practicable intervals,
- (d) flammable and combustible construction material is not used in an area of the underground mine where there is or may be an ignition source that could ignite it, and
- (e) propane is not used in the underground mine except in heaters within portals.

693.3(2) An employer must ensure that all components of the ventilation system are constructed of non-combustible material or treated to make them fire-resistant.

693.3(3) An employer must ensure that dust suppression devices are used if concentrations of dust may create a hazard to workers.

693.3(4) An employer must ensure that conveyor belt transfer points have automatic fire-warning devices that activate an alarm in a permanently attended monitoring station at the surface.

693.3(5) An employer must ensure that equipment brought into an underground mine uses fire-resistant hydraulic fluids that meet the requirements of CSA Standard M423:M87 (R2021), *Fire resistant hydraulic fluids*.

693.3(6) Subsection (5) does not apply to the following vehicle and powered mobile equipment components:

- (a) axles;
- (b) fluid couplings;

- (c) braking systems that employ totally enclosed friction elements immersed in a cooling liquid;
- (d) braking systems with hydraulics that are independent of any other hydraulic system.

693.3(7) Despite subsections (5) and (6), an employer may use a vehicle or powered mobile equipment that uses an automatic fire suppression system and associated automatic engine shutdown if approved by a Director.

AR 242/2022 s118

Fireproofing

693.4 An employer must ensure roadways and linings of a conveyor transfer or loading points in an underground mine are constructed of non-combustible materials or are otherwise made fire-resistant.

AR 242/2022 s118

Protection around conveyors

693.5 An employer must ensure that

- (a) adequate clearance is maintained between the bottom rollers of conveyor belt systems and the floor of the roadway to permit workers to safely remove spilled material, and
- (b) if the clearance is obtained by mounting the conveyor belt system on pillars, the pillars are either non-combustible or otherwise made fire-resistant.

AR 242/2022 s118

Fire detection and suppression systems

693.6 An employer must ensure that fire detection and suppression systems are installed in strategic places to detect and extinguish fires at an underground mine.

AR 242/2022 s118

Firefighting equipment

693.7(1) An employer must ensure that firefighting equipment is

- (a) provided in sufficient quantities and appropriate types to address all fire hazards that may arise, and
- (b) located in all areas where fire hazards are or may be present.

693.7(2) An employer must ensure that, if there is a fire, the direction of the ventilation air flow will not prevent or interfere with the use of firefighting equipment.

693.7(3) An employer must ensure that firefighting equipment is inspected and tested at reasonably practicable intervals to ensure it is operating properly.

AR 242/2022 s118

Water supply system for extinguishing fires

693.8(1) An employer must ensure that a water supply system used for fire suppression is designed and constructed to and otherwise meets specifications certified by a professional engineer.

693.8(2) An employer must ensure that a water supply system is available at all times to supply water to all areas of the underground mine at the pressure and volume necessary for firefighting.

693.8(3) An employer must ensure that the power supply for the water supply system is independent of the main electrical system.

693.8(4) If any component of the water supply system is located in a return air roadway, an employer must ensure that the supply control valves are located at appropriate intervals in the intake air roadways.

AR 242/2022 s118

Carbon monoxide monitors

693.9 An employer must ensure that a conveyor belt system has a carbon monoxide monitor that is linked to the fire detection system.

AR 242/2022 s118

Marking ignition hazards

694 An employer must ensure that areas at the surface where ignition hazards exist or may exist are clearly marked.

AR 191/2021 s694;242/2022

Mine Equipment

694.1 Repealed AR 242/2022 s119.

Propane installations

695(1) An employer must ensure that any underground propane installations are installed and maintained in accordance with the *Safety Codes Act*.

695(2) An employer must ensure that a furnace or device used for heating mine air is designed, constructed and installed to and otherwise meets specifications certified by a professional engineer.

AR 191/2021 s695;242/2022

Bulk fuel storage

696 An employer must ensure that bulk fuel storage facilities are

- (a) not located underground,
- (b) located on a surface that is impervious to the substances being stored, and
- (c) designed, constructed and maintained to prevent fuel from unintentionally entering the underground mine.

AR 191/2021 s696;242/2022

Voice communication

697(1) An employer must ensure that a communication system

- (a) is installed between a permanently attended monitoring station at the surface and underground locations where workers may be located,
- (b) has a separate back-up power supply that operates if there is a power failure, and
- (c) has an alarm that, in the case of an emergency, is
 - (i) initiated from the permanently attended monitoring station at the surface, and
 - (ii) activated to warn workers.

697(2) Subsection (1) does not apply to exploration drivages from the surface where visual or audible communication with the workers can be maintained while the workers are underground.

AR 191/2021 s697;242/2022

Batteries

697.1(1) An employer must ensure that battery-charging stations are

- (a) not located underground,
- (b) located in a well-ventilated area to prevent the accumulation of flammable gases, and
- (c) used, installed, assembled, operated, serviced, stored, tested and maintained in accordance with and otherwise meet specifications certified by a professional engineer.

697.1(2) An employer must ensure that batteries are not repaired in an underground location or in a hazardous location.

AR 242/2022 s120

Switchgear

697.2(1) An employer must ensure that only an electrician energizes and de-energizes electrical systems at an underground mine.

697.2(2) Despite subsection (1), an employer must ensure that workers are able to energize and de-energize electrical systems at an underground mine in the event of an emergency when an electrician is not available.

697.2(3) An employer at a work site where coal is mined must ensure that electrical distribution switchgear is not located nearer to the working face than the last ventilated cross cut.

AR 242/2022 s120

Clearances underground for rubber-tired, self-propelled equipment

697.3 An employer must ensure that rubber-tired, self-propelled equipment does not travel underground unless

- (a) the total horizontal clearance on each side is not less than 2 metres between the rubber-tired, self-propelled equipment and workers, equipment and vehicles, and
- (b) there is sufficient vertical clearance between the rubber-tired, self-propelled equipment, including its load, and the lowest overhead obstruction.

AR 242/2022 s120

Diesel-powered equipment

697.4 An employer must ensure that diesel-powered equipment used in an underground mine is certified by the United States Mine Safety and Health Administration or certified by a professional engineer to meet

- (a) CSA Standard M424.1-16, *Flameproof non-rail-bound, diesel-powered machines for use in gassy underground coal mines*,
- (b) CSA Standard M424.2-16, *Non-rail-bound diesel-powered machines for use in non-gassy underground mines*, or
- (c) United States Mine Safety and Health Administration 30 CFR (2002).

AR 242/2022 s120

698 and **699** Repealed AR 242/2022 s121.

Portal

700(1) An employer must ensure that all parts of a portal are constructed of non-combustible materials.

700(2) An employer must ensure that, before a portal is constructed, a professional engineer prepares and certifies a portal construction plan that

- (a) includes drawings, diagrams and instructions detailing the design of the portal, and
- (b) specifies how the portal is to be safely constructed and positioned while protecting workers from falling or collapsing ground.

700(3) An employer must ensure that a portal is designed and constructed to specifications certified by a professional engineer.

AR 191/2021 s700;242/2022

Evacuation and Emergencies

Outlets

701(1) An employer must ensure that there are at least 2 separate and independent outlets by which workers can exit an underground mine.

701(2) An employer must ensure that the outlets are designed and constructed to and otherwise meet specifications certified by a professional engineer, which must include the provision of at least one outlet that will allow egress of workers in the event of any reasonably foreseeable incident.

701(3) Subsection (1) does not apply to the following:

- (a) a new underground mine where entrances to a mine or outlets are being constructed;
- (b) a location where the mine voice communication system is in the process of being constructed between mine openings;
- (c) a location where ground is being excavated for the purposes of searching for or proving mineral deposits.

701(4) If there is only one exit from an area of an underground mine where work is being conducted, an employer must ensure that only those workers necessary to complete the work are present in such an area.

AR 191/2021 s701;242/2022

Escape ways

702 An employer must ensure escape ways

- (a) are designed and constructed to and otherwise meet specifications certified by a professional engineer that ensure workers can safely escape from an underground mine in an emergency, and
- (b) have markings and guide lines that
 - (i) are located at strategic places,
 - (ii) direct workers to the locations of the exits of the underground mine, and
 - (iii) show locations of self-rescue personal protective equipment and refuge stations.

AR 191/2021 s702;242/2022

Refuge stations

702.1(1) An employer must ensure that there are refuge stations located at strategic places in an underground mine.

702.1(2) An employer must ensure that the refuge stations are

- (a) designed and installed in accordance with and otherwise meet specifications certified by a professional engineer,
- (b) of sufficient size to accommodate the number of workers who may need to use them in the event of an emergency,
- (c) available to and accessible by workers in the event of an emergency, and
- (d) stocked with sufficient supplies to provide necessities of life for the foreseeable duration of an emergency.

AR 242/2022 s123

Protection from contact with moving equipment

703 An employer must ensure that a haulage mine level or tunnel has places for workers to safely avoid contact with moving equipment and that such places are

- (a) strategically located,
- (b) of sufficient size, and
- (c) clearly identified.

AR 191/2021 s703;242/2022

Emergency warning system

703.1(1) An employer must establish and implement an emergency warning system that alerts workers of an emergency that requires workers to be promptly evacuated.

703.1(2) An employer must ensure the emergency warning system required by subsection (1) is inspected and tested at reasonably practicable intervals to ensure it is operating properly.

AR 242/2022 s123

Evacuation

703.2 An employer must ensure that

- (a) a mock exercise for evacuation of an underground mine is conducted with all workers at least annually, and
- (b) a report is made of the exercise, including identifying any remedial actions undertaken to address any deficiencies.

AR 242/2022 s123

Emergency response station

703.3(1) An employer must establish, maintain and operate an emergency response station and provide facilities for conducting rescue operations and other emergency work.

703.3(2) An employer must ensure that sufficient quantities of rescue equipment and personal protective equipment are available to workers for immediate use at an emergency response station.

AR 242/2022 s123

Respiratory protective equipment for emergency escape

703.4(1) An employer must ensure that

- (a) each worker who goes underground is provided with self-rescue personal protective equipment that complies with Part 18 and is rated at a minimum of one hour,
- (b) each worker is in possession of self-rescue personal protective equipment at all times when underground, and
- (c) additional self-rescue personal protective equipment is stored and located at strategic places underground between the most distant working face and the exits.

703.4(2) An employer must ensure that each worker

- (a) receives training in the proper procedures for the use, donning and switch-over of self-rescue personal protective equipment during an emergency, and
- (b) is aware of the locations of the additional self-rescue personal protective equipment referred to in subsection (1)(c).

703.4(3) An employer must ensure that each worker receives refresher training every 3 months in the subjects referred to in subsection (2)(a).

AR 242/2022 s123

Vehicles

Underground fuel stations

704(1) An employer must ensure that no bulk fuel is stored underground.

704(2) Despite subsection (1), if bulk fuel storage is required underground, an employer must ensure designated underground fuel stations are designed and constructed to and otherwise meet specifications certified by a professional engineer, which must include controls to prevent spills and associated hazards.

704(3) An employer and supervisor must ensure diesel fuel tanks of vehicles and equipment that must be filled underground are filled only at designated underground fuel stations.

AR 191/2021 s704;242/2022

Diesel fuel

705(1) An employer must ensure that the quantity of diesel fuel stored at a designated underground fuel station is not greater than the quantity of fuel required for 24 hours' work.

705(2) An employer must ensure that diesel fuel is prevented from spilling while the fuel tanks are filled.

705(3) An employer must ensure that all empty diesel fuel containers are removed from an underground mine daily.

705(4) An employer must ensure that spilled oil, diesel fuel or any other combustible or flammable liquid is immediately taken up with a non-flammable absorbent material that is

- (a) deposited in a fireproof receptacle, and
- (b) removed from an underground mine at intervals of not more than every 3 days.

AR 191/2021 s705;242/2022

Control of equipment

706(1) An employer must ensure that the control levers of storage battery locomotives, trolley locomotives and vehicles are designed so that the levers

- (a) can only be removed when the lever is in the neutral position, and
- (b) are spring loaded or set to return to the neutral position.

706(2) An employer must ensure that all continuous mining equipment is equipped with proximity detection systems.

706(3) An employer must ensure that proximity detection systems include equipment-mounted components and components worn by workers that

- (a) cause equipment to stop before contacting a worker,
- (b) provide a warning signal on the components worn by the worker and the worker who is operating the equipment that alerts workers before the system causes equipment to stop, and
- (c) are protected from interference with or from electrical systems or other sources of electromagnetic radiation.

AR 191/2021 s706;242/2022

Roof and Side Support

Support system

707(1) If an entry or roadway is to be excavated in an underground mine, an employer must ensure that a geotechnical analysis of the strata and structures is conducted by a professional engineer to determine the effects of the strata and structures on the entry or roadway excavation and that a report is prepared.

707(2) An employer must ensure that support systems for an underground mine are designed and constructed to and otherwise meet specifications certified by a professional engineer, which must include

- (a) the support system of the roof and sides of a roadway,
- (b) the dimensions of support pillars, and
- (c) the procedures for the removal of any supports.

707(3) An employer must ensure that the professional engineer referred to in subsection (2) takes into consideration the following:

- (a) the depth of cover and stratigraphy;
- (b) the nature and character of the strata immediately above the roof horizon, the further overlying strata and the floor strata;
- (c) the strength characteristics of the roof, sides, floor strata and the coal seam;
- (d) the thickness and sequence of bedding planes and other planes of weakness in relation to the application of supports;
- (e) the local hydrogeology;
- (f) the structural control, including faults, synclines, anticlines and other known abnormalities;
- (g) the proximity of any surface glacial deposits and their stability;
- (h) the possible interaction between underlying and overlying coal seams, mine workings, pillars, aquifers, geological features and the proposed mine workings;
- (i) the mining sequence;
- (j) with respect to the general roadways layout and related extraction, the possible impact at the surface area and its infrastructure;
- (k) the geotechnical analysis referred to in subsection (1);
- (l) the propensity of the coal and surrounding strata for sudden bursts of solids and/or gas.

707(4) An employer must ensure that stability of the support system is maintained when supports are installed, maintained or removed.

707(5) An employer and underground mine manager must ensure that the removal of any supports is performed in accordance with the specifications referred to in subsection (2).

AR 191/2021 s707;242/2022

Pillar extractions

708 If solid mineral pillars or blocks are to be extracted from an underground mine, an employer must ensure that procedures for the systematic extraction of pillars or blocks are developed to specifications certified by a professional engineer, which must include that

- (a) workers are not permitted to work beneath an unsupported roof, and
- (b) workers are protected from the hazard of the collapse of a side or rib.

AR 191/2021 s708;242/2022

709 and **710** Repealed AR 242/2022 s127.

Ventilation System

Ventilation system

711(1) An employer must ensure that a mechanical ventilation system is designed, constructed and installed to and otherwise meets specifications certified by a professional engineer, which must include

- (a) the construction of the mechanical ventilation system and equipment,
- (b) the provision of a sufficient supply of fresh air to work areas,
- (c) control of airborne dust,
- (d) control of exposure to harmful substances or the creation of hazardous conditions, and
- (e) prevention of the build-up of flammable and combustible substances in the air.

711(2) An employer must develop and implement safe operating procedures for the mechanical ventilation system to specifications certified by a professional engineer, which must include

- (a) maintenance of the ventilation system and equipment,
- (b) maintenance of air pressure, air flow and velocity,
- (c) provision of sufficient ventilation,
- (d) testing requirements,
- (e) location of testing, and
- (f) frequency of testing and maintenance.

711(3) An employer must ensure that a competent worker reviews maintenance and testing performed under subsection (2) to verify that the mechanical ventilation system is operating in accordance with the safe operating procedures.

711(4) An employer must ensure that compressed air is not used for ventilation.

711(5) Despite subsection (4), an employer may use compressed air for ventilation in refuge stations if it is part of the design under subsection (1).

AR 191/2021 s711;242/2022

Air velocity

712 An employer must ensure that a ventilation system in an underground mine maintains a minimum air velocity at working faces to prevent methane layering from occurring.

AR 191/2021 s712;242/2022

Return airway

713 An employer must ensure that underground oil transformers rated at more than 1000 kilovoltamperes, garages, bulk oil storage areas and fuel stations are ventilated by air that flows directly to the return airway.

Airlock doors

714 An employer must ensure that the operation of airlock doors does not compromise the effectiveness of the ventilation system.

AR 191/2021 s714;242/2022

Stoppings

715 An employer must ensure that

- (a) ventilation stoppings between intake and return airways prevent air leaks,
- (b) the space between the faces of ventilation stoppings and roadways is kept free of obstructions, and
- (c) ventilation stoppings are constructed at crosscuts on each side of the conveyor system up to the last crosscut before the tail end of the last conveyor in order to minimize the potential contamination of those airways.

Seals

716(1) An employer must ensure that worked-out or inaccessible areas of an underground mine are sealed off as soon as reasonably practicable after an area has been worked out or becomes inaccessible.

716(2) An employer must ensure that seals are designed, constructed and installed to and otherwise meet specifications certified by a professional engineer, which must include the measures to be taken to contain fires, spontaneous heating or other hazards to workers.

716(3) An employer must ensure that a seal is monitored to ensure that a hazard to workers is not created.

716(4) If a hazard to workers is detected at the seal, an employer must ensure that all work that may be impacted by the hazard stops, except for work necessary to eliminate or control the hazard.

AR 191/2021 s716;242/2022

Chutes

717 An employer must ensure that, in a system with chutes passing from an upper to a lower mine level, mineral or rock is kept in the chutes above the bulkhead to prevent any passage of air.

Splits

718(1) An employer must ensure that an underground portion of a mine is divided into splits.

718(2) An employer must ensure that each split and each working face in a split is supplied with a separate current of fresh air.

718(3) Repealed AR 242/2022 s131.

AR191/2021 s718;242/2022

Main fans

719 An employer must ensure that

- (a) all main fans are monitored with automatic continuous ventilating pressure monitoring devices that are checked daily,
- (b) a mine has a standby main fan, and
- (c) a mine has an emergency power supply capable of running the main fans if the principal power source fails.

AR 191/2021 s719;242/2022

Reverse flows

720 If a part of a ventilation system requires the reversal of air flow, an employer must ensure that safe operating procedures are developed to specifications certified by a professional engineer.

AR 191/2021 s720;242/2022

Surface fans

721(1) An employer must ensure that the main surface ventilating fans

- (a) are offset by not less than 5 metres from the nearest side of the mine opening, and
- (b) have non combustible air ducts and housing.

721(2) An employer must ensure that the mine opening referred to in subsection (1) is protected by one or more weak walls or explosion doors, or a combination of weak walls and explosion doors, located in direct line with possible explosive forces.

721(3) Despite subsection (1), the main surface ventilating fan may be located directly in front of or over a mine opening if

- (a) the opening is not in a direct line with possible air blasts coming out of the mine, and
- (b) there is another opening not less than 5 metres and not more than 30 metres from the fan opening that
 - (i) is in a direct line with possible air blasts coming out of the mine, and
 - (ii) has explosion doors.

Booster fans

722 An employer must ensure that a booster fan

- (a) does not restrict the free passage of air delivered by a main fan if the booster fans stops,
- (b) stops if a main fan stops, and
- (c) is continuously monitored by a system that alarms at a permanently attended monitoring station if the fan stops or its performance falls below an established efficiency level.

Auxiliary fans

723(1) An employer must ensure that an auxiliary fan is electrically grounded.

723(2) An employer must ensure that a heading has an auxiliary ventilation system or a system of line brattices to direct ventilation so that the face of the heading is swept by the ventilating air supply if the heading

- (a) is advanced more than 10 metres from the main ventilation circuit, and
- (b) has a raise or sub-drift that is more than 10 metres from the main ventilation circuit.

723(3) An employer must ensure that the distance referred to in subsection (2) is measured from the nearest rib.

723(4) If a heading to be ventilated is less than 200 metres long, the auxiliary fan interlock requirement of clause 7.2.3 of CSA Standard M421-16 (R2021), *Use of electricity in mines*, does not apply.

AR 191/2021 s723;242/2022

Brattice, vent tubes

724(1) If brattice or vent tubes are used to ventilate the working face, an employer must ensure that the brattice or vent tubes are kept as close as reasonably practicable to the working face.

724(2) An employer must ensure that any ventilation control devices used in an underground mine that have the potential for electrical static discharge, including brattices or vent tubes, are constructed of materials that meet the requirements of CSA Standard M427-M91 (R2016), *Fire-performance and antistatic requirements for ventilation materials*.

AR 191/2021 s724;242/2022

Ventilation fans

725(1) An employer must ensure that

- (a) if a fan associated with the ventilation system stops, workers in affected areas are immediately moved to a place that is adequately ventilated, and
- (b) a competent worker tests and inspects the affected area to ensure it is adequately ventilated before workers enter or return to the area.

725(2) Despite subsection (1), a competent worker may enter the affected area to test and inspect the affected area to ensure it is adequately ventilated.

AR 191/2021 s725;242/2022

726 to 728 Repealed AR 242/2022 s136.

Operating in split

729 An employer must ensure that not more than one piece of coal mining equipment operates in one split.

AR 191/2021 s729;242/2022

Gas and Dust Control

Gas inspections

730(1) An employer must ensure that, when workers are present underground, a competent worker

- (a) is located underground,
- (b) carries at all times a gas testing device for methane, carbon monoxide and oxygen,
- (c) within 4 hours of each shift commencing work, uses the device referred to in clause (b) to inspect that part of the underground mine being worked, or intended to be worked, and all related roadways, and
- (d) inspects for gas at the working face of every work area, at the edge of the gob, in roof cavities and anywhere else that gas may accumulate, at reasonably practicable intervals.

730(2) An employer must ensure that the competent worker referred to in subsection (1) makes a report on the conditions of the areas inspected under subsection (1) and provides that report to the employer and a supervisor as soon as possible.

AR 191/2021 s730;242/2022

Flammable gas levels

731 Despite section 162, an employer must ensure that

- (a) a bleeder system is designed, constructed, installed and operated such that the flammable or combustible gas level does not exceed 40 percent of the lower explosive limit,
- (b) workers are withdrawn from a work area if the amount of flammable or combustible gas in the air exceeds 40 percent of the lower explosive limit,
- (c) the supply of electrical power is automatically cut off if the amount of flammable or combustible gas in the air exceeds 25 percent of the lower explosive limit, and
- (d) workers do not operate diesel engines if the amount of flammable or combustible gas in the air exceeds 20 percent of the lower explosive limit.

AR 191/2021 s731;242/2022

Diesel vehicle roads

732(1) If a diesel vehicle is operated in an underground mine, an employer must ensure that a competent worker tests the air flow and the percentage of flammable or combustible gas present in the air

- (a) at least once each week, and
- (b) whenever an alteration is made in the quantity of air circulating.

732(2) If the percentage of flammable or combustible gas measured under subsection (1) exceeds 15 percent of the lower explosive limit, an employer must ensure a competent worker

- (a) performs further tests under subsection (1), and
- (b) immediately notifies the employer and a supervisor of the results of the tests.

732(3) If the percentage of flammable or combustible gas tested under subsection (1) exceeds 15 percent of the lower explosive limit continuously over a 24-hour period, an employer must install a system for the continuous monitoring of flammable and combustible gases.

732(4) An employer must ensure the testing required by subsection (2) continues until

- (a) the percentage of flammable or combustible gas measured is less than 15 percent of the lower explosive limit, or
- (b) a system for the continuous monitoring of flammable or combustible gas is installed.

AR 191/2021 s732;242/2022

Degassing procedures

733(1) An employer must ensure that procedures for degassing headings are developed to specifications certified by a professional engineer.

733(2) If an accumulation of flammable or combustible gas cannot be safely removed, an employer must ensure the affected parts of the underground mine are sealed in accordance with section 716.

AR 191/2021 s733;242/2022

734 to 737 Repealed AR 242/2022 s139.

Detection equipment for flammable and combustible gases

738(1) An employer must ensure that coal-cutting equipment is equipped with detection equipment that continuously monitors the levels of flammable and combustible gases.

738(2) An employer must ensure the sensor for the detection equipment under subsection (1) is installed

- (a) as close to the cutting head as reasonably practicable, and
- (b) not more than 3 metres from the cutting head.

738(3) An employer must ensure that the detection equipment under subsection (1)

- (a) has an alarm that warns workers if the level of flammable or combustible gas reaches 20 percent of the lower explosive limit of the flammable or combustible gas, and
- (b) automatically cuts off power to the cutting head if the level of flammable or combustible gas reaches 25 percent of the lower explosive limit.

738(4) If the alarm referred to in subsection (3)(a) is activated, the worker who is operating the coal-cutting equipment must

- (a) back the equipment out of the working face, and
- (b) turn off the power to the equipment.

AR 191/2021 s738;242/2022

739 and 740 Repealed AR 242/2022 s141.

Roof bolting

741 An employer must ensure that any roof bolting equipment

- (a) is equipped with a monitor for flammable and combustible gases,
- (b) has controls that are interlocked with the monitor to prevent the operation of the roof bolting equipment when flammable or combustible gas readings exceed 25 percent of the lower explosive limit, and
- (c) is equipped with an alarm that warns the worker operating the roof bolting equipment of flammable or combustible gas readings exceeding 20 percent of the lower explosive limit.

AR 191/2021 s741;242/2022

Airborne dust control

742(1) An employer must ensure that there is a water supply designed to suppress airborne dust

- (a) at a location where a mineral is transferred from a conveyor to a chute, a vehicle or another conveyor, and
- (b) at the cutting teeth or picks of coal-cutting equipment.

742(2) Subsection (1) does not apply to a location where mineral is conveyed from the conveyor of a vehicle.

742(3) An employer must ensure that a roadway used by rubber-tired vehicles is treated or wetted to minimize the creation of airborne dust.

742(4) An employer must ensure that there is an ongoing program for monitoring the concentration of respirable dust to which workers are exposed.

742(5) Repealed AR 242/2022 s143.

AR 191/2021 s742;242/2022

Incombustible dust

743(1) This section does not apply to the part of a roadway within 10 metres of the working face while coal cutting is in progress.

743(2) An employer must ensure that accumulation of combustible dust in an underground mine is kept as low as reasonably practicable.

743(3) An employer must ensure stone dusting application and dust testing procedures are developed to specifications certified by a professional engineer that include the measures to be taken to ensure all combustible dust is rendered inert.

743(4) An employer must ensure that any part of a roadway is cleaned as thoroughly as reasonably practicable of all combustible dust before that part is treated for the first time with incombustible dust.

743(5) An employer must ensure that the floor, roof and sides of a roadway that is accessible to workers are treated with incombustible dust.

AR 191/2021 s743;242/2022

744 Repealed AR 242/2022 s145.

Explosion Control

Explosion barriers

745(1) An employer must develop an explosion prevention plan to specifications certified by a professional engineer that includes the measures to be taken for the design, erection, location and maintenance of an explosion barrier.

745(2) An employer must ensure that the condition and position of the explosion barriers required by subsection (1) are inspected by a competent person at reasonably practicable intervals.

AR 191/2021 s745;242/2022

746 Repealed AR 242/2022 s147.

Spacing between adjoining mining operations

747 Where interactions between adjoining underground mines may compromise the structural integrity of the underground mines or create other hazards to workers, any employer at such an adjoining underground mine must ensure

- (a) an adequate distance is maintained between adjoining underground mines, or
- (b) procedures are developed in accordance with specifications certified by a professional engineer that include the measures to be taken to protect the health and safety of workers at adjoining underground mines.

AR 191/2021 s747;242/2022

Drill holes

748 An employer must ensure that underground mines are not operated within 100 metres of a hole drilled or being drilled for oil or gas.

AR 191/2021 s748;242/2022

Water or gas

749 The employer must ensure that the working face is not advanced to within 50 metres of the surface or to within 100 metres horizontally of

- (a) a projection onto the working face of a place that is likely to contain a dangerous accumulation of water or gas,
- (b) inactive workings that have not been examined and found free from accumulations of water or gas, or
- (c) the seam outcrop or subcrop.

Shaft access and hoisting equipment

749.1 An employer must ensure that shaft access and mine hoisting equipment, including rope haulage, is designed, constructed and installed to and otherwise meets specifications certified by a professional engineer.

AR 191/2021 s749.1;242/2022

Mining Operations and Mining Certificates

749.2 and 749.3 Repealed AR 242/2022 s150.

Certification of underground mine managers and underground mine foremen

749.4(1) An underground mine manager certificate or underground mine foreman certificate may be issued by

- (a) a Director, or
- (b) an organization approved by a Director.

749.4(2) A person may apply for an underground mine manager certificate or underground mine foreman certificate in a manner authorized by a Director.

749.4(3) A Director may establish the qualifications and minimum standards that a Director considers necessary for a person making an application under subsection (2).

749.4(4) A Director may compel a person who applies under subsection (2) to provide a Director or any organization under subsection (1) with any information that a Director determines is necessary for considering whether to issue an underground mine manager certificate or underground mine foreman certificate.

749.4(5) A Director, at any time, may impose any terms and conditions that the Director considers necessary on the underground mine manager certificate or underground mine foreman certificate, and those terms and conditions are part of the underground mine manager certificate or underground mine foreman certificate.

749.5(6) A person who is issued an underground mine manager certificate or underground mine foreman certificate must comply with the certificate.

AR 191/2021 s749.4;242/2022

749.5 to 749.7 Repealed AR 242/2022 s152.

Suspension and cancellation

749.8(1) A Director, by notice in writing, may cancel an underground mine manager certificate or underground mine foreman certificate or suspend it for the period specified in the notice

- (a) if the underground mine manager or underground mine foreman has failed to comply with a term or condition of the underground mine manager certificate or underground mine foreman certificate, or
- (b) for any other reason that, in the opinion of the Director, warrants the cancellation or suspension of the underground mine manager certificate or underground mine foreman certificate.

749.8(2) When a Director suspends an underground mine manager certificate or underground mine foreman certificate, the Director may impose any terms and conditions that the Director considers necessary.

749.8(3) The terms and conditions under subsection (2) must be complied with or performed before the suspension may be lifted.

749.8(4) A person whose underground mine manager certificate or underground mine foreman certificate has been suspended or cancelled must surrender the certificate immediately to an officer on request.

AR 191/2021 s749.8;242/2022

749.9 to 749.93 Repealed AR 242/2022 s154.

Part 37

Oil and Gas Wells

Application

750 This Part applies to activities and ancillary processes associated with the exploration for, drilling for and extraction of oil, gas or geothermal energy and the decommissioning of related wells.

AR 191/2021 s750;242/2022

Health and safety orientation

751.1 Before a worker comes on to a work site for the first time, a prime contractor or, if there is no prime contractor, an employer must ensure the worker completes site-specific orientation that encompasses

- (a) site-specific hazards,
- (b) work procedures that must be followed,
- (c) hazard controls in place to protect workers,
- (d) required personal protective equipment,
- (e) an emergency response plan,
- (f) processes for reporting hazards,
- (g) site-specific processes for addressing undue hazards, work refusals and resolution, and
- (h) any other matter required to ensure the health and safety of workers at the work site.

AR 242/2022 s155

Work site organization

752.1 A prime contractor or, if there is no prime contractor, an employer must prepare, construct and lay out the work site to ensure

- (a) the safe installation, operation, mobilization, demobilization and movement of all equipment that will be required for the work being performed,
- (b) the support of the gross weight of the equipment under maximum loads, and
- (c) that emergency response activities can be carried out safely.

AR 242/2022 s155

Purging lines

752.2 If a flammable or combustible substance is used to purge piping, a prime contractor or, if there is no prime contractor, an employer must ensure workers are protected from fire and explosion hazards.

AR 242/2022 s155

Firefighting equipment

752.3 A prime contractor or, if there is no prime contractor, an employer must ensure that firefighting equipment, including fire extinguishers, is

- (a) provided in sufficient quantities and appropriate types to address all fire hazards that may arise, and
- (b) located in all areas where fire hazards are or may be present.

AR 242/2022 s155

Operating load of derrick or mast

753(1) An employer must ensure that the maximum safe operating load of a derrick or mast is prominently displayed on the derrick or mast.

753(2) If a structural modification or repair is made to a derrick or mast, an employer must ensure that

- (a) the structural modification or repair is certified by a professional engineer,
- (b) the maximum safe operating load of the derrick or mast is determined and certified by a professional engineer, and
- (c) the load marking on the derrick or mast is replaced if the maximum safe operating load is changed.

AR 191/2021 s753;242/2022

Derricks and masts

754(1) An employer must ensure that, before a derrick or mast is erected or brought down, a competent worker inspects all of its parts to verify all equipment and component parts are secured and safe to operate.

754(2) An employer must ensure that when a mast is hoisted

- (a) rigging is attached to designated lifting points only, and
- (b) lifting points are clearly marked on each mast of the derrick.

AR 191/2021 s754;242/2022

Reports for equipment inspections and repairs

755 An employer must ensure that a report is made of

- (a) any repairs performed to equipment used, and
- (b) any inspection or results of a pull test required to be performed under this Part on a drilling rig, service rig, snubbing unit, swabbing unit or other well servicing or drilling equipment.

AR 191/2021 s755;242/2022

Reports for rented or leased equipment inspections and repairs

755.1(1) An employer that rents or leases equipment from a supplier must

- (a) make reports of inspections and repairs done to the equipment, and

- (b) ensure that the supplier is provided with a copy of any such report.

755.1(2) A supplier that rents or leases equipment to an employer at a work site must

- (a) make reports of inspections and repairs done by the supplier to the equipment,
- (b) ensure that a report made under this subsection is provided to an employer that rents or leases the equipment, and
- (c) ensure that a report made under subsection (1) is provided to any subsequent employer that rents or leases the equipment.

AR 242/2022 s158

Sliding prohibited

756(1) An employer must ensure that no worker slides down a pipe, kelly hose, cable or rope on a derrick or mast unless the line is part of a means of escape and there is an emergency.

756(2) A worker must not slide down a pipe, kelly hose, cable or rope on a derrick or mast unless the line is part of a means of escape and there is an emergency.

AR 191/2021 s756;242/2022

757 Repealed AR 242/2022 s160.

Inspections and safety check

758(1) An employer must ensure that a drilling rig, service rig, snubbing unit, swabbing unit or other well servicing or drilling equipment is inspected by a competent worker

- (a) before it is placed into service, and
- (b) at reasonably practicable intervals for as long as it is in service.

758(2) An employer must ensure that no worker works on a drilling rig, service rig, snubbing unit, swabbing unit or other well servicing or drilling equipment until the following are installed and secure:

- (a) guards;
- (b) platforms, stairways, handrails and guardrails;
- (c) the emergency escape line and its components;
- (d) fastening devices required in the erection of the rig and its substructure.

758(3) Subsection (2) does not apply to a worker installing and securing the items referred to in subsection (2)(a) to (d).

AR 191/2021 s758;242/2022

759 and 760 Repealed AR 242/2022 s162.

Exits from enclosures

761(1) An employer must ensure that a floor enclosure on a drilling rig, service rig, snubbing unit, swabbing unit or other well servicing or drilling equipment has exits to ground level that open away from the well bore.

761(2) An employer must ensure that a catwalk on a drilling rig, service rig, snubbing unit, swabbing unit or other well servicing or drilling equipment has a stairway or another means of safe egress at the end farthest from the well bore.

AR 191/2021 s761;242/2022

Emergency escape

762(1) An employer must ensure that the emergency means of escape from the principal working platform of a drilling rig, service rig, snubbing unit, swabbing unit or other well servicing or drilling equipment is visually inspected by a competent worker at least once every 7 days.

762(2) If the emergency means of escape includes using an anchored line, an employer must ensure the line is able to successfully withstand a pull test load of 13.3 kilonewtons at the time of its installation.

762(3) If emergency escape equipment is used as part of the emergency means of escape, an employer must ensure that it is

- (a) kept at the principal working platform when not in use, and
- (b) easily accessible to workers in an emergency.

AR 191/2021 s762;242/2022

Guy lines and anchors

763(1) An employer must ensure that all guy lines and anchors are installed and pull tested in accordance with

- (a) manufacturer specifications,
- (b) specifications certified by a professional engineer, or
- (c) API RP 4G, *Operation, Inspection, Maintenance, and Repair of Drilling and Well Servicing Structures*, 5th Edition, February 2019, including the 2020 addendums.

763(2) An employer must ensure that the specifications applied under subsection (1) for the correct number and proper spacing of guy lines are on a plate attached to the derrick, mast, snubbing unit or other well servicing or drilling equipment.

AR 191/2021 s763;242/2022

764 Repealed AR 242/2022 s165.

Tubular storage

765(1) An employer must ensure that, if a trailer is used as a pipe rack, the trailer

- (a) has guardrails and toe boards along the full length of both sides of the trailer,
- (b) has a stairway at the end farthest from the rig floor,
- (c) is constructed so that the lower end of the pipe does not roll off the trailer when the pipe is hoisted into the derrick, and
- (d) is secured against movement.

765(2) An employer must ensure that, when standing drill pipes, drill collars, tubing and casing are racked in a derrick, all fluids are completely drained from the standing drill pipes, drill collars, tubing and casing.

765(3) An employer must ensure that drill pipes, drill collars, tubing, casing and rods that are racked in a derrick or mast are secured and cannot fall out of or across the derrick or mast.

AR 191/2021 s765;242/2022

Drawworks

766(1) An employer must ensure that the function or action of each operating control on a drilling rig, service rig, snubbing unit, swabbing unit or other well servicing or drilling equipment is clearly marked on or near the control.

766(2) A worker who is operating the drawworks must ensure that all other workers are clear of the machinery and lines before the drawworks is put into motion.

AR 191/2021 s766;242/2022

Brakes

767(1) An employer must ensure that the drawworks brakes of a drilling rig, service rig, snubbing unit, swabbing unit or other well servicing or drilling equipment are tested at the beginning of each work shift and inspected at least once every 7 days to ensure they are in good working order.

767(2) Unless drawworks have an automatic feed control, an employer must ensure that drawworks brakes are not left unattended without first being secured in the “on” or “engaged” position.

767(3) An employer must ensure that, except during drilling, drawworks controls are not left unattended while the hoisting drum is in motion.

AR 191/2021 s767;242/2022

Weight indicators

768 An employer must ensure that the hoist mechanism of a drilling rig, service rig, snubbing unit, swabbing unit or other well servicing or drilling equipment has a reliable weight indicator that

- (a) is secured against falling by a secondary cable or chain if it is hung above the derrick or mast floor, and
- (b) is calibrated at least annually if a minimum interval between calibrations is not stated in the manufacturer’s specifications.

AR 191/2021 s768;242/2022

Travelling blocks

769(1) An employer must ensure that each hook of a travelling block has a safety latch, mousing, shackle or equivalent positive locking device.

769(2) An employer must ensure that the travelling block and each hook, elevator, elevator link and unit of travelling equipment is free from projecting bolts, nuts, pins or other parts.

769(3) An employer must ensure that an upward travel limiting device

- (a) is installed on every drilling rig, service rig, snubbing unit, swabbing unit or other well servicing or drilling equipment,
- (a.1) is tested at least once during each work shift, and
- (b) prevents the travelling block from contacting the crown structure by disengaging the power to the hoisting drum and applying brakes.

AR 191/2021 s769;242/2022

Worker lifting and rescue

770(1) Subject to subsection (2), an employer must ensure that a travelling block, a tugger or a raising system is not used to raise or lower a worker unless allowed by the manufacturer's specifications.

770(2) Subsection (1) does not apply in an emergency to rescue a worker from a derrick if

- (a) the rotary table is stopped, and
- (b) the worker operating the control of the travelling block, tugger or raising system is a worker designated under section 117.

AR 191/2021 s770;242/2022

Catheads

771(1) An employer must ensure that rope-operated catheads are not used at a work site.

771(2) An employer must ensure that each automatic cathead has separate controls unless

- (a) the cathead has dual-purpose controls, and
- (b) a locking device is installed to prevent one cathead from being engaged unintentionally while another cathead is in operation.

AR 191/2021 s771;242/2022

772 Repealed AR 242/2022 s172.

Rotary table danger zone

773(1) An employer must ensure that a danger zone is established and clearly marked around a rotary table.

773(2) When a rotary table is in motion, an employer must ensure that

- (a) no worker enters the danger zone, and
- (b) no loose material or equipment is located in the danger zone.

773(3) Despite subsection (2), an employer may allow a worker and equipment within the rotary table danger zone while the rotary table is in motion if the employer ensures that

- (a) the rotary table is restricted to a slow rate of speed,
- (b) the rotary table is under the continuous control of a designated worker positioned at the rotary table controls,
- (c) the area around the rotary table is clear of any equipment that may contact the rotating equipment,

- (d) workers positioning slips or tongs remain clear of rotating equipment, and
- (e) all lines attached to tongs are placed outside of the direct line of rotating slips.

773(4) Prior to initiating or resuming drilling operations, the employer must ensure that all workers are positioned outside of the rotary table danger zone and that all equipment is stored clear of the danger zone.

AR 191/2021 s773;242/2022

Tong safety

774 An employer must ensure that a rotary tong has

- (a) a primary device that prevents uncontrolled movement of the tong, and
- (b) a secondary device that prevents uncontrolled movement of the tong if the primary device fails.

AR 191/2021 s774;242/2022

Counterweights

775 An employer must ensure that the lowest position of a counterweight above a derrick or mast floor is kept at a height so that the counterweight cannot come into contact with any worker unless the worker is otherwise protected from contact with the counterweight.

AR 191/2021 s775;242/2022

Fluid pumping and piping systems

776(1) An employer must ensure that when a positive displacement pump is used to pump incompressible fluids

- (a) the positive displacement pump and its attachments have valves, pipes and fittings rated equal to or greater than the pump's maximum working pressure,
- (b) the positive displacement pump is protected against freezing,
- (c) except in the case of a pumping wellhead, a pressure relief device is installed on the discharge side of a positive displacement pump,
- (d) a valve is not installed between the pressure relief device and the positive displacement pump,
- (e) piping on the discharge side of the pressure relief device does not have a valve,
- (f) if shear pins are used in a pressure relief device, they are of the design and strength specified in the manufacturer's specifications,
- (g) the fluids or materials discharged through a pressure relief device are piped to a place where they will not endanger workers,
- (h) piping connected to the pressure side and discharge side of the pressure relief device is not smaller than the normal pipe-size openings of the device, and
- (i) piping from the discharge side of the pressure relief device is continuously sloped to drain fluids and protect fluids from freezing.

776(2) An employer must ensure that pipes and fittings installed and maintained at a work site meet the requirements of ASME B1.20.1-2013 (R2018), *Pipe Threads, General Purpose (Inch)*, for threaded connections.

776(3) An employer must ensure that a mud gun used for jetting is secured against movement.

776(4) For a wellhead using a down-hole positive displacement pump, an employer must ensure that the pump is prevented from creating pressures that exceed the pressure rating of the piping and pumping system.

776(5) An employer must ensure that no valve is closed on the discharge line of a positive displacement pump while the pump is in operation.

776(6) A worker must not close a valve on a discharge line of a positive displacement pump while the pump is in operation.

AR 191/2021 s776;242/2022

Controlling pressure hazards

776.1(1) An employer must ensure that a piping system is

- (a) designed and assembled to withstand the maximum anticipated pressures, and
- (b) tested when it is initially installed and after any modifications to it to verify that it can withstand the maximum anticipated pressures.

776.1(2) An employer must ensure that

- (a) any energy that may be released from pressurized equipment is directed away from workers, or
- (b) there is shielding, restraints or other controls in place to protect workers.

776.1(3) If a piping system at the work site may exceed 3000 kilopascals, an employer must ensure that

- (a) the flow piping system connections are welded, flanged or have hammer unions, or
- (b) if the only connection on the wellhead is a threaded connection that is integral to the wellhead, the component parts of that threaded connection are compatible with each other.

776.1(4) Before a valve or other system component is disassembled, an employer must ensure that the valve or other system component is drained, depressurized, purged or otherwise made safe in accordance with section 215.4.

776.1(5) An employer must ensure that

- (a) piping systems are depressurized safely,
- (b) pipe blockages are cleared safely, and
- (c) workers are not exposed to any hazards associated with pipes freezing.

AR 242/2022 s175

Rig tank or pit enclosures

777(1) An employer must ensure that ignition sources do not create a fire or explosion hazard when fluids containing a flammable or combustible substance are circulated through equipment or piping.

777(2) An employer must ensure that an enclosed rig tank or pit is properly vented and that vented harmful substances are directed away from workers and ignition sources.

AR 191/2021 s777;242/2022

778 Repealed AR 242/2022 s176.

Drill stem testing

779(1) This section applies to drill stem testing operations.

779(2) An employer must ensure that after fluids are encountered while tripping out, workers use the mud can and test plug on every joint of pipe disconnected, unless the drill stem contents have been pumped out and replaced with drilling fluid.

779(3) An employer must ensure that

- (a) testing is performed for the presence of hydrogen sulphide and hydrocarbons if oil, water or gas is encountered during the drill stem testing, and
- (b) if hydrogen sulphide is present, the sour fluids in the drill stem are displaced with drilling fluid and circulated to a flare pit or a holding tank that is at least 50 metres from the well.

779(4) An employer must ensure that

- (a) motors and engines that are not required in the testing operation are shut off, and
- (b) there are no motor vehicles within 25 metres of the well bore.

779(5) An employer must ensure that, if test fluid recovery is encountered during darkness,

- (a) liquids are reverse circulated, or
- (b) if reverse circulation is not practicable because the pump out sub has failed, additional drill pipe is not pulled and disconnected until daylight.

AR 191/2021 s779;242/2022

Well swabbing

780(1) This section applies to well swabbing operations.

780(2) An employer must ensure that

- (a) swabbing units are anchored securely against movement,
- (b) fluids are piped directly to a battery, skid tank, mobile trailer or tank truck, and
- (c) the battery, skid tank, mobile trailer or tank truck is located at least 50 metres from the well bore.

780(3) An employer must ensure that, if fluids are piped to a tank truck,

- (a) the engine of the truck is shut off, and
- (b) no worker is present in the cab of the truck while fluids are transferred to the truck.

780(4) A worker must not be present in the cab of a tank truck while fluids are transferred to that truck.

780(5) Subsections (3) and (4) do not apply if the engine of a tank truck must be running to operate the hydraulic or generator systems and the engine is equipped with a positive air shutoff system.

780(6) If workers are working during darkness, an employer must ensure that

- (a) there is auxiliary lighting providing sufficient illumination,
- (b) rig lighting is turned off if it is not designed for use in an explosive atmosphere,
- (c) sandline flags are illuminated and acid resistant,
- (d) wind direction indicators are illuminated and appropriately located around the site, and
- (e) atmospheric monitoring equipment is used.

AR 191/2021 s780;242/2022

Well servicing

781(1) This section applies to well servicing operations.

781(2) An employer must ensure that

- (a) when hydrocarbons are circulated through equipment or piping, the air intake and exhaust of the pump motor are located at least 7 metres away from the rig tank, and
- (b) if a tank truck is being loaded or unloaded, it is located at least 7 metres away from the rig tank in a direction away from the well bore.

781(3) An employer must ensure that, before fluids are unloaded into the wellhead, a hydraulic pressure test of the lines between the pump and the wellhead is performed to verify that the system is operating properly.

781(4) An employer must ensure that the controls on oil savers can be readily operated by a worker on the rig floor.

AR 191/2021 s781;242/2022

Well stimulation

782(1) This section applies to well stimulation.

782(2) An employer must ensure that, if a working pressure of 2000 kilopascals or more is applied to the piping system,

- (a) a danger zone between a pump or sand concentrator and the wellhead is established and clearly marked,
- (b) all equipment can be controlled from outside the danger zone, and
- (c) no worker enters the danger zone.

782(3) Despite subsection (2), an employer may permit a worker to enter the danger zone to perform necessary work if the pump is disengaged before that worker enters the danger zone.

782(4) An employer must ensure that when liquid carbon dioxide or liquid nitrogen is being used at the work site

- (a) the valve controls and workers are positioned on the side of the piping unit opposite to the side of the pipe supplying the well,

- (b) a check valve is installed as close as is reasonably practicable to the wellhead except while cementing or selective acidizing is occurring, and
- (c) a bleed-off valve is installed between a check valve and the wellhead.

AR 191/2021 s782;242/2022

783 Repealed AR 242/2022 s179.

Gas sample containers

784 An employer must ensure that containers, piping and fittings used in collecting gas samples are designed, used and transported in such a way as to prevent unintended release of their contents.

AR 191/2021 s784;242/2022

Part 38 Expired

Part 39

Tree Care Operations

Application

792 This Part applies to arboriculture activities that involve pruning, repairing, maintaining or removing trees or cutting brush if a worker works at height and depends on the tree for support.

Safe work practices

793(1) An employer must develop and implement safe work practices and procedures that include

- (a) the assessment of hazards at the work site,
- (b) worker training, including hazard recognition,
- (c) the selection, limitation, operation and maintenance of equipment and personal protective equipment,
- (d) the use of work positioning systems and fall protection systems, and
- (e) emergency rescue.

793(2) If reasonably practicable, an employer must involve affected workers in the development and implementation of the safe work practices and procedures.

Fall protection and work positioning

794(1) If it is not reasonably practicable to comply with the fall protection requirements of section 139, an employer must ensure that a worker uses a work positioning system.

794(2) A worker must use or wear the work positioning or fall protection system the employer requires the worker to use or wear.

Harness standards

795(1) An employer must ensure that a harness manufactured on or after March 31, 2023 and used as part of a work positioning system is approved to

- (a) NFPA Standard 1983, *Standard on Fire Service Life Safety Rope and System Components*, 2006 Edition, as a Class II or Class III life safety harness,
- (b) CEN Standard EN 813: 1997, *Personal protective equipment for prevention of falls from a height — Sit harnesses*,
- (c) CSA Standard Z259.10-18, *Full body harnesses*,
- (d) ANSI/ASSE Standard Z359.1-2007, *Safety requirements for personal fall arrest systems, subsystems and components*, or
- (e) CEN Standard EN 361: 2007, *Personal protective equipment against falls from a height — Full body harnesses*.

795(2) Subsection (1) does not apply to harnesses in use before April 30, 2004.

Knot exemption

796 Section 150.3 does not apply to arboriculture activities to which this Part applies.

Part 40

Utility Workers — Electrical

Application

797 If a requirement of this Part conflicts with a requirement elsewhere in this Code, the requirement of this Part prevails.

798 Repealed AR 242/2022 s182.

Protective devices or equipment

799(1) An employer must ensure that a protective device and protective equipment required by this Part meets the requirements of the following applicable standards:

- (a) CAN/ULC-60832-99, *Insulating Poles (Insulating Sticks) and Universal Tool Attachments (Fittings) for Live Workings*;
- (b) CAN/ULC-D60855-00, *Live Working — Insulating Foam Filled Tubes and Solid Rods for Live Working*;
- (c) CAN/ULC-60895-04, *Live Working — Conductive Clothing for Use at Nominal Voltage Up to 800 kV A.C. and +/- 600 kV D.C.*;
- (d) CAN/ULC-60900-99, *Hand Tools for Live Working up to 1000 V a.c. and 1500 V d.c.*;
- (e) CAN/ULC-60903-04, *Live Working — Gloves of Insulating Materials*;
- (f) CAN/ULC-D60984-00, *Sleeves of Insulating Material for Live Working*;
- (g) CAN/ULC-D61112-01, *Blankets of Insulating Material for Electrical Purposes*;
- (h) CAN/ULC-D61229-00, *Rigid Protective Covers for Live Working on a.c. Installations*;
- (i) CAN/ULC-61236-99, *Saddles, Pole Clamps (Stick Clamps) and Accessories for Live Working*;
- (j) CAN/CSA-C225-00 (R2005), *Vehicle Mounted Aerial Devices*.

799(2) Subsection (1) applies only to new protective devices and protective equipment put into service as of the effective date of this Code.

799(3) A laboratory that performs electrical insulating materials testing to the standards listed in subsection (1) must meet the requirements of ASTM Standard D2865 06, *Standard Practice for Calibration of Standards and Equipment for Electrical Insulating Materials Testing*.

Safe work practices for electric utilities and rural electrification associations

800 An electric utility and a rural electrification association must ensure that all work performed by utility employees is in accordance with the requirements of CAN/ULC-S801-14, *Standard on Electric Utility Workplace Electrical Safety for Generation, Transmission, and Distribution*.

AR 191/2021 s800;242/2022

Safe work practices for industrial power producers

801 An industrial power producer must

- (a) complete a written assessment of hazards associated with the production of electrical energy,
- (b) implement written safe work procedures that are made available to utility employees, and
- (c) ensure all work performed by utility employees is in accordance with the safe work procedures required by subsection (b).

Coordinated work

802 If utility employees

- (a) perform work on or near a power system, and
- (b) their work activities may affect or be affected by a utility employee of another electric utility, industrial power producer or rural electrification association,

the involved electric utilities, industrial power producers or rural electrification associations must jointly develop and follow one agreed upon set of safe work procedures for isolating electrical equipment and lines or blocking reclosing devices.

Communication lines, cables

803 A utility employee stringing or removing communication lines or cables near any electric utility facility must ensure that

- (a) the safe limit of approach distance between the communication lines or cables and energized equipment or lines is met as required by CAN/ULC-S801-14, *Standard on Electric Utility Workplace Electrical Safety for Generation, Transmission, and Distribution*,
- (b) the communication lines or cables are prevented from contacting overhead electrical lines,
- (c) the work is done under the control of the operator of the electric utility system, and
- (d) the work method is acceptable to the operator of the electric utility system.

AR 191/2021 s803;242/2022

Work on energized electrical equipment or lines (above 750 volts)

804(1) If work is performed on energized electrical equipment or lines, an employer must ensure that

- (a) a minimum of 2 qualified utility employees are used to perform the work and an additional utility employee is at ground level,
- (b) aerial devices are equipped with both upper and lower controls, and
- (c) if an aerial device is used to perform the work, either an additional utility employee qualified to operate the lower controls is present at the work site at ground level or the utility employee already at the work site is qualified to operate the lower controls.

804(2) Despite subsection (1), subsection (1)(a) and (1)(c) do not apply if

- (a) a professional engineer certifies that an alternative live line work procedure provides adequate utility employee protection,

- (b) the live line work on the electrical equipment or lines is performed by one qualified utility employee, and
- (c) a 2nd qualified utility employee is present at the work site at ground level.

804(3) Subsections (1) and (2) do not apply to

- (a) switching work,
- (b) fuse replacement work,
- (c) phasing work,
- (d) measuring clearances with live line tools,
- (e) power quality measurements with live line tools, and
- (f) emergency situations in which, in order to protect life or property, a qualified utility employee performs work to eliminate the electrical hazards.

Part 41

Work Requiring Rope Access

General Requirements

Exemptions

805 Workers involved in training for occupational rope access work or performing occupational rope access work may use equipment, personal protective equipment and practices other than those specified in Part 9.

Exemptions

806 Workers involved in emergency rescue services or training for the purpose of emergency rescue may use equipment, personal protective equipment and practices other than those specified in this Part.

Exemptions

807 This Part does not apply to workers using fall protection systems specified in Part 9.

Rope access safe work plan

808 An employer must develop an occupational rope access safe work plan for a work site if

- (a) a worker at the work site may fall 3 metres or more, or
- (b) there is an unusual possibility of injury if a worker falls less than 3 metres.

Rope access safe work plan

809 An occupational rope access safe work plan must specify the following:

- (a) the hazards associated with the work to be performed;
- (b) how the hazards will be eliminated or controlled;
- (c) the rope access system to be used at the work site;
- (d) the procedures used to assemble, maintain, inspect, use and disassemble the rope access system;
- (e) the members of the work team by name and their duties;
- (f) the appropriate personal protective equipment to be used;
- (g) an emergency response plan.

Rope access safe work plan

810 An employer must ensure that an occupational rope access safe work plan is available at the work site before work with a risk of falling begins.

Safe work practices

- 811** An employer must develop and implement safe work practices that include
- (a) the assessment of hazards at the work site in accordance with Part 2,
 - (b) worker training, including hazard recognition and the selection, limitation, operation, inspection and maintenance of equipment and personal protective equipment,
 - (c) the use of work positioning systems and fall protection systems, and
 - (d) the rescue procedures to be used in case of equipment and personal protective equipment malfunction, a fall or injury that leaves a worker suspended and requiring rescue.

Instruction of workers

812 An employer must ensure that a worker is trained in the rope access safe work plan, the safe work practices and the safe use of the rope access system before allowing the worker to work in an area where a rope access system is to be used.

Tools and equipment

813(1) An employer must ensure that equipment to be used by a worker during occupational rope access work activities is not suspended from the worker's working line or safety line.

813(2) An employer must ensure that equipment weighing more than 8 kilograms and to be used by a worker during occupational rope access work activities is suspended from a separate line secured to a suitable anchorage.

Equipment compatibility

814 An employer must ensure that all components of an occupational rope access system are compatible with one another and with the environment in which they are used.

Inspection and maintenance

- 815** An employer must ensure that the components of an occupational rope access system are
- (a) inspected by the worker as required by the manufacturer before the system is used on each work shift,
 - (b) kept free from substances and conditions that could contribute to their deterioration, and
 - (c) re-certified as specified by the manufacturer.

Low stretch (static) and high stretch (dynamic) rope

816 An employer must ensure that the working line and safety line of an occupational rope access system are the same diameter.

Low stretch (static) and high stretch (dynamic) rope

817 An employer must ensure that low stretch or static rope manufactured on or after July 1, 2009 and used in an occupational rope access system is approved to

- (a) CEN Standard EN 1891: 1998, *Personal protective equipment for the prevention of falls from a height — Low stretch kernmantel ropes*, and is a Type A rope as classified by the standard,
- (b) NFPA Standard 1983, *Standard on Fire Service Life Safety Rope, Harness, and Hardware*, 2006 Edition, or
- (c) UIAA Standard 107: 2004, *Mountaineering and Climbing Equipment — Low Stretch Ropes*, and is a Type A rope as classified by the standard.

Low stretch (static) and high stretch (dynamic) rope

818 An employee must ensure that high stretch or dynamic rope used in an occupational rope access system is approved to

- (a) CEN Standard EN 892: 2004, *Mountaineering equipment — Dynamic mountaineering ropes — Safety requirements and test methods*, or
- (b) UIAA Standard 101: 2004, *Mountaineering and Climbing Equipment — Dynamic Ropes*.

Cow's tail

819(1) If a cow's tail is made of dynamic rope, an employer must ensure that the rope is approved to

- (a) CEN Standard EN 892: 2004, *Mountaineering equipment — Dynamic mountaineering ropes — Safety requirements and test methods*, or
- (b) UIAA Standard 101: 2004, *Mountaineering and Climbing Equipment — Dynamic Ropes*.

819(2) If a cow's tail is not made of dynamic rope, an employer must ensure that the cow's tail is approved to CEN Standard EN 354: 2002, *Personal protective equipment against falls from a height — Lanyards*.

Removal from service

820(1) An employer must ensure that equipment and personal protective equipment used as part of an occupational rope access system is removed from service

- (a) as specified by the manufacturer, or
- (b) if it is defective,

and returned to the manufacturer, destroyed, or rendered unusable.

820(2) An employer must ensure that equipment and personal protective equipment used as part of an occupational rope access system that is removed from service is not returned to service unless a professional engineer or the manufacturer certifies that the equipment and personal protective equipment is safe to use.

Worker rescue

821 An employer must ensure that a worker can be promptly rescued in case of equipment and personal protective equipment malfunction, fall or injury.

Worker rescue

822 An employer must ensure that a worker is trained to perform self rescue on the equipment and personal protective equipment.

Industrial Rope Access Work

Safe work practices

823 An employer must ensure that one of the following safe work practices for industrial rope access work is followed:

- (a) *International guidelines on the use of rope access methods for industrial purposes*, July 2001, published by the Industrial Rope Access Trade Association;
- (b) *Safe Practices for Rope Access Work*, October 2003, published by the Society of Professional Rope Access Technicians;
- (c) *Industrial Rope Access Technique*, ARAA Industry Code, September 2000, published by the Australian Rope Access Association.

Safe work practices

824 If the requirements of section 823 conflict with requirements elsewhere in this Code, the requirements of this Code prevail.

Safe work practices

825 An employer must ensure that at least 2 workers trained in industrial rope access work are present when rope access equipment and rope access personal protective equipment and techniques are used.

Worker competency

826 An employer must ensure that the training required to comply with section 812 includes the applicable skills and practical experience hours described in

- (a) Clauses 15.3, 16.3 or 17.3 as appropriate, of *General requirements for certification of personnel engaged in industrial rope access methods*, 2005, published by the Industrial Rope Access Trade Association,
- (b) Clause 7 of *Certification Requirements for Rope Access Work*, January 2005, published by the Society of Professional Rope Access Technicians, or
- (c) Appendix D of *Industrial Rope Access Technique*, ARAA Industry Code, September 2000, published by the Australian Rope Access Association.

Worker's personal logbook

827(1) A worker performing industrial rope access work must have a personal logbook containing a record of the industrial rope access work performed by that worker.

827(2) Records in the worker's personal logbook must be in chronological order and each entry must be verified and signed by the rope access supervisor or worksite manager.

827(3) Each record of work must include

- (a) the date the work was performed,
- (b) the type of work performed, including the access method used,
- (c) the type of structure worked on, and
- (d) the hours worked using industrial rope access techniques.

827(4) The worker must ensure that the personal logbook is current and available at the worksite for inspection by an officer.

Maximum arrest force, clearance, anchor strength

828 An employer must ensure that a rope access system used for industrial rope access work

- (a) limits the maximum arresting force on a worker to 6 kilonewtons,
- (b) prevents the worker from striking a lower surface that could cause injury, unless doing so exposes the worker to other greater hazards, and
- (c) minimizes the hazards of swinging and striking an object that could injure the worker.

Maximum arrest force, clearance, anchor strength

829(1) An employer must ensure that an anchor to which an industrial rope access system is attached has an ultimate breaking strength of at least 16 kilonewtons per worker attached, in the direction in which the load may be applied.

829(2) Despite subsection (1), if it is not practicable for the anchor to have the specified ultimate breaking strength, an anchor may be used that has an ultimate breaking strength per attached worker of 2 times the estimated maximum arresting force created by a fall in the direction of the rope pull, unless doing so exposes the worker to other greater hazards.

Safety line

830(1) An employer must ensure that a safety, secondary, belay or backup line is used when the working line is the primary means of support.

830(2) An employer must ensure that the safety line and the working line are each provided with a separate anchorage connection and are separately fixed to the worker's harness.

830(3) Subsections (1) and (2) do not prohibit both the working line and safety line from being attached to a single harness attachment point.

830(4) An employer may allow a worker to connect the safety line to the sternal or frontal attachment point of the worker's full body harness in accordance with the harness manufacturer's specifications.

Head protection

831(1) Despite section 234, if there is a foreseeable danger of injury to a worker's head while the worker is performing industrial rope access work, and there is a significant possibility of lateral impact to the worker's head, an employer must ensure that the worker wears protective headwear that is appropriate to the hazards and meets the requirements of

- (a) CSA Standard Z94.1-15, *Industrial protective headwear — Performance, selection, care and use*,
- (b) ANSI Standard Z89.1-2003, *American National Standard for Industrial Head Protection*, for Type II helmets,
- (c) CEN Standard EN 12492: 2000, *Mountaineering equipment — Helmets for mountaineers — Safety requirements and test methods*, if the manufacturer's specifications allow the helmet to be used for industrial work at height, or
- (d) UIAA Standard 106: 2004, *Mountaineering and Climbing Equipment — Helmets*, if the manufacturer's specifications allow the helmet to be used for industrial work at height,

if the protective headwear was manufactured on or after March 31, 2023.

831(2) Despite section 234, if there is a foreseeable danger of injury to a worker's head while the worker is performing industrial rope access work, and the possibility of lateral impact to the worker's head is unlikely, an employer must ensure that the worker wears protective headwear that is appropriate to the hazards and meets the requirements of

- (a) CSA Standard Z94.1-15, *Industrial protective headwear — Performance, selection, care and use*,
- (b) ANSI Standard Z89.1-2003, *American National Standard for Industrial Head Protection*, for Type I or Type II helmets,
- (c) CEN Standard EN 397: 2006, *Specification for industrial safety helmets*,
- (d) CEN Standard EN 12492: 2000, *Mountaineering equipment — Helmets for mountaineers — Safety requirements and test methods*, if the manufacturer's specifications allow the helmet to be used for industrial work at height, or
- (e) UIAA Standard 106: 2004, *Mountaineering and Climbing Equipment — Helmets*, if the manufacturer's specifications allow the helmet to be used for industrial work at height,

if the protective headwear was manufactured on or after March 31, 2023.

AR 191/2021 s831;242/2022

Head protection

832 An employer must ensure that the protective headwear required by section 831 is equipped with a retention system having at least 3 separate points of attachment to the helmet shell, and includes a chin strap.

Head protection

833 An employer must ensure that a worker secures the protective headwear according to the manufacturer's specifications.

Full body harness

834 An employer must ensure that a full body harness is used during industrial rope access work and if manufactured on or after March 31, 2023 is approved to

- (a) NFPA Standard 1983, *Standard on Fire Service Life Safety Rope and System Components*, 2006 Edition, as a Class III safety harness,
- (b) CEN Standard EN 361: 2007, *Personal protective equipment against falls from a height — Full body harnesses*,
- (c) ANSI/ASSE Standard Z359.1-2007, *Safety requirements for personal fall arrest systems, subsystems and components*, or
- (d) CSA Standard Z259.10-18, *Full body harnesses*.

AR 191/2021 s834;242/2022

Connecting components

835 An employer must ensure that connecting components manufactured on or after July 1, 2009 used in industrial rope access work consist of carabiners, D rings, O rings, oval rings and self locking connectors approved to

- (a) CEN Standard EN 362: 2004, *Personal protective equipment against falls from height. Connectors*,
- (b) CEN Standard EN 12275: 1998, *Mountaineering equipment — Connector — Safety requirements and test methods*,
- (c) UIAA Standard 121: 2004, *Mountaineering and Climbing Equipment — Connectors*,
- (d) CSA Standard Z259.12 01 (R2006), *Connecting Components for Personal Fall Arrest Systems*, or
- (e) NFPA Standard 1983, *Standard on Fire Service Life Safety Rope, Harness, and Hardware*, 2006 Edition.

Connecting components

836 An employer must ensure that carabiners used as part of an industrial rope access system are

- (a) a screw gate type, or
- (b) self locking and self closing, requiring at least 2 consecutive, deliberate actions to open.

Ascenders

837 An employer must ensure that an ascender manufactured on or after July 1, 2009 used in an industrial rope access system is approved to

- (a) CEN Standard EN 567: 1997, *Mountaineering equipment — Rope clamps — Safety requirements and test methods*,
- (b) UIAA Standard 126: 2004, *Mountaineering and Climbing Equipment — Rope Clamps*, or

- (c) NFPA Standard 1983, *Standard on Fire Service Life Safety Rope, Harness, and Hardware*, 2006 Edition.

Back-up devices

838 An employer must ensure that a back-up device manufactured on or after July 1, 2009 used in an industrial rope access system is approved to

- (a) CEN Standard EN 353 2: 2002, *Personal protective equipment against falls from a height — Part 2: Guided type fall arresters including a flexible anchor line*,
- (b) CEN Standard EN 567: 1997, *Mountaineering equipment — Rope clamps — Safety requirements and test methods*,
- (c) UIAA Standard 126: 2004, *Mountaineering and Climbing Equipment — Rope Clamps*, or
- (d) ANSI Standard Z359.1-2007, *Safety requirements for personal fall arrest systems, subsystems and components*.

Descenders

839 An employer must ensure that a descender manufactured on or after July 1, 2009 used in an industrial rope access system is approved to

- (a) CEN Standard EN 341: 1997, *Personal protective equipment against falls from height — Descender devices*, as a Class A device, or
- (b) NFPA Standard 1983, *Standard on Fire Service Life Safety Rope, Harness and Hardware*, 2006 Edition.

Non-industrial Rope Access Work

Safe work practices

840 An employer must ensure that a Director approves the safe work practices for non industrial rope access work.

Worker competency

841 An employer must ensure that the training required to comply with section 812 includes the applicable skills described in

- (a) *Technical Handbook for Professional Mountain Guides* (July 1999), published by the Association of Canadian Mountain Guides (ACMG), if the work involves guiding activities within the scope of the publication,
- (b) *Climbing Gym Instructor Technical Manual* (July 2003), published by the Association of Canadian Mountain Guides (ACMG), if the work involves climbing activities within the scope of the publication, or
- (c) if this work involves caving activities within the scope of these publications,
 - (i) *Cave Guiding Standards for British Columbia and Alberta* (March 2003), published by the Canadian Cave Conservancy, and

- (ii) *British Columbia Cave Rescue Companion Rescue Workshop* (2005), published by British Columbia Cave Rescue.

Fall factor, clearance, anchorage strength

842 An employer must ensure that a rope system used for non industrial rope access work

- (a) limits the fall factor on a worker to 1.78, unless doing so exposes the worker to other greater hazards,
- (b) prevents the worker from striking a lower surface that could cause injury, unless doing so exposes the worker to other greater hazards, and
- (c) minimizes the hazards of swinging and striking an object that could injure the worker.

Fall factor, clearance, anchorage strength

843(1) An employer must ensure that an anchor used for non industrial rope access work has an ultimate breaking strength of at least 16 kilonewtons per worker attached, in the direction in which the load may be applied.

843(2) Despite subsection (1), if it is not practicable for the anchor to have the specified ultimate breaking strength, an anchor may be used that has an ultimate breaking strength per attached worker of 2 times the estimated maximum arresting force created by a fall in the direction of the rope pull, unless doing so exposes the worker to other greater hazards.

Head protection

844 Despite section 234, if there is a foreseeable danger of injury to a worker's head while performing non-industrial rope access work, an employer must ensure that a worker wears protective headwear that is appropriate to the hazards and meets the requirements of

- (a) CEN Standard EN 12492: 2000, *Mountaineering equipment — Helmets for mountaineers — Safety requirements and test methods*,
- (b) UIAA Standard 106: 2004, *Mountaineering and Climbing Equipment — Helmets*, or
- (c) ANSI Standard Z89.1-2003, *American National Standard for Industrial Head Protection*, for Type II helmets,

if the protective headwear was manufactured on or after July 1, 2009.

Head protection

845 An employer must ensure that a worker secures the protective headwear according to the manufacturer's specifications.

Head protection

846 Protective headwear in good condition meeting an earlier edition of a standard listed in section 844 may remain in service.

Sit harness

847 An employer must ensure that a sit harness used for non industrial rope access work is approved to

- (a) CEN Standard EN 813: 1997, *Personal protective equipment for prevention of falls from a height — Sit harnesses*,
- (b) CEN Standard EN 12277: 1998, *Mountaineering equipment — Harnesses — Safety requirements and test methods*, or
- (c) UIAA Standard 105: 2004, *Mountaineering and Climbing Equipment — Harnesses*.

Full body harness

848 An employer must ensure that a full body harness used during non industrial rope access work is approved to

- (a) CEN Standard EN 361: 2007, *Personal protective equipment against falls from a height — Full body harnesses*,
- (b) ANSI/ASSE Standard Z359.1 2007, *Safety requirements for personal fall arrest systems, subsystems and components*, or
- (c) CSA Standard Z259.10-18, *Full body harnesses*,

if the full body harness was manufactured on or after March 31, 2023.

AR 191/2021 s848;242/2022

Connecting components

849 An employer must ensure that connecting components used during non industrial rope access work are approved to

- (a) CEN Standard EN 12275: 1998, *Mountaineering equipment — Connectors — Safety requirements and test methods*, or
- (b) UIAA Standard 121: 2004, *Mountaineering and Climbing Equipment — Connectors*.

Schedules

Schedule 1 Chemical Substances

Table 1 Substances and processes requiring a code of practice

[See section 26(1)]

Arsenic and arsenic compounds
Asbestos
Benzene
Beryllium
1,3 Butadiene
Cadmium
Coal tar pitch volatiles
1,2 Dibromoethane (Ethylene dibromide)
Ethylene oxide
Hexachlorobutadiene
Hydrazines
Hydrogen sulphide
Isocyanates
Lead and lead compounds
Methyl bromide
Methyl hydrazine
Perchlorates
Silica crystalline, respirable
Styrene in styrene resin fabrication
Vinyl chloride (Chloroethylene)
Zinc chromate

Table 2

Occupational exposure limits for chemical substances

- (1) A person using this Table may apply either the “mg/m³” or “ppm” measure defined as follows:
- “mg/m³” means milligrams of substance per cubic metre of air measured at ambient work site conditions;
 - “ppm” (parts per million) means parts of a vapour or gas by volume at standard conditions (25°C and an absolute barometric pressure of 101.3 kilopascals) per parts of contaminated air by volume at ambient work site conditions.
- (2) “f/cc” means fibres per cubic centimetre of air; “CAS” means Chemical Abstracts Service.
- (3) The numbers 1, 2 and 3 in the “Substance Interaction” column have the following meanings:
- 1 — substance may be readily absorbed through intact skin;
 - 2 — substance is a simple asphyxiant that may create an atmosphere deficient in oxygen; available oxygen in the range of 19.5 percent to 23 percent by volume must be present;
 - 3 — occupational exposure limit is based on irritation effects and its adjustment to compensate for unusual work schedules is not required.
- (4) A carcinogen is defined as “an agent capable of inducing benign or malignant neoplasms.” Based on the weight of evidence from epidemiologic studies, “A1” would be a Confirmed Human Carcinogen and means that the agent is carcinogenic to humans. “A2” would be a Suspected Human Carcinogen and means that human data are accepted as adequate in quality but are conflicting or insufficient to classify the agent as A1 (*American Conference of Governmental Industrial Hygienists*).

Substance	CAS number	8-hour occupational exposure limit			15-minute or ceiling (c) occupational exposure limit		Substance interaction 1, 2, 3	Carcinogenicity A1, A2
		ppm	mg/m ³	f/cc	ppm	mg/m ³		
Acetaldehyde	75-07-0	-	-	-	(c) 25	(c) 45	3	
Acetic acid	64-19-7	10	25	-	15	37	-	
Acetic anhydride	108-24-7	-	-	-	(c) 5	(c) 21	3	
Acetone	67-64-1	500	1200	-	750	1800	-	
Acetone cyanohydrin	75-86-5	-	-	-	-	(c) 5	1	
Acetonitrile	75-05-8	20	34	-	-	-	3	
Acetophenone	98-86-2	10	49	-	-	-	3	
Acetylene	74-86-2	-	-	-	-	-	2	
Acetylene dichloride (1,2-Dichloroethylene)	540-59-0 156-59-2 156-60-5	200	793	-	-	-	-	
Acetylene tetrabromide (1,1,2,2-Tetrabromoethane)	79-27-6	0.1	1.4	-	-	-	-	
Acetylene tetrachloride (1,1,2,2-Tetrachloroethane)	79-34-5	1	6.9	-	-	-	1	
Acetylsalicylic acid (Aspirin)	50-78-2	-	5	-	-	-	3	
Acrolein	107-02-8	-	-	-	(c) 0.1	(c) 0.2	1	
Acrylamide	79-06-1	-	0.03	-	-	-	1	
Acrylic acid	79-10-7	2	5.9	-	-	-	1,3	
Acrylic acid, n-butyl ester (n-Butyl acrylate)	141-32-2	2	10	-	-	-	3	
Acrylic acid, ethyl ester (Ethyl acrylate)	140-88-5	5	20	-	15	61	-	
Acrylic acid, methyl ester (Methyl acrylate)	96-33-3	2	7	-	-	-	1	
Acrylonitrile (Vinyl cyanide)	107-13-1	2	4.3	-	-	-	1	
Adipic acid	124-04-9	-	5	-	-	-	-	
Adiponitrile	111-69-3	2	8.8	-	-	-	1	
Aldrin	309-00-2	-	0.25	-	-	-	1	

Substance	CAS number	8-hour occupational exposure limit			15-minute or ceiling (c) occupational exposure limit		Substance interaction 1, 2, 3	Carcinogenicity A1, A2
		ppm	mg/m ³	f/cc	ppm	mg/m ³		
Aliphatic Hydrocarbon gases, Alkane (C2-C4)	-	1000	-	-	-	-	-	-
Allyl alcohol	107-18-6	0.5	1.2	-	-	-	1, 3	
Allyl chloride	107-05-1	1	3.1	-	2	6.2	-	
Allyl glycidyl ether	106-92-3	1	4.7	-	-	-	-	
Allyl propyl disulfide	2179-59-1	0.5	3	-	-	-	3	
Alumina (Aluminum oxide)	1344-28-1	-	10	-	-	-	-	
Aluminum Metal Dust Pyro powders, as Al Soluble salts, as Al Alkyls, not otherwise specified as Al	7429-90-5	-	10	-	-	-	3	
		-	5	-	-	-	-	
		-	2	-	-	-	3	
		-	2	-	-	-	3	
Aluminum oxide (Alumina)	1344-28-1	-	10	-	-	-	-	
Aminoethanol (Ethanolamine)	141-43-5	3	7.5	-	6	15	3	
Aminopyridine	504-29-0	0.5	1.9	-	-	-	-	
Amino-1,2,4 triazole (Amitrole)	61-82-5	-	0.2	-	-	-	-	
Amitrole	61-82-5	-	0.2	-	-	-	-	
Ammonia	7664-41-7	25	17	-	35	24	-	
Ammonium chloride fume	12125-02-9	-	10	-	-	20	3	
Ammonium perfluorooctanoate	3825-26-1	-	0.01	-	-	-	1	
Ammonium persulfate (Persulfates)	7727-54-0	-	0.1	-	-	-	3	
Ammonium sulfamate	7773-06-0	-	10	-	-	-	-	
Amosite (Asbestos)	12172-73-5	-	-	0.1	-	-	-	A1
n-Amyl acetate (1-Pentyl acetate)	628-63-7	50	266	-	100	532	3	
Sec-Amyl acetate (2-Pentyl acetate)	626-38-0	50	266	-	100	532	3	
Tert-Amyl acetate (1,1-dimethylpropyl acetate)	625-16-1	50	266	-	100	532	3	
Aniline	62-53-3	2	7.6	-	-	-	1	
o-Anisidine	90-04-0	-	0.5	-	-	-	1	
p-Anisidine	104-94-9	-	0.5	-	-	-	1	

Substance	CAS number	8-hour occupational exposure limit			15-minute or ceiling (c) occupational exposure limit		Substance interaction 1, 2, 3	Carcinogenicity A1, A2
		ppm	mg/m ³	f/cc	ppm	mg/m ³		
Antimony & compounds, as Sb	7440-36-0	-	0.5	-	-	-	3	
Antimony hydride	7803-52-3	0.1	0.5	-	-	-	-	
ANTU (α -Naphthylthiourea)	86-88-4	-	0.3	-	-	-	-	
Argon	7440-37-1	-	-	-	-	-	2	
Arsenic, elemental & inorganic compounds as As	7440-38-2	-	0.01	-	-	-	-	A1
Arsine	7784-42-1	0.05	0.2	-	-	-	-	
Asbestos, all forms	1332-21-4 12172-73-5 12001-29-5 12172-67-7	-	-	0.1	-	-	-	A1
Asphalt (Petroleum; Bitumen) fume	8052-42-4	-	5	-	-	-	3	
Atrazine	1912-24-9	-	5	-	-	-	3	
Azinphos-methyl (Guthion)	86-50-0	-	0.2	-	-	-	1	
Barium and soluble compounds, as Ba	7440-39-3	-	0.5	-	-	-	-	
Barium sulfate	7727-43-7	-	10	-	-	-	-	
Benomyl	17804-35-2	0.84	10	-	-	-	3	
Benzene	71-43-2	0.5	1.6	-	2.5	8	1	A1
p-Benzoquinone (Quinone)	106-51-4	0.1	0.4	-	-	-	-	
Benzotrichloride (Benzyl trichloride)	98-07-7	-	-	-	(c) 0.1	(c) 0.8	1	A2
Benzoyl chloride	98-88-4	-	-	-	(c) 0.5	(c) 2.9	3	
Benzoyl peroxide	94-36-0	-	5	-	-	-	3	
Benzyl acetate	140-11-4	10	61	-	-	-	3	
Benzyl chloride	100-44-7	1	5.2	-	-	-	3	
Benzyl trichloride (Benzotrichloride)	98-07-7	-	-	-	(c) 0.1	(c) 0.8	1	A2
Beryllium and compounds, as Be	7440-41-7	-	0.002	-	-	0.01	-	A1
Biphenyl (Diphenyl)	92-52-4	0.2	1.3	-	-	-	-	
Bis (2-dimethylaminoethyl) ether	3033-62-3	0.5	0.3	-	0.15	0.9	1,3	

Substance	CAS number	8-hour occupational exposure limit			15-minute or ceiling (c) occupational exposure limit		Substance interaction 1, 2, 3	Carcinogenicity A1, A2
		ppm	mg/m ³	f/cc	ppm	mg/m ³		
Bismuth telluride Undoped, as Bi ₂ Te ₃ Se-doped, as Bi ₂ Te ₃	1304-82-1	-	10	-	-	-	-	
Bitumen (Asphalt fume)	8052-42-4	-	5	-	-	-	3	
Borates, tetra, sodium salts, Anhydrous Decahydrate Pentahydrate	1303-96-4	-	1	-	3	-	3	
Boron oxide	1303-86-2	-	10	-	-	-	3	
Boron tribromide	10294-33-4	-	-	-	(c) 1	(c) 10	-	
Boron trifluoride	7637-07-2	-	-	-	(c) 1	(c) 2.8	-	
Bromacil	314-40-9	-	10	-	-	-	-	
Bromine	7726-95-6	0.1	0.7	-	0.2	1.3	-	
Bromine pentafluoride	7789-30-2	0.1	0.7	-	-	-	3	
Bromochloromethane (Chlorobromomethane)	74-97-5	200	1060	-	-	-	-	
Bromoethane (Ethyl bromide)	74-96-4	5	22	-	-	-	1	
Bromoform (Tribromomethane)	75-25-2	0.5	5.2	-	-	-	1	
1-Bromopropane	106-44-5	10	50	-	-	-	-	
Bromotrifluoromethane (Trifluorobromomethane)	75-63-8	1000	6090	-	-	-	-	
1,3-Butadiene	106-99-0	2	4.4	-	-	-	-	A2
Butane	106-97-8	1000	-	-	-	-	-	
Butanethiol (n-tyl mercaptan)	109-79-5	0.5	1.8	-	-	-	3	
n-Butanol (n-Butyl alcohol)	71-36-3	20	60	-	-	-	3	
sec-Butanol (sec-Butyl alcohol)	78-92-2	100	303	-	-	-	-	
tert-Butanol (tert-Butyl alcohol)	75-65-0	100	303	-	-	-	-	
2-Butanone (Methyl ethyl ketone)	78-93-3	200	590	-	300	885	-	
3-Buten-2-one (Methyl vinyl ketone)	78-94-4	-	-	-	(c) 0.2	(c) 0.6	1	
2-Butoxyethanol (Ethylene glycol monobutyl ether)	111-76-2	20	97	-	-	-	3	

Substance	CAS number	8-hour occupational exposure limit			15-minute or ceiling (c) occupational exposure limit		Substance interaction 1, 2, 3	Carcinogenicity A1, A2
		ppm	mg/m ³	f/cc	ppm	mg/m ³		
n-Butoxyethyl acetate	112-07-2	20	131	-	-	-	-	
n-Butyl acetate	123-86-4	150	713	-	200	950	3	
sec-Butyl acetate	105-46-4	200	950	-	-	-	3	
tert-Butyl acetate	540-88-5	200	950	-	-	-	3	
n-Butyl acrylate	141-32-2	2	10	-	-	-	-	
n-Butylamine	109-73-9	-	-	-	(c) 5	(c) 15	1	
Butylated hydroxytoluene (BHT) (2,6-Di-tert-butyl-p-cresol)	128-37-0	-	10	-	-	-	3	
tert-Butyl chromate as CrO ₃	1189-85-1	-	-	-	-	(c) 0.1	1	
n-Butyl glycidyl ether	2426-08-06	3	16	-	-	-	1	
n-Butyl lactate	138-22-7	5	30	-	-	-	-	
Butyl mercaptan (Butanethiol)	109-79-5	0.5	1.8	-	-	-	3	
o-sec-Butylphenol	89-72-5	5	31	-	-	-	1, 3	
p-tert-Butyltoluene	98-51-1	1	6.1	-	-	-	-	
Cadmium, elemental	7440-43-9		0.01	-	-	-	-	A2
Cadmium compounds as Cd, respirable			0.002	-	-	-	-	A2
Calcium carbonate (Aragonite, Calcite, Marble, Vaterite)	1317-65-3 471-34-1	-	10	-	-	-	3	
Calcium chromate, as Cr	13756-19-0	-	0.001	-	-	-	-	A2
Calcium cyanamide	156-62-7	-	0.5	-	-	-	3	
Calcium hydroxide	1305-62-0	-	5	-	-	-	3	
Calcium oxide	1305-78-8	-	2	-	-	-	3	
Calcium silicate, (synthetic, nonfibrous)	1344-95-2	-	10	-	-	-	3	
Calcium sulphate (Plaster of Paris, Gypsum)	7778-18-9 26499-65-0 13397-24-5	-	10	-	-	-	-	
Camphor, synthetic	76-22-2	2	12	-	3	19	-	
Caprolactam	105-60-2	-	5	-	-	-	-	
Captafol	2425-06-1	-	0.1	-	-	-	1,3	
Captan	133-06-2	-	5	-	-	-	3	
Carbaryl (Sevin®)	63-25-2	-	5	-	-	-	-	

Substance	CAS number	8-hour occupational exposure limit			15-minute or ceiling (c) occupational exposure limit		Substance interaction 1, 2, 3	Carcinogenicity A1, A2
		ppm	mg/m ³	f/cc	ppm	mg/m ³		
Carbofuran	1563-66-2	-	0.1	-	-	-	-	
Carbon black	1333-86-4	-	3.5	-	-	-	-	
Carbon dioxide	124-38-9	5000	9000	-	30,000	54,000	-	
Carbon disulfide	75-15-0	1	3.1	-	-	-	1	
Carbon monoxide	630-08-0	25	29	-	-	-	-	
Carbon tetrabromide	558-13-4	0.1	1.4	-	0.3	4.1	-	
Carbon tetrachloride (Tetrachloromethane)	56-23-5	5	31	-	10	63	1	A2
Carbonyl chloride (Phosgene)	75-44-3	0.1	0.4	-	-	-	-	
Carbonyl fluoride	353-50-4	2	5.4	-	5	13	-	
Catechol	120-80-9	5	23	-	-	-	1	
Cellulose	9004-34-6	-	10	-	-	-	3	
Cesium hydroxide	21351-79-1	-	2	-	-	-	3	
Chlordane	57-74-9	-	0.5	-	-	-	1	
Chlorinated camphene (Toxaphene)	8001-35-2	-	0.5	-	-	1	1	
Chlorinated diphenyl oxide	31242-93-0	-	0.5	-	-	-	-	
Chlorine	7782-50-5	0.5	1.5	-	1	2.9	3	
Chlorine dioxide	10049-04-4	0.1	0.3	-	0.3	0.8	-	
Chlorine trifluoride	7790-91-2	-	-	-	(c) 0.1	(c) 0.4	-	
Chloroacetaldehyde	107-20-0	-	-	-	(c) 1	(c) 0.4	3	
Chloroacetone	78-95-5	-	-	-	(c) 1	(c) 3.8	1, 3	
2-Chloroacetophenone (Phenacyl chloride)	532-27-4	0.05	0.3	-	-	-	3	
Chloroacetyl chloride	79-04-9	0.05	0.2	-	0.15	0.7	1,3	
Chlorobenzene	108-90-7	10	46	-	-	-	-	
o-Chlorobenzylidene malononitrile	2698-41-1	-	-	-	(c) 0.05	(c) 0.4	1	
Chlorobromomethane	74-97-5	200	1060	-	-	-	-	
2-Chloro-1,3-butadiene (β-Chloroprene)	126-99-8	10	36	-	-	-	1,3	
Chlorodifluoromethane	75-45-6	1000	3500	-	-	-	-	

Substance	CAS number	8-hour occupational exposure limit			15-minute or ceiling (c) occupational exposure limit		Substance interaction 1, 2, 3	Carcinogenicity A1, A2
		ppm	mg/m ³	f/cc	ppm	mg/m ³		
Chlorodiphenyl (42 percent chlorine) (PCBs, Polychlorinated biphenyls – 42 percent chlorine)	53469-21-9	-	1	-	-	-	1	
Chlorodiphenyl (54 percent chlorine) (PCBs, Polychlorinated biphenyls 54 percent chlorine)	11097-69-1	-	0.5	-	-	-	1	
1-Chloro,2,3-epoxy-propane (Epichlorohydrin)	106-89-8	0.5	1.9	-	-	-	1	
Chloroethane (Ethyl chloride)	75-00-3	100	264	-	-	-	1	
2-Chloroethanol (Ethylene chlorohydrin)	107-07-3	-	-	-	(c) 1	(c) 3.3	1	
Chloroethylene (Vinyl chloride)	75-01-4	1	2.6	-	-	-	-	A1
Chloroform (Trichloromethane)	67-66-3	10	49	-	-	-	-	
Bis(Chloromethyl) ether	542-88-1	0.001	0.005	-	-	-	-	A1
p-Chloronitrobenzene (p-Nitrochlorobenzene)	100-00-5	0.1	0.6	-	-	-	1	
1-Chloro-1-nitropropane	600-25-9	2	10	-	-	-	-	
Chloropentafluoroethane	76-15-3	1000	6300	-	-	-	-	
Chloropicrin (Trichloronitromethane)	76-06-2	0.1	0.7	-	-	-	-	
1-Chloro-2-propanol and 2-Chloro-1-propanol	127-00-4 78-89-7	1	4	-	-	-	1	
β-Chloroprene	126-99-8	10	36	-	-	-	1,3	
2-Chloropropionic acid	598-78-7	0.1	0.4	-	-	-	1	
o-Chlorostyrene	2039-87-4	50	283	-	75	425	-	
o-Chlorotoluene	95-49-8	50	259	-	-	-	3	
2-Chloro-6-(trichloromethyl) pyridine (Nitrapyrin)	1929-82-4	-	10	-	-	20	-	
Chlorpyrifos	2921-88-2	-	0.1	-	-	-	1	
Chromite ore processing (Chromate), as Cr	-	-	0.05	-	-	-	-	A1

Substance	CAS number	8-hour occupational exposure limit			15-minute or ceiling (c) occupational exposure limit		Substance interaction 1, 2, 3	Carcinogenicity A1, A2
		ppm	mg/m ³	f/cc	ppm	mg/m ³		
Chromium, metal and inorganic compounds, as Cr Metal and Cr III compounds Water-soluble Cr VI compounds Insoluble Cr VI compounds	7440-47-3	-	0.5 0.05 0.01	-	-	-	3 - -	A1 A1
Chromyl chloride	14977-61-8	0.025	0.2	-	-	-	3	
Chrysotile (Asbestos)	12001-29-5	-	-	0.1	-	-	-	A1
Clopidol	2971-90-6	-	10	-	-	-	3	
Coal dust (Respirable particulate) This limit expires on July1, 2010 and is replaced by the exposure limit shown below		-	2	-	-	-	-	-
Coal dust (Respirable particulate) Anthracite Bituminous These limits come into effect on July 1, 2010		-	0.4 0.9	-	-	-	-	
Coal tar pitch volatiles, as benzene solubles	65996-93-2	-	0.2	-	-	-	-	A1
Cobalt, elemental inorganic compounds, as Co	7440-48-4	-	0.02	-	-	-	-	
Cobalt carbonyl, as Co	10210-68-1	-	0.1	-	-	-	-	
Cobalt hydrocarbonyl, as Co	16842-03-8	-	0.1	-	-	-	-	
Copper Fume Dusts/mists, as Cu	7440-50-8	-	0.2 1	-	-	-	- -	
Cotton, dust, raw		-	0.2	-	-	-	-	
Coumaphos (mg/m3)	56-72-4		0.5	-	-	-	1	
Cresol, all isomers	1319-77-3 95-48-7 108-39-4 106-44-5	5	22	-	-	-	1	
Cristobalite, respirable (Silica, crystalline)	14464-46-1	-	0.025	-	-	-	-	A2
Crocidolite (Asbestos)	12001-28-4	-	-	0.1	-	-	-	A1

Substance	CAS number	8-hour occupational exposure limit			15-minute or ceiling (c) occupational exposure limit		Substance interaction 1, 2, 3	Carcinogenicity A1, A2
		ppm	mg/m ³	f/cc	ppm	mg/m ³		
Crotonaldehyde	4170-30-3	-	-	-	(c) 0.3	(c) 0.9	1, 3	
Cruformate	299-86-5	-	5	-	-	-	-	
Cumene	98-82-8	50	246	-	-	-	-	
Cyanamide	420-04-2	-	2	-	-	-	3	
Cyanide and Cyanide salts and hydrogen cyanide as CN								
Hydrogen cyanide	74-90-8	-	-	-	(c) 4.7	(c) 5.2	1	
Calcium cyanide	592-01-8	-	-	-	-	(c) 5	1	
Potassium cyanide	151-50-8	-	-	-	-	(c) 5	1	
Sodium cyanide	143-33-9	-	-	-	-	(c) 5	1	
Cyanogen	460-19-5	10	21	-	-	-	3	
Cyanogen chloride	506-77-4	-	-	-	(c) 0.3	(c) 0.8	-	
Cyclohexane	110-82-7	100	344	-	-	-	-	
Cyclohexanol	108-93-0	50	205	-	-	-	1	
Cyclohexanone	108-94-1	20	80	-	50	200	1	
Cyclohexene	110-83-8	300	1010	-	-	-	3	
Cyclohexylamine	108-91-8	10	41	-	-	-	3	
Cyclonite (RDX)	121-82-4	-	0.5	-	-	-	1	
Cyclopentadiene	542-92-7	75	203	-	-	-	3	
Cyclopentane	287-92-3	600	1720	-	-	-	-	
Cyhexatin (Tricyclohexyltin hydroxide)	13121-70-5	-	5	-	-	-	-	
2,4-D (2,4-Dichlorophenoxyacetic acid)	94-75-7	-	10	-	-	-	3	
DDT (Dichlorodiphenyl trichloroethane)	50-29-3	-	1	-	-	-	-	
Decaborane	17702-41-9	0.05	0.3	-	0.15	0.8	1	
Demeton (Systox®)	8065-48-3	-	0.05	-	-	-	1	
Demeton-s-methyl (Methyl demeton)	8022-00-2	-	0.05	-	-	-	1	
Diacetone alcohol (4-Hydroxyl-4-methyl-2-pentanone)	123-42-2	50	238	-	-	-	3	
4,4-Diaminodiphenyl-methane (4,4'-Methylene dianiline)	101-77-9	0.1	0.8	-	-	-	1	
1,2-Diaminoethane (Ethylenediamine)	107-15-3	10	25	-	-	-	1	
Diazinon	333-41-5	-	0.01	-	-	-	1	

Substance	CAS number	8-hour occupational exposure limit			15-minute or ceiling (c) occupational exposure limit		Substance interaction 1, 2, 3	Carcinogenicity A1, A2
		ppm	mg/m ³	f/cc	ppm	mg/m ³		
Diazomethane	334-88-3	0.2	0.3	-	-	-	-	A2
Dibenzoyl peroxide (Benzoyl peroxide)	94-36-0	-	5	-	-	-	3	
Diborane	19287-45-7	0.1	0.1	-	-	-	-	
Dibrom (Naled)	300-76-5	-	0.1	-	-	-	1	
2-N-Dibutylaminoethanol	102-81-8	0.5	3.5	-	-	-	1,3	
2,6-Di-tert-butyl-p-cresol (Butylated hydroxytoluene, BHT)	128-37-0	-	10	-	-	-	3	
Dibutyl phenyl phosphate	2528-36-1	0.3	3.5	-	-	-	1	
Dibutyl phosphate	107-66-4	1	8.6	-	2	17	-	
Dibutyl phthalate	84-74-2	-	5	-	-	-	-	
Dichloroacetic acid	79-43-6	0.5	2.6	-	-	-	1	
Dichloroacetylene	7572-29-4	-	-	-	(c) 0.1	(c) 0.4	-	
o-Dichlorobenzene (1,2-Dichlorobenzene)	95-50-1	25	150	-	50	300	-	
p-Dichlorobenzene (1,4-Dichlorobenzene)	106-46-7	10	60	-	-	-	-	
1,4-Dichloro-2-butene	764-41-0	0.005	0.03	-	-	-	1	A2
Dichlorodifluoromethane	75-71-8	1000	4950	-	-	-	-	
1,3-Dichloro-5,5-dimethyl hydantoin	118-52-5	-	0.2	-	-	0.4	3	
Dichlorodiphenyl-trichloroethane (DDT)	50-29-3	-	1	-	-	-	-	
1,1-Dichloroethane (Ethylidene chloride)	75-34-3	100	405	-	-	-	-	
1,2-Dichloroethane (Ethylene dichloride)	107-06-2	10	40	-	-	-	-	
1,1-Dichloroethylene (Vinylidene chloride)	75-35-4	5	20	-	-	-	-	
1,2-Dichloroethylene, all isomers (Acetylene dichloride)	540-59-0 156-59-2 156-60-5	200	793	-	-	-	-	
Dichloroethyl ether (2,2'-Dichlorodiethyl ether)	111-44-4	5	29	-	10	58	1	

Substance	CAS number	8-hour occupational exposure limit			15-minute or ceiling (c) occupational exposure limit		Substance interaction 1, 2, 3	Carcinogenicity A1, A2
		ppm	mg/m ³	f/cc	ppm	mg/m ³		
Dichlorofluoromethane (Dichloromonofluoromethane)	75-43-4	10	42	-	-	-	-	
Dichloromethane (Methylene chloride)	75-09-4	50	174	-	-	-	-	
1,1-Dichloro-1-nitroethane	594-72-9	2	12	-	-	-	3	
2,4-Dichlorophenoxyacetic acid (2,4-D)	94-75-7	-	10	-	-	-	3	
1,2-Dichloropropane (Propylene dichloride)	78-87-5	10	46	-	-	-	-	
1,1-Dichloro-1-nitroethane	594-72-9	2	12	-	-	-	-	
1,3-Dichloropropene	542-75-6	1	4.5	-	-	-	1	
2,2-Dichloropropionic acid	75-99-0	-	5	-	-	-	3	
Dichlorotetrafluoroethane (1,2-Dichloro-1,1,2,2-tetrafluoroethane)	76-14-2	1000	7000	-	-	-	-	
Dichlorvos	62-73-7	-	0.1	-	-	-	1	
Dicrotophos	141-66-2	-	0.05	-	-	-	1	
Dicyclopentadiene	77-73-6	5	27	-	-	-	3	
Dicyclopentadienyl iron (Ferrocene)	102-54-5	-	10	-	-	-	-	
Dieldrin	60-57-1	-	0.25	-	-	-	1	
Diesel fuel, as total hydrocarbons	68334-30-5 68476-30-2 68476-34-6 68476-31-3 77650-28-3		100	-	-	-	-	
Diethanolamine	111-42-2	-	2	-	-	-	1	
Diethylamine	109-89-7	5	15	-	15	45	1, 3	
2-Diethylaminoethanol	100-37-8	2	9.6	-	-	-	1	
Diethylene dioxide (1,4-Dioxane)	123-91-1	20	72	-	-	-	1	
Diethylene triamine	111-40-0	1	4.2	-	-	-	1,3	
Diethyl ether (Ethyl ether)	60-29-7	400	1210	-	500	1520	-	

Substance	CAS number	8-hour occupational exposure limit			15-minute or ceiling (c) occupational exposure limit		Substance interaction 1, 2, 3	Carcinogenicity A1, A2
		ppm	mg/m ³	f/cc	ppm	mg/m ³		
Di(2-ethylhexyl)phthalate (DEHP, Di-sec-octyl phthalate)	117-81-7	-	5	-	-	-	3	
Diethyl ketone	96-22-0	200	705	-	300	1060	-	
Diethyl phthalate	84-66-2	-	5	-	-	-	3	
Difluorodibromomethane	75-61-6	100	858	-	-	-	-	
1,1-Difluoroethylene (Vinylidene fluoride)	75-38-7	500	1310	-	-	-	-	
Diglycidyl ether	2238-07-5	0.1	0.5	-	-	-	-	
Dihydroxybenzene (Hydroquinone)	123-31-9	-	2	-	-	-	-	
Diisobutyl ketone (2,6-Dimethyl-4-heptanone)	108-83-8	25	145	-	-	-	3	
Diisopropylamine	108-18-9	5	21	-	-	-	1	
Dimethoxymethane (Methylal)	109-87-5	1000	3110	-	-	-	-	
N,N-Dimethylacetamide	127-19-5	10	36	-	-	-	1	
Dimethylamine	124-40-3	5	9.2	-	15	28	-	
Dimethylaminobenzene (Xylidine, mixed isomers)	1300-73-8	0.5	2.5	-	-	-	1	
bis(2-Dimethylamino-ethyl) ether (DMAEE)	3033-62-3	0.05	0.3	-	0.15	0.98	1	
Dimethylaniline (N,N-Dimethylaniline)	121-69-7	5	25	-	10	50	1	
Dimethylbenzene (Xylene, o, m & p isomers)	1330-20-7 95-47-6 108-38-3 106-42-3	100	434	-	150	651	-	
Dimethylbutane (Hexane, all isomers, except n-Hexane)	75-83-2 79-29-8	500	1760	-	1000	3500	-	
Dimethyl-1,2-dibromo-2,2-dichloroethyl phosphate (Dibrom, Naled)	300-76-5	-	0.1	-	-	-	1	
Dimethylethoxysilane	14857-34-2	0.5	2.1	-	1.5	6.4	-	
Dimethylformamide	68-12-2	10	30	-	-	-	1	
2,6-Dimethyl-4-heptanone (Diisobutyl ketone)	108-83-8	25	145	-	-	-	3	
1,1-Dimethylhydrazine	57-14-7	0.01	0.02	-	-	-	1	
Dimethyl phthalate	131-11-3	-	5	-	-	-	3	

Substance	CAS number	8-hour occupational exposure limit			15-minute or ceiling (c) occupational exposure limit		Substance interaction 1, 2, 3	Carcinogenicity A1, A2
		ppm	mg/m ³	f/cc	ppm	mg/m ³		
1,1-Dimethylpropyl acetate (tert-Amyl acetate)	625-16-1	50	266	-	100	532	3	
Dimethyl sulfate	77-78-1	0.1	0.5	-	-	-	1, 3	
Dimethyl sulfide	75-18-3	10	25	-	-	-	3	
Dinitolmide (3,5-Dinitro-o-toluamide)	148-01-6	-	5	-	-	-	-	
Dinitrobenzene, all isomers	528-29-0 99-65-0 100-25-4 25154-54-5	0.15	1	-	-	-	1	
Dinitro-o-cresol	534-52-1	-	0.2	-	-	-	1	
3,5-Dinitro-o-toluamide (Dinitolmide)	148-01-6	-	5	-	-	-	-	
Dinitrotoluene	25321-14-6	-	0.2	-	-	-	1	
1,4-Dioxane (Diethylene dioxide)	123-91-1	20	72	-	-	-	1	
Dioxathion	78-34-2	-	0.1	-	-	-	1	
1,3-Dioxolane	646-06-0	20	61	-	-	-	-	
Diphenyl (Biphenyl)	92-52-4	0.2	1.3	-	-	-	-	
Diphenylamine	122-39-4	-	10	-	-	-	-	
Diphenyl ether, vapour (Phenyl ether)	101-84-8	1	7	-	2	14	-	
Diphenylmethane-4,4'-diisocyanate (Methylene bisphenyl isocyanate, MDI)	101-68-8	0.005	0.05	-	-	-	-	
Dipropylene glycol methyl ether [(2-Methoxymethylethoxy) propanol, DPGME]	34590-94-8	100	606	-	150	909	1	
Dipropyl ketone	123-19-3	50	235	-	-	-	3	
Diquat	2764-72-9	-	-	-	-	-	-	
Total	85-00-7	-	0.5	-	-	-	1	
Respirable	6385-62-2	-	0.1	-	-	-	1	
Di-sec-octyl-phthalate (DEHP, Di-sec-octyl phthalate)	117-81-7	-	5	-	-	-	3	
Disulfiram	97-77-8	-	2	-	-	-	-	
Disulfoton	298-04-4	-	0.05	-	-	-	1	
Diuron	330-54-1	-	10	-	-	-	3	
Divinyl benzene	1321-74-0	10	53	-	-	-	3	

Substance	CAS number	8-hour occupational exposure limit			15-minute or ceiling (c) occupational exposure limit		Substance interaction 1, 2, 3	Carcinogenicity A1, A2
		ppm	mg/m ³	f/cc	ppm	mg/m ³		
Dodecyl mercaptan	112-55-0	0.1	0.8	-	-	-	3	
Emery	1302-74-5	-	10	-	-	-	3	
Endosulfan	115-29-7	-	0.1	-	-	-	1	
Endrin	72-20-8	-	0.1	-	-	-	1	
Enflurane	13838-16-9	75	566	-	-	-	-	
Enzymes, proteolytic (Subtilisins)	1395-21-7 9014-01-1	-	-	-	-	(c) 0.00006	-	
Epichlorohydrin (1-Chloro-2,3-epoxypropane)	106-89-8	0.5	1.9	-	-	-	1	
EPN	2104-64-5	-	0.1	-	-	-	1	
1,2-Epoxypropane (Propylene oxide)	75-56-9	2	4.7	-	-	-	-	
2,3-Epoxy-1-propanol (Glycidol)	556-52-5	2	6.1	-	-	-	3	
Ethane	74-84-0	1000	-	-	-	-	-	
Ethanethiol (Ethyl mercaptan)	75-08-1	0.5	1.3	-	-	-	-	
Ethanol (Ethyl alcohol)	64-17-5	1000	1880	-	-	-	-	
Ethanolamine (2-Aminoethanol)	141-43-5	3	7.5	-	6	15	3	
Ethion	563-12-2	-	0.05	-	-	-	1	
2-Ethoxyethanol (Ethylene glycol monoethyl ether)	110-80-5	5	18	-	-	-	1	
2-Ethoxyethyl acetate (Ethylene glycol monoethyl ether acetate)	111-15-9	5	27	-	-	-	1	
Ethyl acetate	141-78-6	400	1440	-	-	-	3	
Ethyl acrylate (Acrylic acid, ethyl ester)	140-88-5	5	20	-	15	61	-	
Ethyl alcohol (Ethanol)	64-17-5	1000	1880	-	-	-	-	
Ethylamine	75-04-7	5	9.2	-	15	28	1	
Ethyl amyl ketone (5-Methyl-3-heptanone)	541-85-5	25	131	-	-	-	-	
Ethyl benzene	100-41-4	100	434	-	125	543	-	
Ethyl bromide (Bromoethane)	74-96-4	5	22	-	-	-	1	
Ethyl tert-butyl ether (ETBE)	637-92-3	5	21	-	-	-	-	
Ethyl butyl ketone (3-Heptanone)	106-35-4	50	234	-	75	350	-	
Ethyl chloride (Chloroethane)	795-00-3	100	264	-	-	-	1	
Ethyl cyanoacrylate (Ethyl-2-cyanoacrylate)	7085-85-0	0.2	1	-	-	-	-	

Substance	CAS number	8-hour occupational exposure limit			15-minute or ceiling (c) occupational exposure limit		Substance interaction 1, 2, 3	Carcinogenicity A1, A2
		ppm	mg/m ³	f/cc	ppm	mg/m ³		
Ethylene chlorohydrin (2-chloroethanol)	107-07-3	-	-	-	(c) 1	(c) 3.3	1	
Ethylenediamine (1,2-Diaminoethane)	107-15-3	10	25	-	-	-	1	
Ethylene dichloride (1,2-Dichloroethane)	107-06-2	10	40	-	-	-	-	
Ethylene	74-85-1	200	229	-	-	-	-	
Ethylene glycol	107-21-1	-	-	-	-	(c) 100	3	
Ethylene glycol dinitrate (EGDN)	628-96-6	0.05	0.3	-	-	-	1	
Ethylene glycol isopropyl ether (2-Isopropoxyethanol)	109-59-1	25	106	-	-	-	1	
Ethylene glycol methyl ether acetate (2-Methoxyethyl acetate)	110-49-6	0.1	0.5	-	-	-	1	
Ethylene glycol monobutyl ether (2-Butoxyethanol)	111-76-2	20	97	-	-	-	3	
Ethylene glycol monoethyl ether (2-Ethoxyethanol)	110-80-5	0.1	0.4	-	-	-	1	
Ethylene glycol monoethyl ether acetate (2-Ethoxyethyl acetate)	111-15-9	5	27	-	-	-	1	
Ethylene glycol monomethyl ether (2-Methoxyethanol)	109-86-4	0.1	0.3	-	-	-	1	
Ethylene oxide	75-21-8	1	1.8	-	-	-	-	A2
Ethylenimine	151-56-4	0.5	0.9	-	-	-	1	
Ethyl ether (Diethyl ether)	60-29-7	400	1210	-	500	1520	-	
Ethyl formate (Formic acid, ethyl ester)	109-94-4	100	303	-	-	-	3	
2-Ethylhexanoic acid	149-57-5	-	5	-	-	-	-	
Ethylidene chloride (1,1-Dichloroethane)	75-34-3	100	405	-	-	-	-	
Ethylidene norbornene	16219-75-3	-	-	-	(c) 5	(c) 25	3	
Ethyl mercaptan	75-08-1	0.5	1.3	-	-	-	-	
N-Ethylmorpholine	100-74-3	5	24	-	-	-	1	
Ethyl silicate (Silicic acid, tetraethyl ester)	78-10-4	10	85	-	-	-	-	
Fenamiphos	22224-92-6	-	0.05	-	-	-	1	
Fensulfothion	115-90-2	-	0.01	-	-	-	1	
Fenthion	55-38-9	-	0.05	-	-	-	1	

Substance	CAS number	8-hour occupational exposure limit			15-minute or ceiling (c) occupational exposure limit		Substance interaction 1, 2, 3	Carcinogenicity A1, A2
		ppm	mg/m ³	f/cc	ppm	mg/m ³		
Ferbam	14484-64-1	-	10	-	-	-	3	
Ferrocene (Dicyclopentadienyl iron)	102-54-5	-	10	-	-	-	-	
Ferrovandium dust	12604-58-9	-	1	-	-	3	3	
Flour dust (Total particulate)		-	0.5	-	-	-	-	
Fluorides, as F		-	2.5	-	-	-	-	
Fluorine	7782-41-4	1	1.6	-	2	3.1	3	
Fluorotrichloromethane (Trichlorofluoromethane)	75-69-4	-	-	-	(c) 1000	(c) 5620	-	
Fonofos	944-22-9	-	0.01	-	-	-	1	
Formaldehyde	50-00-0	0.75	0.9	-	(c) 1	(c) 1.3	-	A2
Formamide	75-12-7	10	18	-	-	-	1	
Formic acid	64-18-6	5	9.4	-	10	19	3	
Formic acid, ethyl ester (Ethyl formate)	109-94-4	100	303	-	-	-	3	
Formic acid, methyl ester (Methyl formate)	107-31-3	100	246	-	150	368	3	
Furfural	98-01-1	2	7.9	-	-	-	1, 3	
Furfuryl alcohol	98-00-0	10	40	-	15	60	1, 3	
Gallium arsenide, respirable particulate	1303-00-0	-	0.0003	-	-	-	3	
Gasoline	86290-81-5	300	-	-	500	-	-	
Germanium tetrahydride	7782-65-2	0.2	0.6	-	-	-	-	
Glass Fibres								
Continuous filament		-	-	1	-	-	3	
Continuous filament, total		-	5	-	-	-	3	
Glass Wool		-	-	1	-	-	-	
Special purpose		-	-	1	-	-	3	
Glutaraldehyde, activated and inactivated	111-30-8	-	-	-	(c) 0.05	(c) 0.2	-	
Glycerin mist	56-81-5	-	10	-	-	-	3	
Glycidol (2,3-Epoxy-1-propanol)	556-52-5	2	6.1	-	-	-	3	
Glycol monoethyl ether (2-Ethoxyethanol)	110-80-5	5	18	-	-	-	1	
Glyoxal	107-22-2	-	0.1	-	-	-	-	
Grain dust (oat, wheat, barley)		-	4	-	-	-	-	

Substance	CAS number	8-hour occupational exposure limit			15-minute or ceiling (c) occupational exposure limit		Substance interaction 1, 2, 3	Carcinogenicity A1, A2
		ppm	mg/m ³	f/cc	ppm	mg/m ³		
Graphite, respirable (all forms except graphite fibres)	7782-42-5	-	2	-	-	-	-	
Guthion® (Azinphos-methyl)	86-50-0	-	0.2	-	-	-	1	
Gypsum (Calcium sulphate)	13397-24-5	-	10	-	-	-	-	
Hafnium and compounds, as Hf	7440-58-6	-	0.5	-	-	-	-	
Halothane	151-67-7	50	404	-	-	-	-	
Helium	7440-59-7	-	-	-	-	-	2	
Heptachlor and Heptachlor epoxide	76-44-8 1024-57-3	-	0.05	-	-	-	1	
Heptane, all isomers	142-82-5 590-35-2 565-59-3 108-08-7 591-76-4 589-34-4	400	1640	-	500	2050	-	
2-Heptanone (Methyl n-amyl ketone)	110-43-0	50	233	-	-	-	3	
3-Heptanone (Ethyl butyl ketone)	106-35-4	50	234	-	75	350	-	
Hexachlorobenzene	118-74-1	-	0.002	-	-	-	1	
Hexachlorobutadiene	87-68-3	0.02	0.2	-	-	-	1	
γ-Hexachlorocyclohexane (Lindane)	58-89-9	-	0.5	-	-	-	1	
Hexachlorocyclopentadiene	77-47-4	0.01	0.1	-	-	-	3	
Hexachloroethane	67-72-1	1	9.7	-	-	-	1	
Hexachloronaphthalene	1335-87-1	-	0.2	-	-	-	1	
Hexafluoroacetone	684-16-2	0.1	0.7	-	-	-	1	
Hexahydrophthalic anhydride, all isomers	85-42-7 13149-00-3 14166-21-3	-	-	-	-	(c) 0.005	-	
1,6-Hexamethylene diisocyanate	822-06-0	0.005	0.03	-	-	-	-	
n-Hexane	110-54-3	50	176	-	-	-	1	
Hexane (all isomers except n-hexane)	107-83-5 96-14-0 75-83-2 79-29-8	500	1760	-	1000	3500	-	
1,6-Hexanediamine	124-09-4	0.5	2.4	-	-	-	3	

Substance	CAS number	8-hour occupational exposure limit			15-minute or ceiling (c) occupational exposure limit		Substance interaction 1, 2, 3	Carcinogenicity A1, A2
		ppm	mg/m ³	f/cc	ppm	mg/m ³		
2-Hexanone (Methyl n-butyl ketone)	591-78-6	5	20	-	10	40	1	
1-Hexene	592-41-6	50	172	-	-	-	-	
Hexone (Methyl isobutyl ketone)	108-10-1	50	205	-	75	307	-	
Sec-Hexyl acetate	108-84-9	50	295	-	-	-	3	
Hexylene glycol	107-41-5	-	-	-	(c) 25	(c) 121	3	
Hydrazine	302-01-2	0.01	0.01	-	-	-	1	
HCFC-123 1,1,1-trifluoro-2,2-dichloroethane	306-83-2	50	310	-	-	-	-	
Hydrogen	1333-74-0	-	-	-	-	-	2	
Hydrogenated terphenyls	61788-32-7	0.5	4.9	-	-	-	-	
Hydrogen bromide	10035-10-6	-	-	-	(c) 2	(c) 6.6	3	
Hydrogen chloride	7647-01-0	-	-	-	(c) 2	(c) 3	3	
Hydrogen cyanide and cyanide salts, as CN								
Hydrogen cyanide	74-90-8	-	-	-	(c) 4.7	(c) 5.2	1	
Calcium cyanide	592-01-8	-	-	-	-	(c) 5	1	
Potassium cyanide	151-50-8	-	-	-	-	(c) 5	1	
Sodium cyanide	143-33-9	-	-	-	-	(c) 5	1	
Hydrogen fluoride, as F	7664-39-3	0.5	0.4	-	(c) 2	(c) 1.6	-	
Hydrogen peroxide	7722-84-1	1	1.4	-	-	-	3	
Hydrogen selenide, as Se	7783-07-5	0.05	0.2	-	-	-	-	
Hydrogen sulphide	7783-06-4	10	14	-	(c) 15	(c) 21	-	
Hydroquinone (Dihydroxybenzene)	123-31-9	-	2	-	-	-	-	
4-Hydroxy-4-methyl-2-pentanone (Diacetone alcohol)	123-42-2	50	238	-	-	-	3	
2-Hydroxypropyl acrylate	999-61-1	0.5	2.7	-	-	-	1	
Indene	95-13-6	10	48	-	-	-	-	
Indium & compounds, as In	7440-74-6	-	0.1	-	-	-	-	
Iodine	7553-56-2	-	-	-	(c) 0.1	(c) 1	3	
Iodoform	75-47-8	0.6	9.7	-	-	-	-	
Iron oxide (Fe₂O₃), Respirable	1309-37-1	-	5	-	-	-	-	
Iron pentacarbonyl, as Fe	13463-40-6	0.1	0.8	-	0.2	1.6	-	
Iron salts, soluble, as Fe	-	-	1	-	-	-	3	
Isoamyl acetate (Isopentyl acetate)	123-92-2	50	266	-	100	532	3	
Isoamyl alcohol	123-51-3	100	361	-	125	451	3	
Isobutyl acetate	110-19-0	150	713	-	-	-	3	

Substance	CAS number	8-hour occupational exposure limit			15-minute or ceiling (c) occupational exposure limit		Substance interaction 1, 2, 3	Carcinogenicity A1, A2
		ppm	mg/m ³	f/cc	ppm	mg/m ³		
Isobutyl alcohol	78-83-1	50	152	-	-	-	3	
Isobutyl nitrite	542-56-3	-	-	-	(c) 1	4.2	-	
Isooctyl alcohol	26952-21-6	50	266	-	-	-	1, 3	
Isopentane (Pentane, all isomers)	78-78-4	600	1770	-	-	-	-	
Isopentyl acetate (Isoamyl acetate)	123-92-2	50	266	-	100	532	3	
Isophorone	78-59-1	-	-	-	(c) 5	(c) 28	-	
Isophorone diisocyanate	4098-71-9	0.005	0.05	-	-	-	-	
Isopropanol (2-Propanol, Isopropyl alcohol)	67-63-0	200	492	-	400	984	-	
Isopropoxyethanol	109-59-1	25	106	-	-	-	1	
Isopropyl acetate	108-21-4	100	416	-	200	832	-	
Isopropyl alcohol (2-Propanol, Isopropanol)	67-63-0	200	492	-	400	984	-	
Isopropylamine	75-31-0	5	12	-	10	24	-	
N-Isopropylaniline	768-52-5	2	11	-	-	-	1	
Isopropyl ether	108-20-3	250	1040	-	310	1300	3	
Isopropyl glycidyl ether (IGE)	4016-14-2	50	238	-	75	356	-	
Kaolin respirable	1332-58-7	-	2	-	-	-	-	
Kerosene/Jet fuels, as total hydrocarbon vapour	8008-20-6 64742-81-0	-	200	-	-	-	1	
Ketene	463-51-4	0.5	0.9	-	1.5	2.6	-	
Lead elemental & inorganic compounds, as Pb	7439-92-1	-	0.05	-	-	-	-	
Lead arsenate, as Pb(AsO ₄) ₂	7784-40-9	-	0.15	-	-	-	-	
Lead chromate, as Pb as Cr	7758-97-6	-	0.05 0.012	-	-	-	-	A2
Limestone (Calcium carbonate)	1317-65-3	-	10	-	-	-	3	
Lindane (γ-Hexachlorocyclohexane)	58-89-9	-	0.5	-	-	-	1	
Lithium hydride	7580-67-8	-	0.025	-	-	-	3	
L.P.G. (Liquified petroleum gas)	68476-85-7	1000	-	-	1500	-	-	
Magnesium oxide fume	1309-48-4	-	10	-	-	-	-	
Malathion	121-75-5	-	1	-	-	-	1	
Maleic anhydride	108-31-6	0.1	0.4	-	-	-	-	
Manganese, elemental & inorganic compounds, as Mn	7439-96-5	-	0.2	-	-	-	-	

Substance	CAS number	8-hour occupational exposure limit			15-minute or ceiling (c) occupational exposure limit		Substance interaction 1, 2, 3	Carcinogenicity A1, A2
		ppm	mg/m ³	f/cc	ppm	mg/m ³		
Manganese cyclopentadienyl tricarbonyl, as Mn	12079-65-1	-	0.1	-	-	-	1	
Marble (Calcium carbonate)	1317-65-3	-	10	-	-	-	3	
Mercury, as Hg in Alkyl compounds, Aryl compounds Inorganic compounds, including metallic mercury	7439-97-6		0.01 0.1 0.025	- - -	- - -	0.03 - -	1 1 1	
Mesityl oxide	141-79-7	15	60	-	25	100	-	
Methacrylic acid	79-41-4	20	70	-	-	-	3	
Methacrylic acid, methyl ester (Methyl methacrylate)	80-62-6	50	205	-	100	410	-	
Methanethiol (Methyl mercaptan)	74-93-1	0.5	1.0	-	-	-	-	
Methanol (Methyl alcohol)	67-56-1	200	262	-	250	328	1	
Methomyl	16752-77-5	-	2.5	-	-	-	-	
Methoxychlor	72-43-5	-	10	-	-	-	-	
2-Methoxyethanol (Ethylene glycol monomethyl ether)	109-86-4	0.1	0.3	-	-	-	1	
2-Methoxyethyl acetate (Ethylene glycol monomethyl ether acetate)	110-49-6	0.1	0.5	-	-	-	1	
(2-Methoxymethylethoxy) propanol (DPGME)	34590-94-8	100	606	-	150	909	-	
4-Methoxyphenol	150-76-5	-	5	-	-	-	-	
1-Methoxy-2-propanol (Propylene glycol monomethyl ether)	107-98-2	100	369	-	150	553	-	
Methyl acetate	79-20-9	200	606	-	250	757	-	
Methyl acetylene (Propyne)	74-99-7	1000	1640	-	-	-	-	
Methyl acetylene-propadiene mixture (MAPP)	59355-75-8	1000	1640	-	1250	2050	-	
Methyl acrylate (Acrylic acid, methyl ester)	96-33-3	2	7	-	-	-	1	
Methylacrylonitrile	126-98-7	1	2.7	-	-	-	1	
Methylal (Dimethoxymethane)	109-87-5	1000	3110	-	-	-	-	
Methyl alcohol (Methanol)	67-56-1	200	262	-	250	328	1	
Methylamine	74-89-5	5	6.4	-	15	19	3	
Methyl amyl alcohol (Methyl isobutyl carbinol; 4-Methyl-2-pentanol)	108-11-2	25	104	-	40	167	1	

Substance	CAS number	8-hour occupational exposure limit			15-minute or ceiling (c) occupational exposure limit		Substance interaction 1, 2, 3	Carcinogenicity A1, A2
		ppm	mg/m ³	f/cc	ppm	mg/m ³		
Methyl n-amyl ketone (2-Heptanone)	110-43-0	50	233	-	-	-	3	
N-Methyl aniline (Monomethyl aniline)	100-61-8	0.5	2.2	-	-	-	1	
2-Methylaziridine (Propyleneimine)	75-55-8	2	4.7	-	-	-	1,3	
Methyl bromide	74-83-9	1	3.9	-	-	-	1,3	
1-Methylbutyl acetate (2-Pentyl acetate, sec-amyl acetate)	626-38-0	50	266	-	100	532	3	
3-Methylbutyl acetate (Isopentyl acetate, isoamyl acetate)	123-92-2	50	266	-	100	532	3	
Methyl-tert-butyl ether (MTBE)	1634-04-4	50	180	-	-	-	-	
Methyl n-butyl ketone (2-Hexanone)	591-78-6	5	20	-	10	40	1	
Methyl Cellosolve (2-Methoxyethanol)	109-86-4	0.1	0.3	-	-	-	1	
Methyl Cellosolve acetate (2-Methoxyethyl acetate)	110-49-6	0.1	0.5	-	-	-	1	
Methyl chloride	74-87-3	50	103	-	100	207	1	
Methyl chloroform (1,1,1-Trichloroethane)	71-55-6	350	1910	-	450	2460	-	
Methyl-2-cyanoacrylate	137-05-3	0.2	0.9	-	-	-	3	
Methylcyclohexane	108-87-2	400	1610	-	-	-	-	
Methylcyclohexanol	25639-42-3	50	234	-	-	-	3	
o-Methylcyclohexanone	583-60-8	50	229	-	75	344	1	
2-Methylcyclopentadienyl manganese tricarbonyl, as Mn	12108-13-3	-	0.2	-	-	-	1	
Methyl demeton (Demeton-methyl)	8022-00-2	-	0.5	-	-	-	1	
Methylene bisphenyl isocyanate (Diphenylmethane-4,4'-diisocyanate; MDI)	101-68-8	0.005	0.05	-	-	-	-	
Methylene chloride (Dichloromethane)	75-09-2	50	174	-	-	-	-	
4,4'-Methylenebis(2-chloroaniline) (MBOCA)	101-14-4	0.01	0.1	-	-	-	1	
Methylenebis(4-cyclohexylisocyanate)	5124-30-1	0.005	0.05	-	-	-	-	
4,4'-Methylene dianiline (4,4'-Diaminodiphenylmethane)	101-77-9	0.1	0.8	-	-	-	1	
Methyl ethyl ketone (MEK; 2-Butanone)	78-93-3	200	590	-	300	885	-	
Methyl ethyl ketone peroxide	1338-23-4	-	-	-	(c) 0.2	(c) 1.4	-	
Methyl formate (Formic acid, methyl ester)	107-31-3	100	246	-	150	368	3	

Substance	CAS number	8-hour occupational exposure limit			15-minute or ceiling (c) occupational exposure limit		Substance interaction 1, 2, 3	Carcinogenicity A1, A2
		ppm	mg/m ³	f/cc	ppm	mg/m ³		
5-Methyl-3-heptanone (Ethyl amyl ketone)	541-85-5	25	131	-	-	-	-	
Methyl hydrazine	60-34-4	0.01	0.02	-	-	-	1	
Methyl iodide	74-88-4	2	12	-	-	-	1	
Methyl isoamyl ketone	110-12-3	50	234	-	-	-	-	
Methyl isobutyl carbinol (Methyl amyl alcohol)	108-11-2	25	104	-	40	167	1	
Methyl isobutyl ketone (Hexone)	108-10-1	50	205	-	75	307	-	
Methyl isocyanate	624-83-9	0.02	0.05	-	-	-	1,3	
Methyl isopropyl ketone	563-80-4	200	705	-	-	-	3	
Methyl mercaptan (Methanethiol)	74-93-1	0.5	1	-	-	-	-	
Methyl mercury, as Hg (mercury, alkyl compounds)	22967-92-6	-	0.01	-	-	0.03	1	
Methyl methacrylate	80-62-6	50	205	-	100	410	-	
Methyl parathion	298-00-0	-	0.2	-	-	-	1	
2-Methylpentane (all isomers except n-hexane, isohexane) (hexane)	107-83-5	500	1760	-	1000	3500	-	
3-Methylpentane (all isomers except n-hexane) (hexane)	96-14-0	500	1760	-	1000	3500	-	
4-Methyl-2-pentanol (Methyl amyl alcohol)	108-11-2	25	104	-	40	167	1	
Methyl propyl ketone (2-Pentanone)	107-87-9	200	705	-	250	881	-	
Methyl silicate	681-84-5	1	6	-	-	-	-	
α-Methyl styrene	98-83-9	50	242	-	100	483	-	
Methyl styrene (all isomers) (Vinyl toluene, α-methyl styrene)	25013-15-4 98-83-9 1319-73-9	50	242	-	100	483	-	
N-Methyl-N,2,4,6-tetranitroaniline (Tetryl)	479-45-8	-	1.5	-	-	-	3	
Methyl vinyl ketone (3-Buten-2-one)	78-94-4	-	-	-	(c) 0.2	(c) 0.6	1	
Metribuzin	21087-64-9	-	5	-	-	-	-	
Mevinphos	7786-34-7	-	0.01	-	-	-	1	
Mica Respirable	12001-26-2	-	3	-	-	-	-	

Substance	CAS number	8-hour occupational exposure limit			15-minute or ceiling (c) occupational exposure limit		Substance interaction 1, 2, 3	Carcinogenicity A1, A2
		ppm	mg/m ³	f/cc	ppm	mg/m ³		
Molybdenum, as Mo	7439-98-7	-	0.5	-	-	-	3	
Soluble compounds, respirable		-	3	-	-	-	-	
Metal and insoluble compounds, respirable		-	10	-	-	-	-	
Metal and insoluble compounds, total								
Monochloroacetic acid	79-11-8	0.5	1.9	-	-	-	1,3	
Monochlorobenzene (Chlorobenzene)	108-90-7	10	46	-	-	-	-	
Monocrotophos	6923-22-4	-	0.05	-	-	-	1	
Morpholine	110-91-8	20	71	-	-	-	1	
Naled (Dibrom)	300-76-5	-	0.1	-	-	-	1	
Naphtha (Rubber solvent)	8030-30-6	400	1590	-	-	-	-	
Naphthalene	91-20-3	10	52	-	15	79	1	
α-Naphthylthiourea (ANTU)	86-88-4	-	0.3	-	-	-	-	
Natural Rubber latex, as total proteins	9006-04-6	-	0.001	-	-	-	1	
Neon	7440-01-9	-	-	-	-	-	2	
Nickel	7440-02-0	-	1.5	-	-	-	-	A1
Elemental/metal		-	0.2	-	-	-	-	
Insoluble compounds, as Ni		-	0.1	-	-	-	-	
Soluble compounds, as Ni								
Nickel carbonyl, as Ni	13463-39-3	0.05	0.3	-	-	-	-	
Nickel subsulfide, as Ni	12035-72-2	-	0.1	-	-	-	-	A1
Nicotine	54-11-5	-	0.5	-	-	-	1	
Nitrapyrin (2-Chloro-6-trichloromethyl pyridine)	1929-82-4	-	10	-	-	20	-	
Nitric acid	7697-37-2	2	5.2	-	4	10	-	
Nitric oxide	10102-43-9	25	31	-	-	-	-	
p-Nitroaniline	100-01-6	-	3	-	-	-	1	
Nitrobenzene	98-95-3	1	5	-	-	-	1	
p-Nitrochlorobenzene	100-00-5	0.1	0.6	-	-	-	1	
Nitroethane	79-24-3	100	307	-	-	-	-	
Nitrogen	7727-37-9	-	-	-	-	-	2	
Nitrogen dioxide	10102-44-0	3	5.6	-	5	9.4	3	
Nitrogen trifluoride	7783-54-2	10	29	-	-	-	-	
Nitroglycerin (NG)	55-63-0	0.05	0.5	-	-	-	1	
Nitromethane	75-52-5	20	50	-	-	-	-	
1-Nitropropane	108-03-2	25	91	-	-	-	-	
2-Nitropropane	79-46-9	10	36	-	-	-	-	

Substance	CAS number	8-hour occupational exposure limit			15-minute or ceiling (c) occupational exposure limit		Substance interaction 1, 2, 3	Carcinogenicity A1, A2
		ppm	mg/m ³	f/cc	ppm	mg/m ³		
Nitrotoluene, all isomers	88-72-2 99-08-1 99-99-0	2	11	-	-	-	1	
Nitrotrichloromethane (Chloropicrin, trichloronitromethane)	76-06-2	0.1	0.7	-	-	-	-	
Nitrous oxide	10024-97-2	50	90	-	-	-	-	
Nonane, all isomers	111-84-2	200	1050	-	-	-	-	
Octachloronaphthalene	2234-13-1	-	0.1	-	-	0.3	1	
Octane, all isomers	111-65-9	300	1400	-	-	-	3	
Oil mist, mineral		-	5	-	-	10	-	
Osmium tetroxide, as Os	20816-12-0	0.0002	0.002	-	0.0006	0.006	3	
Oxalic acid	144-62-7	-	1	-	-	2	3	
Oxygen difluoride	7783-41-7	-	-	-	(c) 0.05	(c) 0.1	-	
Ozone	10028-15-6	0.1	0.2	-	0.3	0.6	-	
Paraffin wax fume	8002-74-2	-	2	-	-	-	-	
Paraquat Total Respirable	4685-14-7	- - -	0.5 0.1 -	- - -	- - -	- - -	- - -	
Parathion	56-38-2	-	0.05	-	-	-	1	
Particulate polycyclic aromatic hydrocarbons (PPAH; Coal tar pitch volatiles)	65996-93-2	-	0.2	-	-	-	-	A1
Particulate Not Otherwise Regulated Total Respirable		- -	10 3	- -	- -	- -	3	
PCBs, Polychlorinated biphenyls 42 percent chlorine (Chlorodiphenyl – 42 percent chlorine)	53469-21-9	-	1	-	-	-	1	
PCBs, Polychlorinated biphenyls 54 percent chlorine (Chlorodiphenyl – 54 percent chlorine)	11097-69-1	-	0.5	-	-	-	1	
Pentaborane	19624-22-7	0.005	0.01	-	0.015	0.04	-	
Pentachloronaphthalene	1321-64-8	-	0.5	-	-	-	1	
Pentachloronitrobenzene	82-68-8	-	0.5	-	-	-	-	
Pentachlorophenol	87-86-5	-	0.5	-	-	-	1	
Pentaerythritol	115-77-5	-	10	-	-	-	3	

Substance	CAS number	8-hour occupational exposure limit			15-minute or ceiling (c) occupational exposure limit		Substance interaction 1, 2, 3	Carcinogenicity A1, A2
		ppm	mg/m ³	f/cc	ppm	mg/m ³		
Pentane, all isomers	78-78-4 109-66-0 463-82-1	600	1770	-	-	-	-	
2-Pentanone (Methyl propyl ketone)	107-87-9	200	705	-	250	881	-	
1-Pentyl acetate (n-Amyl acetate)	628-63-7	50	266	-	100	532	3	
2-Pentyl acetate (sec-Amyl acetate)	626-38-0	50	266	-	100	532	3	
Perchloroethylene (Tetrachloroethylene)	127-18-4	25	170	-	100	678	-	
Perchloromethyl mercaptan	594-42-3	0.1	0.8	-	-	-	3	
Perchloryl fluoride	7616-94-6	3	13	-	6	25	-	
Perfluorobutyl ethylene	19430-93-4	100	1010	-	-	-	-	
Perfluoroisobutylene	382-21-8	-	-	-	(c) 0.01	(c) 0.08	-	
Persulphates								
Ammonium persulphate	7727-54-0	-	0.1	-	-	-	3	
Potassium persulphate	7727-21-1	-	0.1	-	-	-	3	
Sodium persulphate	7775-27-1	-	0.1	-	-	-	3	
Phenacyl chloride (2-Chloroacetophenone)	532-27-4	0.05	0.3	-	-	-	3	
Phenol	108-95-2	5	19	-	-	-	1	
Phenothiazine	92-84-2	-	5	-	-	-	1	
o-Phenylenediamine	95-54-5	-	0.1	-	-	-	-	
m-Phenylenediamine	108-45-2	-	0.1	-	-	-	-	
p-Phenylenediamine	106-50-3	-	0.1	-	-	-	-	
Phenyl ether, vapour	101-84-8	1	7	-	2	14	-	
Phenylethylene (Styrene, monomer)	100-42-5	20	85	-	40	170	-	
Phenyl glycidyl ether (PGE)	122-60-1	0.1	0.6	-	-	-	1	
Phenylhydrazine	100-63-0	0.1	0.4	-	-	-	1	
Phenyl mercaptan	108-98-5	0.1	0.5	-	-	-	1	
Phenylphosphine	638-21-1	-	-	-	(c) 0.05	(c) 0.2	-	
Phorate	298-02-2	-	0.05	-	-	-	1	
Phosgene (Carbonyl chloride)	75-44-5	0.1	0.4	-	-	-	-	
Phosphine	7803-51-2	0.3	0.4	-	1	1.4	-	
Phosphoric acid	7664-38-2	-	1	-	-	3	3	
Phosphorous (yellow)	7723-14-0	-	0.1	-	-	-	-	
Phosphorus oxychloride	10025-87-3	0.1	0.6	-	-	-	3	
Phosphorus pentachloride	10026-13-8	0.1	0.9	-	-	-	3	
Phosphorus pentasulphide	1314-80-3	-	1	-	-	3	3	

Substance	CAS number	8-hour occupational exposure limit			15-minute or ceiling (c) occupational exposure limit		Substance interaction 1, 2, 3	Carcinogenicity A1, A2
		ppm	mg/m ³	f/cc	ppm	mg/m ³		
Phosphorus trichloride	7719-12-2	0.2	1.1	-	0.5	2.8	3	
Phthalic anhydride	85-44-9	1	6.1	-	-	-	-	
m-Phthalodinitrile	626-17-5	-	5	-	-	-	3	
Picloram	1918-02-1	-	10	-	-	-	-	
Picric acid (2,4,6-Trinitrophenol)	88-89-1	-	0.1	-	-	-	-	
Pindone (2-Pivalyl-1,3-indandione)	83-26-1	-	0.1	-	-	-	-	
Piperazine dihydrochloride	142-64-3	-	5	-	-	-	-	
2-Pivalyl-1,3-indandione (Pindone)	83-26-1	-	0.1	-	-	-	-	
Plaster of Paris (Calcium sulfate; Gypsum)	26499-65-0	-	10	-	-	-	-	
Platinum	7440-06-4	-	1	-	-	-	-	
Metal		-	0.002	-	-	-	-	
Soluble salts, as Pt		-		-	-	-	-	
Polymethylene polyphenyl isocyanate (PAPI)	9016-87-9	0.005	0.07	-	-	-	-	
Portland cement	65997-15-1	-	10	-	-	-	-	
Potassium hydroxide	1310-58-3	-	-	-	-	(c) 2	3	
Potassium persulfate (Persulfates)	7727-21-1	-	0.1	-	-	-	3	
Propane	74-98-6	1000	-	-	-	-	-	
n-Propanol (n-Propyl alcohol)	71-23-8	200	492	-	400	984	3	
2-Propanol (Isopropyl alcohol, isopropanol)	67-63-0	200	492	-	400	984	-	
Propargyl alcohol	107-19-7	1	2.3	-	-	-	1	
β-Propiolactone	57-57-8	0.5	1.5	-	-	-	-	
Propionaldehyde	123-38-6	20	48	-	-	-	3	
Propionic acid	79-09-4	10	30	-	-	-	3	
Propoxur	114-26-1	-	0.5	-	-	-	-	
n-Propyl acetate	109-60-4	200	835	-	250	1040	3	
n-Propyl alcohol (n-Propanol)	71-23-8	200	492	-	400	984	3	
Propylene	115-07-1	500	860	-	-	-	-	
Propylene dichloride (1,2-Dichloropropane)	78-87-5	10	46	-	-	-	-	
Propylene glycol dinitrate	6423-43-4	0.05	0.3	-	-	-	1	
Propylene glycol monomethyl ether	107-98-2	100	369	-	150	553	-	
Propyleneimine (2-Methylaziridine)	75-55-8	2	4.7	-	-	-	1,3	
Propylene oxide (1,2-Epoxypropane)	75-56-9	2	4.7	-	-	-	-	

Substance	CAS number	8-hour occupational exposure limit			15-minute or ceiling (c) occupational exposure limit		Substance interaction 1, 2, 3	Carcinogenicity A1, A2
		ppm	mg/m ³	f/cc	ppm	mg/m ³		
n-Propyl nitrate	627-13-4	25	107	-	40	172	-	
Propyne (Methyl acetylene)	74-99-7	1000	1640	-	-	-	-	
Pyrethrum	8003-34-7	-	5	-	-	-	-	
Pyridine	110-86-1	1	3.2	-	-	-	-	
Pyrocatechol (Catechol)	120-80-9	5	23	-	-	-	1	
Quartz, Respirable particulate	14808-60-7	-	0.025	-	-	-	-	A2
Quinone	106-51-4	0.1	0.4	-	-	-	-	
RCF (Refractory Ceramic Fibres)	-	-	-	0.2	-	-	-	A2
RDX (Cyclonite)	121-82-4	-	0.5	-	-	-	1	
Refractory Ceramic Fibres (RCF)	-	-	-	0.2	-	-	-	A2
Resorcinol	108-46-3	10	45	-	20	90	3	
Rhodium, as Rh	7440-16-6	-	1	-	-	-	3	
Metal and Insoluble compounds, Soluble compounds		-	0.01	-	-	-	-	
Rock Wool Fibres		-	-	1	-	-	-	
Ronnel	299-84-3	-	5	-	-	-	-	
Rotenone (commercial)	83-79-4	-	5	-	-	-	-	
Rubber solvent (Naphtha)	8030-30-6	400	1590	-	-	-	-	
Selenium and compounds, as Se	7782-49-2	-	0.2	-	-	-	3	
Selenium hexafluoride	7783-79-1	0.05	0.4	-	-	-	-	
Sesone (Sodium-2-4-dichlorophenoxyethyl sulphate)	136-78-7	-	10	-	-	-	3	
Silane (Silicon tetrahydride)	7803-62-5	5	6.6	-	-	-	3	
Silica-Crystalline, Respirable particulate								
Cristobalite	14464-46-1	-	0.025	-	-	-	-	A2
Quartz	14808-60-7	-	0.025	-	-	-	-	A2
Silicic acid, tetraethyl ester (Ethyl silicate)	78-10-4	10	85	-	-	-	-	
Silicon carbide, nonfibrous	409-21-2	-	10	-	-	-	3	
Total particulate		-	3	-	-	-	3	
Respirable particulate		-	3	-	-	-	3	
Silicon carbide, fibrous (including whiskers)	409-21-2	-	-	0.1	-	-	-	A2
Silicon tetrahydride (Silane)	7803-62-5	5	6.6	-	-	-	3	

Substance	CAS number	8-hour occupational exposure limit			15-minute or ceiling (c) occupational exposure limit		Substance interaction 1, 2, 3	Carcinogenicity A1, A2
		ppm	mg/m ³	f/cc	ppm	mg/m ³		
Silver Metal Soluble compounds, as Ag	7440-22-4	-	0.1	-	-	-	-	
		-	0.01	-	-	-	-	
Slag Wool Fibres		-	-	1	-	-	-	
Soapstone Total (no asbestos and less than 1% crystalline silica) Respirable		-	6	-	-	-	3	
		-	3	-	-	-	3	
Sodium azide As Sodium azide As Hydrazoic acid vapour	26628-22-8	-	-	-	-	(c) 0.29	-	
		-	-	-	(c) 0.11	0.3	-	
Sodium bisulfite	7631-90-5	-	5	-	-	-	3	
Sodium-2,4-dichlorophenoxyethyl sulfate (Sesone)	136-78-7	-	10	-	-	-	3	
Sodium fluoroacetate	62-74-8	-	0.05	-	-	-	1	
Sodium hydroxide	1310-73-2	-	-	-	-	(c) 2	3	
Sodium metabisulfite	7681-57-4	-	5	-	-	-	3	
Sodium persulfate (Persulfates)	7775-27-1	-	0.1	-	-	-	3	
Starch	9005-25-8	-	10	-	-	-	-	
Stearates, excludes stearates of toxic metals		-	10	-	-	-	3	
Stibine (Antimony hydride)	7803-52-3	0.1	0.5		-	-	-	
Stoddard solvent	8052-41-3	100	572	-	-	-	-	
Strontium chromate, as Cr	7789-06-2	-	0.0005	-	-	-	-	A2
Strychnine	57-24-9	-	0.15	-	-	-	-	
Styrene, monomer (Phenylethylene; Vinyl benzene)	100-42-5	20	85	-	40	170	-	
Subtilisins (as 100 percent pure crystalline enzyme)	1395-21-7 9014-01-1	-	-	-	-	(c) 0.00006	-	
Sucrose	57-50-1	-	10	-	-	-	-	
Sulfometuron methyl	74222-97-2	-	5	-	-	-	-	
Sulfotep (TEDP)	3689-24-5	-	0.1	-	-	-	1	
Sulphur	7704-34-9 63705-05-5	-	10	-	-	-	-	
Sulphur dioxide	7446-09-5	2	5.2	-	5	13	3	
Sulphur hexafluoride	2551-62-4	1000	5970	-	-	-	-	
Sulphuric acid	7664-93-9	-	1	-	-	3	-	A2

Substance	CAS number	8-hour occupational exposure limit			15-minute or ceiling (c) occupational exposure limit		Substance interaction 1, 2, 3	Carcinogenicity A1, A2
		ppm	mg/m ³	f/cc	ppm	mg/m ³		
Sulphur monochloride	10025-67-9	-	-	-	(c) 1	(c) 5.5	-	
Sulphur pentafluoride	5714-22-7	-	-	-	(c) 0.01	(c) 0.1	3	
Sulphur tetrafluoride	7783-60-0	-	-	-	(c) 0.1	(c) 0.4	-	
Sulphuryl fluoride	2699-79-8	5	21	-	10	42	-	
Sulprofos	35400-43-2	-	1	-	-	-	-	
Synthetic Vitreous Fibres:								
Glass fibres, continuous filament		-	-	1	-	-	3	-
Glass fibres, continuous filament, total particulate		-	5	-	-	-	3	-
Glass fibres, special purpose		-	-	1	-	-	-	-
Glass wool fibres		-	-	1	-	-	-	-
Refractory ceramic fibres (RCF)		-	-	0.2	-	-	-	A2
Rock wool fibres		-	-	1	-	-	-	-
Slag wool fibres		-	-	1	-	-	-	-
Systox ® (Demeton)	8065-48-3	-	0.05	-	-	-	1	
2,4,5-T (2,4,5-Trichlorophenoxyacetic acid)	93-76-5	-	10	-	-	-	-	
Talc Respirable particulate containing no asbestos fibres	14807-96-6	-	2	-	-	-	-	
Tantalum metal and oxide dusts, as Ta	7440-25-7 1314-61-0	-	5	-	-	-	3	
TEDP (Sulfotep)	3689-24-5	-	0.1	-	-	-	1	
Tellurium & compounds, except hydrogen telluride, as Te	13494-80-9	-	0.1	-	-	-	-	
Tellurium hexafluoride	7783-80-4	0.02	0.2	-	-	-	3	
Temephos	3383-96-8	-	1	-	-	-	1	
TEPP (Tetraethyl pyrophosphate)	107-49-3	-	0.05	-	-	-	1	
Terbufos	13071-79-9	-	0.01	-	-	-	1	
Terephthalic acid	100-21-0	-	10	-	-	-	-	
Terphenyls	26140-60-3	-	-	-	-	(c) 5	3	
1,1,2,2-Tetrabromoethane (Acetylene tetrabromide)	79-27-6	0.1	1.4	-	-	-	-	
1,1,1,2-Tetrachloro-2,2-difluoroethane	76-11-9	500	4170	-	-	-	-	
1,1,2,2-Tetrachloro-1,2-difluoroethane	76-12-0	500	4170	-	-	-	-	

Substance	CAS number	8-hour occupational exposure limit			15-minute or ceiling (c) occupational exposure limit		Substance interaction 1, 2, 3	Carcinogenicity A1, A2
		ppm	mg/m ³	f/cc	ppm	mg/m ³		
1,1,2,2-Tetrachloroethane	79-34-5	1	6.9	-	-	-	1	
Tetrachloroethylene (Perchloroethylene)	127-18-4	25	170	-	100	678	-	
Tetrachloromethane (Carbon tetrachloride)	56-23-5	5	31	-	10	63	1	A2
Tetrachloronaphthalene	1335-88-2	-	2	-	-	-	-	
Tetraethyl lead, as Pb	78-00-2	-	0.1	-	-	-	1	
Tetraethyl pyrophosphate (TEPP)	107-49-3	-	0.05	-	-	-	1	
Tetrafluoroethylene	116-14-3	2	8.2	-	-	-	-	
Tetrahydrofuran	109-99-9	50	147	-	100	295	1	
Tetrakis (hydroxymethyl) phosphonium salts --Tetrakis (hydroxymethyl) phosphonium chloride	124-64-1	-	2	-	-	-	3	
--Tetrakis (hydroxymethyl) phosphonium sulfate	55566-30-8	-	2	-	-	-	3	
Tetramethyl lead, as Pb	75-74-1	-	0.15	-	-	-	1	
Tetramethyl succinonitrile	3333-52-6	0.5	2.8	-	-	-	1	
Tetranitromethane	509-14-8	0.005	0.04	-	-	-	3	
Tetryl (2,4,6-Trinitrophenylmethyl nitramine)	479-45-8	-	1.5	-	-	-	3	
Thallium, elemental, and soluble compounds, as Tl	7440-28-0	-	0.1	-	-	-	1	
4,4'-Thiobis (6-tert-butyl-m-cresol)	96-69-5	-	10	-	-	-	-	
Thioglycolic acid	68-11-1	1	3.8	-	-	-	1,3	
Thionyl chloride	7719-09-7	-	-	-	(c) 1	(c) 4.9	3	
Thiram	137-26-8	-	1	-	-	-	-	
Tin, as Sn Metal	7440-31-5	-	2	-	-	-	-	
Oxide and inorganic compounds except tin hydride		-	2	-	-	-	-	
Organic compounds		-	0.1	-	-	0.2	1	
Titanium dioxide	13463-67-7	-	10	-	-	-	3	
Toluene (Toluol)	108-88-3	50	188	-	-	-	1	
Toluene-2,4 or 2,6-diisocyanate (or as mixture) (TDI)	584-84-9 91-08-7	0.005	0.04	-	(c) 0.02	(c) 0.1	-	
o-Toluidine	95-53-4	2	8.8	-	-	-	1	
m-Toluidine	108-44-1	2	8.8	-	-	-	1	

Substance	CAS number	8-hour occupational exposure limit			15-minute or ceiling (c) occupational exposure limit		Substance interaction 1, 2, 3	Carcinogenicity A1, A2
		ppm	mg/m ³	f/cc	ppm	mg/m ³		
p-Toluidine	106-49-0	2	8.8	-	-	-	1	
Toluol (Toluene)	108-88-3	50	188	-	-	-	1	
Toxaphene (Chlorinated camphene)	8001-35-2	-	0.5	-	-	1	1	
Tremolite (Asbestos)	1332-21-4	-	-	0.1	-	-	-	A1
Tribromomethane (Bromoform)	75-25-2	0.5	5.2	-	-	-	1	
Tributyl phosphate	126-73-8	0.2	2.2	-	-	-	-	
Trichloroacetic acid	76-03-9	1	6.7	-	-	-	3	
1,2,4-Trichlorobenzene	120-82-1	-	-	-	(c) 5	(c) 37	3	
1,1,1-Trichloroethane (Methyl chloroform)	71-55-6	350	1910	-	450	2460	-	
1,1,2-Trichloroethane	79-00-5	10	55	-	-	-	1	
Trichloroethylene	79-01-6	50	269	-	100	537	-	
Trichlorofluoromethane (Fluorotrichloromethane)	75-69-4	-	-	-	(c) 1000	(c) 5620	-	
Trichloromethane (Chloroform)	67-66-3	10	49	-	-	-	-	
Trichloronaphthalene	1321-65-9	-	5	-	-	-	1	
Trichloronitromethane (Chloropicrin)	76-06-2	0.1	0.7	-	-	-	-	
2,4,5-Trichlorophenoxy acetic acid (2,4,5-T)	93-76-5	-	10	-	-	-	-	
1,2,3-Trichloropropane	96-18-4	10	60	-	-	-	1	
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	1000	7660	-	1250	9580	-	
Trichlorphon	52-68-6	-	1	-	-	-	-	
Tricyclohexyltin hydroxide (Cyhexatin)	13121-70-5	-	5	-	-	-	-	
Triethanolamine	102-71-6	-	5	-	-	-	3	
Triethylamine	121-44-8	1	4.1	-	3	12	1	
Trifluorobromomethane (Bromotrifluoromethane)	75-63-8	1000	6090	-	-	-	-	
1,1,1-Trifluoro-2,2-dichloroethane (HCFC-123)	306-83-2	50	310	-	-	-	-	
1,3,5-Triglycidyl-s-triazinetriene	2451-62-9	-	0.05	-	-	-	-	
Trimellitic anhydride	552-30-7	-	-	-	-	(c) 0.04	-	
Trimethylamine	75-50-3	5	12	-	15	36	3	
Trimethyl benzene (mixed isomers)	25551-13-7	25	123	-	-	-	-	
Trimethyl phosphite	121-45-9	2	10	-	-	-	-	
2,4,6-Trinitrophenol (Picric acid)	88-89-1	-	0.1	-	-	-	-	

Substance	CAS number	8-hour occupational exposure limit			15-minute or ceiling (c) occupational exposure limit		Substance interaction 1, 2, 3	Carcinogenicity A1, A2
		ppm	mg/m ³	f/cc	ppm	mg/m ³		
2,4,6-Trinitrophenyl-methylnitramine (Tetryl)	479-45-8	-	1.5	-	-	-	3	
2,4,6-Trinitrotoluene (TNT)	118-96-7	-	0.1	-	-	-	1	
Triorthocresyl phosphate	78-30-8	-	0.1	-	-	-	1	
Triphenyl amine	603-34-9	-	5	-	-	-	3	
Triphenyl phosphate	115-86-6	-	3	-	-	-	-	
Tungsten, as W	7440-33-7	-	5	-	-	10	3	
Metal and insoluble compounds		-	1	-	-	3	-	
Soluble compounds		-		-	-			
Turpentine and selected monoterpenes	8006-64-2 80-56-8 127-91-3 13466-78-9	20	111	-	-	-	3	
Uranium (natural), soluble & insoluble compounds, as U	7440-61-1	-	0.2	-	-	0.6	-	A1
n-Valeraldehyde	110-62-3	50	176	-	-	-	3	
Vanadium pentoxide, as V₂O₅ Respirable particulate or fume	1314-62-1	-	0.05	-	-	-	-	
Vinyl acetate	108-05-4	10	35	-	15	53	-	
Vinyl benzene (Styrene, monomer)	100-42-5	20	85	-	40	170	-	
Vinyl bromide	593-60-2	0.5	2.2	-	-	-	-	A2
Vinyl chloride (Chloroethylene)	75-01-4	1	2.6	-	-	-	-	A1
Vinyl cyanide (Acrylonitrile)	107-13-1	2	4.3	-	-	-	1	
4-Vinyl cyclohexene	100-40-3	0.1	0.4	-	-	-	-	
Vinyl cyclohexene dioxide	106-87-6	0.1	0.6	-	-	-	1	
Vinyl fluoride	75-02-5	1	1.9	-	-	-	-	A2
Vinylidene chloride (1,1-Dichloroethylene)	75-35-4	5	20	-	-	-	-	
Vinylidene fluoride (1,1-Difluoroethylene)	75-38-7	500	1310	-	-	-	-	
N-Vinyl-2-pyrrolidone	88-12-0	0.05	0.2	-	-	-	-	
Vinyl toluene (Methyl styrene, all isomers)	25013-15-4	50	242	-	100	483	-	
VM & P Naphtha	8032-32-4	300	1400	-	-	-	-	
Warfarin	81-81-2	-	0.1	-	-	-	-	

Substance	CAS number	8-hour occupational exposure limit			15-minute or ceiling (c) occupational exposure limit		Substance interaction 1, 2, 3	Carcinogenicity A1, A2
		ppm	mg/m ³	f/cc	ppm	mg/m ³		
Wood Dust (Total) Softwoods and hardwoods except western red cedar Western red cedar		-	5	-	-	-	-	A1 – Oak, beech A2 – Birch, mahogany, teak, walnut
Xylene (o-,m-,p-isomers)	1330-20-7 95-47-6 108-38-3 106-42-3	100	434	-	150	651	-	
m-Xylene α,α'-diamine	1477-55-0	-	-	-	-	(c) 0.1	1,3	
Xylidine (mixed isomers)	1300-73-8	0.5	2.5	-	-	-	1	
Yttrium metal & compounds, as Y	7440-65-5	-	1	-	-	-	-	
Zinc beryllium silicate, as Be	39413-47-3	-	0.002	-	-	0.01	-	A1
Zinc chloride fume	7646-85-7	-	1	-	-	2	3	
Zinc chromates, as Cr	13530-65-9 11103-86-9 37300-23-5	-	0.01	-	-	-	-	A1
Zinc oxide, respirable	1314-13-2	-	2	-	-	10	-	
Zinc stearate	557-05-1	-	10	-	-	-	3	
Zirconium and compounds, as Zr	7440-67-7	-	5	-	-	10	-	

Schedule 2 First Aid

Table 1 Low hazard work

“Low hazard work” means work at

- (a) administrative sites where the work performed is clerical or administrative in nature;
- (b) dispersal sites
 - (i) where a worker is based,
 - (ii) where a worker is required to report for instruction, and
 - (iii) from which a worker is transported to a work site where the work is performed

Table 2 Medium hazard work

“Medium hazard work” means any work that is neither low hazard work nor high hazard work.

Table 3 High hazard work

“High hazard work” means work involving

- (a) construction or demolition, including
 - (i) industrial and commercial process facilities,
 - (ii) pipelines and related gas or oil transmission facilities,
 - (iii) commercial, residential and industrial buildings,
 - (iv) roads, highways, bridges and related installations,
 - (v) sewage gathering systems,
 - (vi) utility installations, and
 - (vii) water distribution systems;
- (b) operation and maintenance of
 - (i) food packing or processing plants,
 - (ii) beverage processing plants,
 - (iii) electrical generation and distribution systems,
 - (iv) foundries,
 - (v) industrial heavy equipment repair and service facilities,
 - (vi) sawmills and lumber processing facilities,
 - (vii) machine shops,
 - (viii) metal fabrication shops,
 - (ix) gas, oil and chemical process plants,
 - (x) steel and other base metal processing plants, and
 - (xi) industrial process facilities not elsewhere specified;
- (c) woodlands operations;
- (d) gas and oil well drilling and servicing operations;
- (e) mining and quarrying operations;
- (f) seismic operations;
- (g) detonation of explosives.

Table 4

First aid room requirements

[See section 178]

- (1) If an employer is required to provide a first aid room by Part 11, the employer must ensure that it is
- (a) located near the work area or areas it is to serve,
 - (b) easily accessible to workers at all times,
 - (c) able to accommodate a stretcher,
 - (d) close to bathroom facilities,
 - (e) of adequate size,
 - (f) kept clean and sanitary,
 - (g) provided with adequate lighting, ventilation and heating,
 - (h) designated as non-smoking,
 - (i) under the supervision of an advanced first aider or an advanced care paramedic,
 - (j) clearly identified as a first aid facility and appropriately marked with how and where to access the first aider,
 - (k) used only to administer first aid or health related services, and
 - (l) equipped with
 - (i) a communication system,
 - (ii) a permanently installed sink with hot and cold potable running water,
 - (iii) a cot or bed with a moisture protected mattress and 2 pillows,
 - (iv) 6 towels and 3 blankets,
 - (v) eye wash equipment,
 - (vi) a shower, or is close to a shower facility if it is a work site described in section 24, and
 - (vii) a CSA Standard Z1220-17 Type 2 Basic Large First Aid Kit.
- (2) A first aid room must contain the following:
- (a) the supplies of a CSA Standard Z1220-17 Type 2 Basic Medium First Aid Kit;
 - (b) space blanket;
 - (c) hot and cold packs;
 - (d) spine board and straps;
 - (e) adjustable cervical collar or set of different sized cervical collars;
 - (f) stretcher;
 - (g) splint set;
 - (h) waterproof waste bag;
 - (i) sphygmomanometer (blood pressure cuff);
 - (j) stethoscope;

- (k) disposable drinking cups;
- (l) portable oxygen therapy unit consisting of a cylinder(s) containing compressed oxygen, a pressure regulator, pressure gauge, a flow meter and oxygen delivery equipment;
- (m) flashlight;
- (n) bandage scissors.

Table 5
First aid requirements for low hazard work
 [See sections 178, 181(1)]

Number of workers at work site per shift	Close work site (up to 20 minutes)	Distant work site (20 – 40 minutes)	Isolated work site (more than 40 minutes)
1	CSA Standard Z1220-17 Type 1 Personal First Aid Kit	CSA Standard Z1220-17 Type 1 Personal First Aid Kit	CSA Standard Z1220-17 Type 1 Personal First Aid Kit
2 – 9	1 Basic First Aider CSA Standard Z1220-17 Type 2 Basic Small First Aid Kit	1 Basic First Aider CSA Standard Z1220-17 Type 2 Basic Small First Aid Kit	1 Intermediate First Aider CSA Standard Z1220-17 Type 2 Basic Small First Aid Kit
10 – 49	1 Basic First Aider CSA Standard Z1220-17 Type 2 Basic Medium First Aid Kit	1 Basic First Aider CSA Standard Z1220-17 Type 2 Basic Medium First Aid Kit	1 Intermediate First Aider CSA Standard Z1220-17 Type 2 Basic Medium First Aid Kit
50 – 99	1 Basic First Aider 1 Intermediate First Aider CSA Standard Z1220-17 Type 2 Basic Large First Aid Kit	1 Basic First Aider 1 Intermediate First Aider CSA Standard Z1220-17 Type 2 Basic Large First Aid Kit	2 Intermediate First Aiders CSA Standard Z1220-17 Type 2 Basic Large First Aid Kit
100 – 199	1 Basic First Aider 2 Intermediate First Aiders CSA Standard Z1220-17 Type 2 Basic Large First Aid Kit Designated area for first aid services	1 Basic First Aider 2 Intermediate First Aiders CSA Standard Z1220-17 Type 2 Basic Large First Aid Kit 3 blankets, stretcher, splints Designated area for first aid services	3 Intermediate First Aiders CSA Standard Z1220-17 Type 2 Basic Large First Aid Kit 3 blankets, stretcher, splints Designated area for first aid services

Number of workers at work site per shift	Close work site (up to 20 minutes)	Distant work site (20 – 40 minutes)	Isolated work site (more than 40 minutes)
200 or more	1 Basic First Aider 2 Intermediate First Aiders Plus 1 Intermediate First Aider for each additional increment of 1 to 100 workers CSA Standard Z1220-17 Type 2 Basic Large First Aid Kit Designated area for first aid services	1 Basic First Aider 2 Intermediate First Aiders Plus 1 Intermediate First Aider for each additional increment of 1 to 100 workers CSA Standard Z1220-17 Type 2 Basic Large First Aid Kit 3 blankets, stretcher, splints Designated area for first aid services	3 Intermediate First Aiders Plus 1 Intermediate First Aider for each additional increment of 1 to 100 workers CSA Standard Z1220-17 Type 2 Basic Large First Aid Kit 3 blankets, stretcher, splints Designated area for first aid services

Note: Number of first aiders indicated is for a shift at all times.

Table 6
First aid requirements for medium hazard work

[See sections 178, 181(1)]

Number of workers at work site per shift	Close work site (up to 20 minutes)	Distant work site (20 – 40 minutes)	Isolated work site (more than 40 minutes)
1	CSA Standard Z1220-17 Type 1 Personal First Aid Kit	CSA Standard Z1220-17 Type 1 Personal First Aid Kit	CSA Standard Z1220-17 Type 1 Personal First Aid Kit
2 – 9	1 Basic First Aider CSA Standard Z1220-17 Type 2 Basic Small First Aid Kit	1 Intermediate First Aider CSA Standard Z1220-17 Type 2 Basic Small First Aid Kit 3 blankets	1 Intermediate First Aider CSA Standard Z1220-17 Type 2 Basic Small First Aid Kit 3 blankets
10 – 19	1 Basic First Aider 1 Intermediate First Aider CSA Standard Z1220-17 Type 2 Basic Small First Aid Kit	1 Basic First Aider 1 Intermediate First Aider CSA Standard Z1220-17 Type 2 Basic Small First Aid Kit 3 blankets	2 Intermediate First Aiders CSA Standard Z1220-17 Type 2 Basic Small First Aid Kit 3 blankets
20 – 49	1 Basic First Aider 1 Intermediate First Aider CSA Standard Z1220-17 Type 2 Basic Medium First Aid Kit	1 Basic First Aider 1 Intermediate First Aider CSA Standard Z1220-17 Type 2 Basic Medium First Aid Kit 3 blankets	2 Intermediate First Aiders CSA Standard Z1220-17 Type 2 Basic Medium First Aid Kit 3 blankets
50 – 99	2 Basic First Aiders 1 Intermediate First Aider CSA Standard Z1220-17 Type 2 Basic Large First Aid Kit	2 Basic First Aiders 1 Intermediate First Aider CSA Standard Z1220-17 Type 2 Basic Large First Aid Kit 3 blankets	3 Intermediate First Aiders CSA Standard Z1220-17 Type 2 Basic Large First Aid Kit 3 blankets

Number of workers at work site per shift	Close work site (up to 20 minutes)	Distant work site (20 – 40 minutes)	Isolated work site (more than 40 minutes)
100 – 199	2 Basic First Aiders 2 Intermediate First Aiders CSA Standard Z1220-17 Type 2 Basic Large First Aid Kit Designated area for first aid services	2 Basic First Aiders 2 Intermediate First Aiders CSA Standard Z1220-17 Type 2 Basic Large First Aid Kit 3 blankets, stretcher, splints Designated area for first aid services	3 Intermediate First Aiders 1 Advanced First Aider CSA Standard Z1220-17 Type 2 Basic Large First Aid Kit 3 blankets, stretcher, splints Designated area for first aid services
200 or more	2 Basic First Aiders 2 Intermediate First Aiders 1 nurse who holds an advanced first aid certificate or 1 advanced care paramedic Plus 1 Intermediate First Aider for each additional increment of 1 to 100 workers First Aid Room for workers	2 Basic First Aiders 2 Intermediate First Aiders 1 nurse who holds an advanced first aid certificate or 1 advanced care paramedic Plus 1 Intermediate First Aider for each additional increment of 1 to 100 workers First Aid Room for workers	4 Intermediate First Aiders 1 nurse who holds an advanced first aid certificate or 1 advanced care paramedic Plus 1 Intermediate First Aider for each additional increment of 1 to 100 workers First Aid Room for workers

Table 7
First aid requirements for high hazard work

[See sections 178, 181(1)]

Number of workers at work site per shift	Close work site (up to 20 minutes)	Distant work site (20 – 40 minutes)	Isolated work site (more than 40 minutes)
1	CSA Standard Z1220-17 Type 1 Personal First Aid Kit	CSA Standard Z1220-17 Type 1 Personal First Aid Kit	CSA Standard Z1220-17 Type 1 Personal First Aid Kit
2 – 4	1 Basic First Aider CSA Standard Z1220-17 Type 3 Intermediate Small First Aid Kit	1 Intermediate First Aider CSA Standard Z1220-17 Type 3 Intermediate Small First Aid Kit 3 blankets	1 Intermediate First Aider CSA Standard Z1220-17 Type 3 Intermediate Small First Aid Kit 3 blankets
5 – 9	1 Basic First Aider 1 Intermediate First Aider CSA Standard Z1220-17 Type 3 Intermediate Small First Aid Kit	2 Intermediate First Aiders CSA Standard Z1220-17 Type 3 Intermediate Small First Aid Kit 3 blankets	2 Intermediate First Aiders CSA Standard Z1220-17 Type 3 Intermediate Small First Aid Kit 3 blankets
10 – 19	1 Basic First Aider 1 Intermediate First Aider CSA Standard Z1220-17 Type 3 Intermediate Small First Aid Kit 3 blankets	2 Intermediate First Aiders CSA Standard Z1220-17 Type 3 Intermediate Small First Aid Kit 3 blankets, stretcher, splints	2 Intermediate First Aiders CSA Standard Z1220-17 Type 3 Intermediate Small First Aid Kit 3 blankets, stretcher, splints
20 – 49	2 Basic First Aiders 1 Intermediate First Aider CSA Standard Z1220-17 Type 3 Intermediate Medium First Aid Kit 3 blankets	3 Intermediate First Aiders CSA Standard Z1220-17 Type 3 Intermediate Medium First Aid Kit 3 blankets, stretcher, splints	3 Intermediate First Aiders CSA Standard Z1220-17 Type 3 Intermediate Medium First Aid Kit 3 blankets, stretcher, splints

Number of workers at work site per shift	Close work site (up to 20 minutes)	Distant work site (20 – 40 minutes)	Isolated work site (more than 40 minutes)
50 – 99	2 Basic First Aiders 2 Intermediate First Aiders CSA Standard Z1220-17 Type 3 Intermediate Large First Aid Kit 3 blankets	2 Basic First Aiders 3 Intermediate First Aiders CSA Standard Z1220-17 Type 3 Intermediate Large First Aid Kit 3 blankets, stretcher, splints	4 Intermediate First Aiders 1 Advanced First Aider CSA Standard Z1220-17 Type 3 Intermediate Large First Aid Kit 3 blankets, stretcher, splints
100 – 199	2 Basic First Aiders 2 Intermediate First Aiders 1 Advanced First Aider First Aid Room for workers	4 Intermediate First Aiders 1 Advanced First Aider First Aid Room for workers	4 Intermediate First Aiders 1 Advanced First Aider First Aid Room for workers
200 or more	2 Basic First Aiders 2 Intermediate First Aiders 1 nurse who holds an advanced first aid certificate or 1 advanced care paramedic Plus 1 Intermediate First Aider for each additional increment of 1 to 100 workers First Aid Room for workers	4 Intermediate First Aiders 1 nurse who holds an advanced first aid certificate or 1 advanced care paramedic Plus 1 Intermediate First Aider for each additional increment of 1 to 100 workers First Aid Room for workers	4 Intermediate First Aiders 1 Advanced First Aider 1 nurse who holds an advanced first aid certificate or 1 advanced care paramedic Plus 1 Intermediate First Aider for each additional increment of 1 to 100 workers First Aid Room for workers

AR 191/2021 Sched 2;242/2022

Schedule 3 Noise

Table 1
Noise exposure limits
[See sections 218, 219(1)]

Exposure level (dBA)	Exposure duration
82	16 hours
83	12 hours and 41 minutes
84	10 hours and 4 minutes
85	8 hours
88	4 hours
91	2 hours
94	1 hour
97	30 minutes
100	15 minutes
103	8 minutes
106	4 minutes
109	2 minutes
112	56 seconds
115 and greater	0

Note: Exposure levels and exposure durations to be prorated if not specified

Tables 2 and 3 Repealed AR 242/2022 s189.

AR 191/2021 Sched 3;242/2022

Schedule 4 Safe Limit of Approach Distances

[See sections 225, 226]

Table 1
Safe limit of approach distances from overhead power lines for persons and equipment

Operating voltage between conductors of overhead power line	Safe limit of approach distance for persons and equipment
0 — 750 volts Insulated or polyethylene covered conductors (1)	300 millimetres
0 — 750 volts Bare, uninsulated	1.0 metre
Above 750 volts Insulated conductors (1) (2)	1.0 metre
750 volts — 40 kilovolts	3.0 metres
69 kilovolts, 72 kilovolts	3.5 metres
138 kilovolts, 144 kilovolts	4.0 metres
230 kilovolts, 260 kilovolts	5.0 metres
500 kilovolts	7.0 metres

Notes:

- (1) Conductors must be insulated or covered throughout their entire length to comply with this group.
- (2) Conductors must be manufactured to rated and tested insulation levels.

Schedule 5 Cable Clips on Wire Rope

[See section 300]

Table
Cable clip requirements for wire rope

Diameter of rope (millimetres)	Number of clips	Spacing between clips centre-to-centre (millimetres)	Torque (Newton.metres)
6	2	38	20
8	2	51	40
10	2	57	65
11	2	64	90
12	3	76	90
16	3	102	135
19	4	114	176
22	4	133	305
25	4	152	305
29	5	178	305
32	5	203	488
38	6	229	488
44	7	267	628
50	8	305	881

Schedule 6 Dimensions of Scaffold Members

Table 1
Light duty double pole scaffolds less than 6 metres in height
[See section 333(2)]

Member	Dimensions
Uprights	38 millimetres by 89 millimetres
Ledgers	2 — 21 millimetres by 140 millimetres or 1 — 21 millimetres by 184 millimetres
Ribbons	21 millimetres by 140 millimetres
Braces	21 millimetres by 140 millimetres

Table 2
Light duty double pole scaffolds 6 metres or more in height
[See section 333(2)]

Member	Dimensions
Uprights	89 millimetres by 89 millimetres
Ledgers	2 — 21 millimetres by 140 millimetres or 1 — 21 millimetres by 184 millimetres
Ribbons	21 millimetres by 140 millimetres
Braces	21 millimetres by 140 millimetres

Table 3
Heavy duty double pole scaffolds less than 6 metres in height
 [See section 333(2)]

Member	Dimensions
Uprights	38 millimetres by 140 millimetres
Ledgers	2 — 21 millimetres by 140 millimetres or 1 — 38 millimetres by 184 millimetres
Ribbons	21 millimetres by 140 millimetres
Braces	21 millimetres by 140 millimetres

Table 4
Heavy duty double pole scaffolds 6 metres or more in height
 [See section 333(2)]

Member	Dimensions
Uprights	89 millimetres by 140 millimetres
Ledgers	2 — 21 millimetres by 140 millimetres or 1 — 38 millimetres by 184 millimetres
Ribbons	21 millimetres by 140 millimetres
Braces	21 millimetres by 140 millimetres

Table 5
Half-horse scaffolds less than 3 metres in height
 [See subsection 335(2)]

Member	Dimensions
Ledgers	38 millimetres by 140 millimetres
Legs	38 millimetres by 89 millimetres
Braces	21 millimetres by 184 millimetres
Ribbons	21 millimetres by 140 millimetres
Leg spread	1 metre

Table 6
Half-horse scaffolds 3 metres to 5 metres in height
 [See subsection 335(2)]

Member	Dimensions
Ledgers	38 millimetres by 140 millimetres
Legs	38 millimetres by 140 millimetres
Braces	21 millimetres by 184 millimetres
Ribbons	21 millimetres by 140 millimetres
Leg spread	1.5 metres

Table 7
Single-pole scaffolds less than 6 metres in height
 [See section 340]

Member	Dimensions
Uprights	38 millimetres by 89 millimetres
Ledgers	2 — 21 millimetres by 140 millimetres or 1 — 21 millimetres by 184 millimetres
Ribbons	21 millimetres by 140 millimetres
Braces	21 millimetres by 140 millimetres
Wall scabs	38 millimetres by 140 millimetres

Table 8
Single-pole scaffolds 6 metres to 9 metres in height
 [See section 340]

Member	Dimensions
Uprights	89 millimetres by 89 millimetres
Ledgers	2 — 21 millimetres by 140 millimetres or 1 — 21 millimetres by 184 millimetres
Ribbons	21 millimetres by 140 millimetres
Braces	21 millimetres by 140 millimetres
Wall scabs	38 millimetres by 140 millimetres

Schedule 7
Toilets at a Work Site
[See section 357(1)]

Number of toilets required at a work site

Number of workers of that sex	Minimum number of toilets for that sex
1 — 10	1
11 — 25	2
26 — 50	3
51 — 75	4
76 — 100	5
> 100	6 plus 1 for each additional 30 workers of the sex in excess of 100

Schedule 8 Saw Blade Crack Limits

Table 1
Circular saw blade crack limits

[See sections 377(1), (2)]

Diameter of saw blade (millimetres)	Maximum length of crack (millimetres)
up — 300	13
301 — 610	25
611 — 915	38
916 — 1220	50
1221 — 1525	64
> 1525	76

Table 2
Band saw blade crack limits

[See subsections 378(1), 378(2)]

Width of band saw blade (millimetres)	Maximum length of crack (millimetres)
up — 125	1/10 of saw blade width
126 — 300	13
> 300	19

Schedule 9 Shoring Component Dimensions

[See subsections 457(1), 457(2)]

Shoring components used in excavations, trenches, tunnels and underground shafts

Soil type	Depth of excavation (metres)	Uprights		Stringers		Cross-braces			
		Minimum dimensions (millimetres)	Maximum horizontal spacing (millimetres)	Minimum dimensions (millimetres)	Maximum vertical spacing (millimetres)	Minimum dimensions (millimetres)		Maximum spacing (millimetres)	
						Width of trench		Vertical	Horizontal
Less than 1.8 metres	1.8 to 3.7 metres								
Hard and compact	1.5 to 3.0	38 x 235	1800	89 x 140	1200	89 x 89	140 x 140	1200	1800
	More than 3.0 to 4.5	38 x 235	1200	89 x 140	1200	89 x 140	140 x 140	1200	1800
	More than 4.5 to 6.0	38 x 235	10	140 x 140	1200	140 x 184	140 x 184	1200	1800
Likely to crack or crumble	1.5 to 3.0	38 x 235	1200	89 x 140	1200	89 x 140	140 x 140	1200	1800
	More than 3.0 to 4.5	38 x 235	900	140 x 140	1200	140 x 140	140 x 184	1200	1800
	More than 4.5 to 6.0	38 x 235	10	140 x 184	1200	140 x 184	140 x 184	1200	1800
Soft, sandy or loose	1.5 to 3.0	38 x 235	10	140 x 140	1200	140 x 140	140 x 184	1200	1800
	More than 3.0 to 4.5	38 x 235	10	140 x 184	1200	140 x 184	184 x 184	1200	1800
	More than 4.5 to 6.0	38 x 235	10	184 x 184	1200	140 x 184	184 x 235	1200	1800

Schedule 10 Minimum Separation Distances

Table 1
**Minimum separation distances between explosives
and fixed radiofrequency transmitters**

[See sections 503(1), (2)]

Transmitter power (watts)	Minimum separation distance (metres)
25 or less	30
26 – 50	45
51 – 100	65
101 – 250	110
251 – 500	135
501 – 1000	200
1001 – 2500	300
2501 – 5000	450
5001 – 10 000	675
10 001 – 25 000	1100
25 001 – 50 000	1500
> 50 000	By extrapolation of this data

Table 2
Minimum separation distances between explosives and
mobile radiofrequency transmitters and cellular telephones
 [See sections 503(1), (2)]

Transmitter power (watts)	Minimum separation distance at selected frequencies (metres)		
	VHF 35 — 36 MHz public use 42 — 44 MHz public use 50 — 54 MHz public use	VHF 144 — 148 MHz amateur 150.8 — 161.6 MHz public use	UHF 450 — 470 MHz public use cellular telephones above 800 MHz
5 or less	25	8	5
6 — 10	35	12	8
11 — 30	57	19	12
31 — 50	80	26	17
51 — 100	115	40	24
101 — 200	160	55	35
201 — 250	180	60	40
251 — 500	250	85	55
501 — 1000	355	120	75
1001 — 1500	435	145	95
1501 — 10 000	1115	365	240

AR 191/2021 Sched 10;242/2022

Schedule 11 Repealed AR 242/2022 s191.

Schedule 12 Radiation Exposure

Table 1
Maximum effective dose limits for ionizing radiation
[see sections 291.4 and 291.6]

Person	Exposure Period	Effective Dose Limit (mSv)
Worker, who uses or is directly involved in the use of ionizing radiation equipment or an ionizing radiation source	One year	50
	Rolling 5 calendar years	100
Worker, pregnant, who uses or is directly involved in the use of ionizing radiation equipment or an ionizing radiation source	Balance of pregnancy after informing employer	4
Worker, student undergoing a course of instruction involving the use of ionizing radiation equipment	One year	1
Worker, other	One year	1

Table 2
Maximum equivalent dose limits for ionizing radiation
[See section 291.4]

Person	Applicable Body Organ or Tissue	Exposure Period	Equivalent Dose Limit (mSv)
Worker who uses or is directly involved in the use of ionizing radiation equipment or an ionizing radiation source	Lens of the eye	One year	50
		Rolling 5 calendar years	100
	Skin	One year	500
	Hands and feet	One year	500
Worker, other	Lens of the eye	One year	15
	Skin	One year	50
	Hands and feet	One year	50

Table 3
Maximum exposure limits for laser radiation for any persons

[See section 291.4]

Type of Radiation	Maximum Exposure Limit
Laser	As set out in ANSI Standard Z136.1-2014, "American National Standard for Safe Use of Lasers" published by the American National Standards Institute

Table 4
Maximum exposure limits for radiofrequency electromagnetic fields for any persons

[See section 291.4]

Type of Radiation	Maximum Exposure Limit
Radiofrequency Electromagnetic Fields in the Range from 3 kHz to 300 GHz	As set out in Safety Code 6, (2015), "Limits of Human Exposure to Radiofrequency Electromagnetic Fields in the Frequency Range from 3kHz to 300 GHz" published by Health Canada

AR 191/2021 Sched 12;242/2022

- abrasive blasting**
respiratory protective equipment, 255
silica use, 39
- abrasive wheel** *See* grinders
- accelerators, particle** *See* particle accelerators
- acceptance**
defined, 1
- access roads**
in definition of mine site, 1
See also mines and mine sites
- Access Scaffolding for Construction Purposes (CSA),** 3, 323
- access to information** *See* confidential business information (WHMIS); information access and privacy for workers
- acetylene**
OEL, Schedule 1, Table 2
upright storage of cylinders, 171(6)
- ACP** *See* advanced care paramedic (ACP); first aid and first aiders
- Act** *See* *Occupational Health and Safety Act*
- actuated fastening tools**
defined, 1
safety precautions, 374
- Addendum to Safety Code 32: Portable, Hand-held, X-ray Tube Based Open-beam XRF Devices (Health Canada),** 291.2(b)
- adjustable lanyard for work positioning,** 148
See also lanyards
- advanced care paramedic (ACP)**
defined
in definition of first aider, 1
advanced care paramedic, 1
availability and location at work site, 181
communication with, 181
designation as first aider, 181(1)
high hazard work, 178, 181(1), Schedule 2, Tables 3 and 7
non-first aid duties, 181
See also first aid and first aiders
- advanced first aider**
defined
advanced first aider, 1
in definition of first aider, 1
availability and location, 181(2)
communication with, 181(2)
designation as first aider, 181(1)
high hazard work, 178, 181(1), Schedule 2, Tables 3 and 7
non-first aid duties, 181(2)
See also first aid and first aiders; nurse with advanced first aid certificate
- aerial devices** *See* elevating platforms and aerial devices
- A-frames, safe practices,** 75
- agricultural tractors**
rollover protective structures, 270
seatbelts and restraint systems, 271
See also powered mobile equipment
- air gouging** *See* hot work
- air line respiratory protective equipment,** 249–252
facial seal, 250
for immediate danger, 251
for no immediate danger, 252
quality of breathing air, 249
See also respiratory protective equipment
- air purifying protective equipment,** 252–253
- airborne harmful substances**
in definition of respirable particulate, 1
in definition of respiratory protective equipment, 1
in definition of restricted area, 1
OEL list, Schedule 1, Table 2
See also health assessments for exposure to asbestos, silica or coal dust; occupational exposure limit (OEL); respiratory protective equipment
- airless spray machinery, nozzle guards,** 170.1(5)–(6)
- alarm systems** *See* warning devices and alarms
- Alberta Fire Code (Alberta Municipal Affairs),** 170.1(3), 171(1)(b)
in definition of combustible liquid, 1
in definition of flash point, 1
- Alberta Human Rights Act,** 390.5(d)
- allied welding processes** *See* welding or allied process
- alloy steel chain**
makeshift rigging and welding, 304(c)
sling standard, 297
- all-terrain vehicles,** 280–282
defined, 1
headwear, 236
load and slope limitations, 282
operator's manual, 281
safe work procedures on sloping ground, 282(2)
three-wheeled vehicles, prohibition, 280
- alone, working** *See* working alone
- aluminum**
aluminum alloy ferrules, 301(2)
light metal alloys in underground mines, prohibition, 693.1
OEL, Schedule 1, Table 2

- American National Standard for Automotive Lifts — Safety Requirements for Construction, Testing, and Validation* (ANSI), 112
- American National Standard for Industrial Head Protection* (ANSI), 234, 831(1)(b), 831(2)(b)–(c), 844(c)
- American National Standard for Ladders — Portable Metal — Safety Requirements* (ANSI), 135(c)
- American National Standard for Ladders — Portable Reinforced Plastic — Safety Requirements* (ANSI), 135(d)
- American National Standard for Ladders — Wood Safety Requirements* (ANSI), 135(b)
- American National Standard for the Safe Use of Lasers* (ANSI), 1, 291.3(2), Schedule 12, Table 3
- American Society of Safety Engineers (ASSE)**, 1
- American Wire Gauge (AWG)**, 1
- ammonite shell**
exclusion in definition of quarry, 1
- analytical x-ray equipment**
in definition of designated radiation equipment, 1
certificate, 291.7
monitoring worker exposure, 291.5–291.6
standards, 291.2(d)
See also radiation exposure; x-ray equipment
- anchors**, 152–152.4
defined, 1
anchor connectors, 152.2(4)–(5)
for boom-supported work platforms and aerial devices, 156(1)
duty to use, 152.2
Flemish eye splices, 152.4
independence of anchors, 152.3
inspection by employee before use, 152.2(2)
maintenance and repair, 152.2(3)
permanent anchors, 152
personal fall arrest system, 152.1(2)
powered mobile equipment in mines, 542
rope access work, industrial, 828–829
rope access work, non-industrial, 843
temporary anchors
personal fall arrest system, 152.1(2), 152.3
travel restraint systems, 152.1(1)
wire rope sling as, 152.4
- animals, lifting of** *See* lifting and handling loads
- animals, raising and maintenance of**
application of Code, 1.1
- ankle protection** *See* footwear
- approvals**
defined
approved by a Director, 1
approved to, 1
approved training agency, 1
identifying marks on equipment, 15
See also specifications, certifications and standards
- approved training agency** *See* training agency, approved
- aprons as protective clothing**
duty to use, 228
use of, 242–243
See also personal protective equipment (PPE)
- arboriculture** *See* tree care operations
- arm protection**
duty to use, 228
personal protective equipment, 242
See also personal protective equipment (PPE)
- arsenic and arsenic compounds**
code of practice required, 26, Schedule 1, Table 1
OEL, Schedule 1, Table 2
- articulating aerial devices** *See* elevating platforms and aerial devices
- asbestos**, 16–27, 31–38
defined
abate, 1
asbestos, 1
asbestos waste, 1
exposed worker, 1
restricted area, 1
buildings, 31–36
air distribution systems, prohibition, 33
crocidolite asbestos, prohibition, 32(1)
release of asbestos, unsafe condition, 31
removal, encapsulation, or enclosure of asbestos
before renovation or alteration, 35–36
removal of asbestos before demolition, 34, 36, 417
spraying asbestos, prohibition, 32(2)
code of practice required, 26, Schedule 1, Table 1
decontamination
methods, 28(c)
of protective clothing, 30
- Director**
approval of training, 37
notice of project, 36
- documents**
code of practice, 26
health assessment, 40
original certificate of completion of asbestos course, 37
health assessment of exposure, 40
contents of report, 40(2)
costs, 40(11), 40(13)
frequency of assessments, 40(6)–(8)

- information to worker, 40(3)
- performed during work hours, 40(12)
- privacy of information, 40(5)
- refusal by worker, 40(9)–(10)
- retention of records, 40(4)
- housekeeping, 28(b)
- OEL, 20, Schedule 1, Table 2
- release of, 28(a)
- restricted areas, 29
 - asbestos worker course, 37
 - authorized persons, 29(1), 29(2)(b), 37
 - decontamination of workers, 29(4)(c)
 - emergencies, 29(5)
 - harmful substances, 29(2)
 - no eating, drinking or smoking, 29(2)(c)
 - personal protective equipment, 29–30
 - prohibited activities, 29(2)(c)
 - protection of worker's street clothing, 29(4)
 - protective clothing for workers, 29(4), 30
 - signs, 29(2)–(3)
 - training of workers, 37
- signs for restricted area, 29(2)–(3)
- training of workers, 37
- waste, 38
 - labelling containers, 38(2)
 - sealed containers, 38(1)
 - unnecessary accumulations, 28(b)
- ascenders**
 - standards for industrial rope access work, 837
 - See also* rope access work
- ASSE (American Society of Safety Engineers), 1**
- ATVs** *See* all-terrain vehicles
- audiometric testing**
 - defined
 - audiometer, 1
 - audiometric technician, 1
 - significant threshold shift, 1
 - audiometric technician, 1, 223(2)–(4)
 - baseline tests, 223
 - confidentiality, 223(5)
 - consultations with audiologist or physician, 223(2)–(7)
 - consultations with occupational health nurse, 223(2)
 - deemed work time, 224
 - documents
 - to employers, 223(6)–(7)
 - information to workers, 223(4)–(5)
 - in noise management program, 221(i)
 - to physician or audiologist, 223(4)–(5), 223(7)
 - retention of records, 223(7)
 - employer's expense, 223(1)
 - in noise management program, 221(i)
 - significant threshold shift, 223
 - standards for audiometers and tests, 223(3)
 - timing of testing, 223(1)
 - See also* noise
- Audiometric testing for use in hearing loss prevention programs (CSA), 223(3)**
- auger mining**
 - in definition of surface mine, 1
 - See also* mines and mine sites; surface mines
- authorized radiation health registration agency**
 - defined
 - authorized radiation health registration agency, 1
 - in definition of registration certificate, 1
 - certificates for designated radiation equipment, 291.7
 - See also* designated radiation equipment; radiation exposure
- authorized radiation protection inspection agency**
 - defined, 1
 - See also* designated radiation equipment; radiation exposure
- automobiles** *See* vehicles
- Automotive Lifts — Safety Requirements for Operation, Inspection and Maintenance (ANSI), 112**
- avalanche control, 515**
- AWG (American Wire Gauge)**
 - defined, 1
- back hoes, 270–271**
 - rollover protective structures, 270
 - seatbelts and restraint systems, 271
 - See also* powered mobile equipment
- backstops**
 - for powered mobile equipment, 459–460
 - for powered mobile equipment in mines, 542
- baggage inspection x-ray equipment**
 - in definition of designated radiation equipment, 1
 - certificate for designated radiation equipment, 291.7
 - monitoring worker exposure, 291.5–291.6
 - standards, 291.2(b)
 - See also* radiation exposure; x-ray equipment
- bags** *See* containers
- band saws, 378–379**
 - band saw wheels, 379
 - blade crack limits, 378, Schedule 8, Table 2
 - retensioning, 378(3)
 - shake band saw blades, cracked, 378(4)
- barrels** *See* containers
- bars**
 - in powered mobile equipment with ROPS, 271(2)

- basic first aider**
 defined
 basic first aider, 1
 in definition of first aider, 1
 low hazard work, 178, 181(1), Schedule 2, Tables 1 and 5
 medium hazard work, 178, 181(1), Schedule 2, Tables 2 and 6
 mines and mine sites, emergency and rescue workers, 546
 high hazard work, 178, 181(1), Schedule 2, Tables 3 and 7
See also first aid and first aiders
- baskets, personnel** *See* personnel baskets and man baskets
- baths and showers** *See* toilets and washing facilities
- battery-charging stations, underground mines**, 697.1
- beards** *See* facial hair
- beekeeping**
 application of Code, 1.1
- Below-the-Hook Lifting Devices (ASME)***, 297(1)
- belts, conveyor** *See* conveyors
- benzene**
 code of practice required, 26, Schedule 1, Table 1
 OEL, Schedule 1, Table 2
- beryllium**
 code of practice required, 26, Schedule 1, Table 1
 OEL, Schedule 1, Table 2
- beverage processing**
 first aid, high hazard work, 178, 181(1), Schedule 2, Tables 3 and 7
- bicycling headwear**, 235
- bins**
 safeguards and warnings, 316
- biohazardous materials**, 526–530
 defined
 biohazardous material, 1
 contaminant, 1
 safety engineered medical sharp, 1
 sharps, 1
 hazard elimination and control, 525.1
 limited exposure, 529
 policies and procedures, 525.2(4)–(7), 528
 post exposure management, 530
 removal before demolition, 417
 respiratory protective equipment
 code of practice, 245
 training in use of, 245(2)
 when needed, 244
 sharps
 containers, 526
 hazard elimination and control, 525.1
 medical sharps, 525.2
 recapping needles, 527
See also respiratory protective equipment
- birds, raising and maintenance**
 application of Code, 1.1
- blades** *See* sharps
- blades, saw** *See* saws and sawmills
- Blankets of Insulating Material for Electrical Purposes (ULC)***, 799(1)
- blast hole**
 defined, 1
 burning explosives, 499.1
 in definition of bootleg, 1
 in definition of stemming, 1
 drilling near blast holes, distances, 485(1)
 fuse assembly length, 504
 ignition precautions, 497.1
 inspection for misfire before drilling or excavation, 485(2)
- mines
 detonating cords, 517.7
 stemming, 517.8
 unattended blast holes, 517.91
 warning signs, 517.91
- mines, underground
 detonators, 517.992, 517.995
 explosive atmospheres, 517.99
 misfires, 517.995–517.996
 worker positioning, 517.99(4)
- position marking, 494(2)
 stemming and leg wires, 494
 undetonated explosives and misfires, 511
 water damage, 486.1
 workers' protection, 488
See also explosives
- blasters**, 468–468.52
 defined
 blaster, 1
 blasting area, 1
 blasting circuit, 1
 blasting machine, 1
 blasting mat, 1
 bootleg, 1
 avalanche control, 515
 Canadian guidelines, 470, 470.1
 certificate
 application for, 468.1(2)–(4)
 cancellation or suspension, 468.3
 compliance with, 468.1(6)
 employer report, 468.5

- issuance authorities, 468.1(1)
- qualifications, 468.1(3)
- terms and conditions, 468.1(5), 468.3
- control of blasting area, 468
- damaged, deteriorated or unsafe explosives, 475
- direct supervision by, 468, 470.3, 517
- explosive strength and quantity, appropriate, 477, 488.1
- explosives work, 468
- inspections of stored explosives, 475
- log book, 468.51
- loss or theft of explosives, 468.52
- mines and mine sites, 517.4–517.91
- oil well blasting and perforating, 516
- oldest explosives used first, 474
- priming, 481
- removal of explosives from magazine, 470.4
- reports
 - blaster's report at end of shift, 468.51
 - employer report of certificates, 468.5
 - loss or theft of explosives, 468.52
 - misfires, 511(3)
 - unauthorized access to explosives, 468.52
- seismic blasting, 517
- standards and specifications, 470, 470.1, 470.2
- storage and disposal of explosives, 470.2
- tools, 480, 491
- two or more blasters, 468(4)
- unauthorized access to explosives, 468(5), 468.52, 470.3
- waste removal, 513
 - See also* detonators and detonation; explosives; mines and mine sites, explosives; underground mines, explosives
- blasting machines**
 - defined
 - blasting machine, 1
 - exclusion from definition of detonator, 1
 - included in definition of lead wire, 1
 - battery system, not to be used, 505(2)
 - cables and wires, 503, 506
 - capacity marking, 495(2)
 - mines
 - cables and wires, 517.5
 - circuit requirements, 517.5
 - standards, 517.5
 - mines, underground
 - blasting cable, 517.991
 - radiofrequency transmitters, minimum distances, 503, Schedule 10, Tables 1–2
 - testing of, 495
 - unauthorized access to, 470.3
 - use for all electric blasting, 505(1)
 - worker protections, 495, 505
- blasting mat**
 - defined, 1
 - above-ground explosives, 502
- Blasting Explosives and Detonators — Storage, Possession, Transportation, Destruction and Sale (NRCan)***, 470
- blood lead level test**, 43
- blood-borne pathogens**
 - exposure control, 525.1
 - See also* biohazardous materials
- blowoffs and blowouts** *See* tire servicing
- boatswain's chairs**
 - defined, 1
 - ropes, 351(3)–(4)
 - standards, 351(1)
 - See also* elevating platforms and aerial devices
- body belts**
 - defined
 - body belt, 1
 - lanyard, 1
 - standards, 142.1(a)
 - for wood pole climbing, 149
- Body belts and saddles for work positioning and travel restraint (CSA)***, 142.1(a)
- body harness** *See* full body harness; sit harness
- body protection**
 - duty to use, 228
 - use of, 242–243
 - See also* fall protection systems; personal fall arrest system (PFAS); personal protective equipment (PPE); radiation exposure
- Boiler, pressure vessel, and pressure piping code (CSA)***, 574(3)
- Boom Supported Elevating Work Platforms (ANSI)***, 347(1)
- booms and boom trucks**
 - defined
 - boom, 1
 - boom truck, 1
 - jib, 1
 - boom and jib stops, 92
 - counterweights and outriggers, 90, 92.2
 - ladders on extending booms, prohibitions, 128
 - load charts, 63(1)
 - personal fall arrest system, 156
 - preventing damage, 92
 - See also* cranes; elevating platforms and aerial devices

- bootleg**
 defined, 1
 drilling operations, 486
See also explosives
- boots** *See* footwear
- bore hole**
 defined, 1
 blaster's report on, 468.51(a)
 connecting down lines to trunk cords, 497
 detonating cords, 517.7
 ignition precautions, 497.1
 mines
 day boxes, 517.4(1)
 priming, 481
 quantity of explosives, 488.1
 secondary blasting, 517.2
 size of bore hole, 487
 tools, 480
 underground mines
 day boxes, 517.96
 explosive atmospheres, 517.99, 517.9991(1)
 firing in the same round, 517.994
 secondary blasting, 517.2, 517.9991
See also explosives
- bottles and boxes** *See* containers
- bracing**, 457–458
 alternatives to temporary protective structures, 457
 installation and removal, 458
 lumber and plywood standards, Schedule 9
 shoring component dimensions, Schedule 9
See also temporary protective structures; temporary supporting structures
- bracket scaffolds**
 design and specifications, 332
See also scaffolds and temporary work platforms
- Braking Performance — Rubber-Tired, Self-Propelled Underground Mining Machines (CSA)**, 574
- brand name**
 in definition of product identifier, 394.1
See also Workplace Hazardous Materials Information System (WHMIS)
- breathing apparatus, self-contained** *See* self-contained breathing apparatus
- breathing equipment** *See* respiratory protective equipment
- bridges**
 for crossing conveyor belts, 373(1)–(2)
 for logging industry vehicles, 525
 overhead cranes, standards, 93–94
 standards
 overhead cranes, 93–94
- British Columbia Cave Rescue Companion Rescue Workshop**, 841(c)(ii)
- broadcasting**
 in definition of electromagnetic radiation, 1
See also radiofrequency transmitters
- brush cutting** *See* tree care operations
- bucking and felling** *See* forestry
- buffing disc** *See* grinders
- buildings** *See* asbestos; demolition
- building shaft hoists** *See* tower and building shaft hoists
- building shafts**
 defined, 1
 demolitions, 422
 safeguards
 under construction, warning signs, 313(3)
 main and secondary work platforms, 313(1)
 no platform at doorway, safety structures, 313(2)
 safeguards on cage of shaft hoists, 318(7)–(8)
- bulk fuel storage** *See* fuel storage
- bulk shipment**
 defined, 394.1
See also Workplace Hazardous Materials Information System (WHMIS)
- bulkheads**, 268
- bulldozers**, 270–271
 rollover protective structures, 270
 seatbelts and seatbelt restraint systems, 271
See also powered mobile equipment
- bump hat**, 238
- buried or concrete-embedded facilities**, 447–448
 defined
 buried facility, 1
 hand expose zone, 1
 owner, 447(1)
 application of Code to disturbing the ground, 441
 beginning work, procedures, 447
 documents
 as-built record drawings, 447(4)–(5)
 buried facility no longer in use, consent for excavation, 448(2)
 disturbance in right of way, 448(4)
 hand expose zone variation for high pressure pipeline, approval, 448(3)
 electric utilities
 exemptions, 448(5.1)
 hand expose zone, 448(1), 448(3)
 locate marks, 447(2)–(3)
 mechanical excavation equipment location, 448(1)–(2), 448(5)

- pipelines
 direct supervision of pipeline, 448(5), 448(7)
 disturbance in right of way, 448(4)
 pipeline exposure, notice before backfilling, 448(7)
 protection and support of facilities, 448(6)
See also excavating and tunneling
- burning material near explosives**, 466
- 1,3 butadiene**
 code of practice required, 26, Schedule 1, Table 1
 OEL, Schedule 1, Table 2
- cabinet x-ray equipment**
 certificate for designated radiation equipment, 291.7
 in definition of designated radiation equipment, 1
 monitoring worker exposure, 291.5–291.6
See also radiation exposure; x-ray equipment
- cable clips**
 double-base clips, 300(4)
 double-saddle clips (fist clips), 300(3)–(4)
 specifications, 300, Schedule 5
 U-bolt clips for wire rope, 300(1), Schedule 5
- cables**
 communication cables near electrical utilities, 803
 sliding prohibited, oil and gas wells, 756
See also buried or concrete-embedded facilities
- cabs**
 in powered mobile equipment, 269
See also powered mobile equipment
- cadmium**
 code of practice required, 26, Schedule 1, Table 1
 OEL, Schedule 1, Table 2
- cages**
 on hoists, 318(7)–(8)
 on vertical ladders, 327(3)–(4)
- caissons** *See* confined and restricted spaces
- Canada Consumer Product Safety Act (Canada)**
 WHMIS not to apply to products under, 395(5)(e)
- Canadian Electrical Code, Part 1, Safety Standard for Electrical Installations (CSA)**
 defined, Canadian Electrical Code, 1
 classification of work sites, 162.1(1), 166(5)–(7), 168(4)–(5)
 in definition of hazardous location, 1
 standards for overhead cranes, 93(a)
- Canadian Nuclear Safety Commission**, 291.5(1)
- Canadian Softwood Plywood (CSA)**, 457(1)(b)(i)
- cancer** *See* carcinogens
- cans** *See* containers
- cantilever hoists**
 defined, 1
 certification by engineer, 76(a)
 installation and use, 76
See also hoists
- canyoning activities**
 in definition of non-industrial rope access work, 1
See also rope access work, non-industrial (mountaineering, caving, canyoning, sport climbing)
- carabiners**
 defined, 1
 standards for fall arrest system, 143
 standards for industrial rope access work, 835–836
- carbon monoxide, underground mines**, 693.9, 730
- carcinogens**
 defined, Schedule 1, Table 2
 asbestos waste, 38(2)
 health assessments for exposed workers, 40(2)
 OEL and carcinogenicity (A1, A2), Schedule 1, Table 2
See also occupational exposure limit (OEL)
- cars** *See* vehicles
- cartridge explosives**, 479
- CAS (Chemical Abstract Service of the American Chemical Society)**, Schedule 1, Table 2
- CAS Registry Number**
 defined, 394.1
 claim for disclosure exemption, 408–409
- catch basins** *See* buried or concrete-embedded facilities
- catheads**
 defined, 1
 controls, 771(2)
 rope-operated catheads, prohibition, 771(1)
- cattle**
 application of Code, 1.1
- Cave Guiding Standards for British Columbia and Alberta (Canadian Cave Conservancy)**, 841(c)(i)
- caving activities**
 in definition of non-industrial rope access work, 1
See also rope access work, non-industrial (mountaineering, caving, canyoning, sport climbing)
- cellular telephones**
 defined
 in definition of electromagnetic radiation, 1
 in definition of radiofrequency transmitter, 1
 explosives, minimum distances, 503, Schedule 10, Table 2
 working alone, 394
- certificate, mining** *See* underground mine foreman; underground mine manager
- certification by professional engineer**
 defined

- certified by a professional engineer, 1
- professional engineer, 1
- following by employer, 12(b)–(d)
- how often to certify equipment, 13(2)(b)
- safe procedures and equipment, 13(2)
- written, stamped and signed, 14
- Certification Requirements for Rope Access Work (Society of Professional Rope Access Technicians)**, 826(b)
- chainsaws**
 - chain adjustments, 376(2)
 - footwear PPE, 233(2)–(4)
 - specifications, 376(1)
- changing rooms**
 - clean and sanitary facilities, 361(1)
 - storage of other materials, 361(2)
 - See also* toilets and washing facilities
- Chemical Abstract Service (CAS)**, 394.1, Schedule 1, Table 2
- chemical compound**
 - in definition of substance, 394.1
- chemical element**
 - in definition of substance, 394.1
- chemical energy**
 - in definition of hazardous energy, 1
 - See also* hazardous energy control
- chemical name**
 - CAS Registry Number, defined, 394.1
 - claim for disclosure exemption, 408–409
 - in definition of product identifier, 394.1
 - See also* Workplace Hazardous Materials Information System (WHMIS)
- chemical substances** *See* occupational exposure limit (OEL); substances
- chimney hoists**, 77–79
 - defined, 1
 - equipment requirements, 77
 - operator responsibilities, 78
 - worker in lifting device, 79
 - See also* hoists
- chipping** *See* hot work
- chloroethylene (vinyl chloride)**
 - code of practice required, 26, Schedule 1, Table 1
 - OEL, Schedule 1, Table 2
- chocking**, 285
 - See also* pile driving equipment and practices
- chutes**
 - materials chute at demolition work site, 420
 - safeguards and warnings, 316
- cigarettes** *See* smoking tobacco
- circular saws**
 - blade crack limits, 377, Schedule 8, Table 1
 - power-fed circular saws, 380
 - sawmill head rig, 382
- claim for disclosure exemption (WHMIS)**
 - defined, 394.1
 - procedures, 408–410
 - See also* confidential business information (WHMIS)
- clay**
 - in definition of pit, 1
- Clearance, Sidemarker, and Identification Lamps for Use on Motor Vehicles 2032 mm or More in Overall Width (SAE)**, 592(1)
- client/resident handling**
 - defined in safe patient/client/resident handling, 1
 - See also* lifting and handling loads
- climbable structure**
 - defined, 1
 - fall protection systems, 154
- climbing activities**
 - in definition of non-industrial rope access work, 1
 - See also* rope access work, non-industrial (mountaineering, caving, canyoning, sport climbing)
- Climbing Gym Instructor Technical Manual (ACMG)**, 841(b)
- climbing wood poles** *See* wood pole climbing
- clips, cable** *See* cable clips
- close work site**
 - defined
 - close work site, 1
 - first aid requirements
 - low hazard work, 178, 181(1), Schedule 2, Tables 1 and 5
 - medium hazard work, 178, 181(1), Schedule 2, Tables 2 and 6
 - high hazard work, 178, 181(1), Schedule 2, Tables 3 and 7
 - See also* first aid and first aiders
- clothing** *See* footwear; headwear; personal protective equipment (PPE); street clothing; worker's clothing
- coal**
 - in definition of coal dust, 1
 - in definition of mine, 1
 - in definition of processing plant, 1
 - exclusion in definition of quarry, 1
 - See also* coal dust; coal mines, underground
- coal dust**
 - defined
 - coal dust, 1

- combustible dust, 1
- exposed worker, 1
- incombustible dust, 1
- restricted area, 1
- decontamination methods, 28(c)
- health assessment for exposure, 40
 - costs, 40(11), 40(13)
 - frequency of assessments, 40(6)–(8)
 - information to worker, 40(3)
 - performed during work hours, 40(12)
 - privacy of information, 40(5)
 - refusal by worker, 40(9)–(10)
 - report contents, 40(2)
 - retention of records, 40(4)
- housekeeping, 28(b)
- minimization of release, 28(a)
- OEL, 16(2.1), Schedule 1, Table 2
- restricted areas
 - authorized persons, 29(1), 29(2)(b)
 - decontamination of workers, 29(4)(c)
 - emergencies, 29(5)
 - harmful substances, 29(2)
 - no eating, drinking or smoking, 29(2)(c)
 - personal protective equipment, 29–30
 - prohibited activities, 29(2)(c)
 - protection of worker's street clothing, 29(4)
 - protective clothing for workers, 29(4) signs, 29(2)–(3)
- See also* coal mines, underground
- coal mines, underground**
 - defined
 - coal dust, 1
 - coal in definition of mine, 1
 - coal in definition of processing plant, 1
 - combustible dust, 1
 - gob, 1
 - incombustible dust, 1
 - coal-cutting equipment, 738, 742
 - diesel-powered equipment
 - standards and certifications, 697.4
 - gas and dust control
 - airborne dust, 742
 - conveyors, 742
 - detection on coal-cutting equipment, 738
 - housekeeping, 693.3, 743
 - incombustible dust treatments, 743
 - monitoring respirable dust exposure, 742
 - roadway for rubber-tired vehicles, 742(3)
 - water supply to suppress dust, 742
 - roof and side support system, 707(3)
 - standards, certifications, procedures and specifications
 - employer to implement, 533.1
 - switchgear locations, 697.2
 - ventilation split, equipment in, 729
 - workers
 - supervision by foreman or manager, 683, 685
 - working alone, 687
- See also* coal dust; mines and mine sites; underground mines; underground mines, explosives; underground mines, fire and explosion prevention; underground mines, ventilation systems; underground mine foreman; underground mine manager
- coal tar pitch volatiles**
 - code of practice required, 26, Schedule 1, Table 1
 - OEL, Schedule 1, Table 2
- coats, lab**
 - duty to use, 228
 - use of, 242–243
- See also* personal protective equipment (PPE)
- Code for Electrical Installations at Oil and Gas Facilities (Alberta Municipal Affairs)***, 162.1(1)(b)
- Code for Tower Cranes (CSA)***, 100
- code name and code number** *See* Workplace Hazardous Materials Information System (WHMIS)
- College and Association of Registered Nurses of Alberta**
 - in definition of nurse, 1
- colour coding**
 - scaffold tagging, 326
 - transfer of hazardous products (WHMIS), 402
- Combination Pelvic/Upper Torso (Type 2) Operator Restraint Systems for Off Road Work Machines (SAE)***, 271
- combined surface and underground mines**, 686
 - See also* surface mines; underground mines
- combustible dust**
 - defined
 - combustible dust, 1
 - hazardous location, 1
 - See also* coal dust; coal mines, underground; mines and mine sites
- combustible liquids**
 - defined
 - combustible liquid, 1
 - in definition of flammable substance, 1
 - in definition of hazardous location, 1
 - containers, 163(2), 165
 - contaminated clothing and skin, 164
 - general prohibitions, 162(4)–(5)

- ignition sources, 162(4)
- storage, standards, 163(2)
- washing or cleaning operations, 162(5)
- See also* fire and explosion hazards
- coming into force (OHS Code), 6**
- committee on health and safety** *See* joint health and safety committee; joint health and safety committee, representatives
- common name**
 - in definition of product identifier, 394.1
 - See also* Workplace Hazardous Materials Information System (WHMIS)
- common name of hazardous materials** *See* Workplace Hazardous Materials Information System (WHMIS)
- communication lines and cables**
 - near electrical utilities, 803
- communication systems**
 - chimney hoists, 77(f)
 - confined and restricted spaces, 48(1)(f), 56
 - designated signaller replacement, 191(8)
 - in emergency response plans, 116(g)
 - emergency systems
 - transportation to health care facility, 180(2)
 - gas and convenience store workers, 392.2(g), 392.5
 - underground mines, 697
 - working alone, 392.2(g), 392.5, 394
 - See also* buried or concrete-embedded facilities; cellular telephones; designated signallers; mobile communications systems
- compact soil** *See* soils and soil types
- competence**
 - in definition of direct supervision, 1
- Competency Standard for Diving Operations (CSA), 424, 437**
- Components for slings — Part 1: Forged steel components, Grade 8 (CEN), 292(1)**
- compounds, lead** *See* lead and lead compounds
- compressed air**
 - not to be used to blow substances, 171(8)(d)
 - ventilation systems in underground mines, 711(4)–(5)
- compressed and liquefied gas, 171**
 - certification by engineer
 - dislodgment hazards, 171(5)
 - gas welding or allied process, 171.2
 - precautions
 - acetylene cylinders, storage, 171(6)
 - back-flow prevention devices, 171(4)
 - clean and without contaminants, 171(3)
 - compressed gas equipment, 171(8)
 - dislodgment hazards, 171(5)
 - flashback devices, 171(4)
 - heat exposure, 171(2)
 - oxygen, stored away from, 171(1)(b)
 - oxygen fuel systems, 171(1)(b), 171(4)
 - use, storage and transportation, 171(1)
 - sparks and flame exposure, 171(8)(c)
 - standards
 - compressed oxygen storage, 171(1)(b)
 - See also* fire and explosion hazards; welding or allied process; Workplace Hazardous Materials Information System (WHMIS)
- Compressed Breathing Air and Systems (CSA), 249**
- concrete pump trucks**
 - defined, 1
 - inspection by operators, 290.2(2)
 - movement of truck, 290.2(5)
 - non-destructive testing, 290.2(1)
 - outriggers, 290.2(3)
 - workers not under boom or mast, 290.2(4)
- concrete-embedded facilities** *See* buried or concrete-embedded facilities
- conduits** *See* buried or concrete-embedded facilities
- confidential business information (WHMIS), 408–414**
 - defined
 - CAS Registry Number, 394.1
 - claim for disclosure exemption, 394.1
 - mixture, 394.1
 - product identifier, 394.1
 - substance, 394.1
 - claim for disclosure exemption, 408–410
 - confidentiality of information, 411–414
 - interim procedures before notice, 409
 - procedures after notice of exemption, 410
 - See also* Workplace Hazardous Materials Information System (WHMIS)
- confidentiality of worker's information** *See* information access and privacy for workers
- confined and restricted spaces, 44–58**
 - defined
 - confined space, 1
 - emergency response plan, 1
 - inerting, 1
 - purge, 1
 - remote monitoring station, 1
 - restricted space, 1
 - tending worker, 1
 - bins, safeguards, 316
 - chutes, safeguards, 316
 - code of practice, 44
 - code of practice required, 52(4)–(5)

- communication systems, 48(1)(f), 56
- documents
 - code of practice, 44, 52(4)–(5)
 - emergency response plan, 55
 - entry permit system, 47, 50, 58
 - evacuation procedures, 53(4)
 - hazard assessment, 45, 52(3), 52(6), 58
 - inspection records, 48(3)
 - inspections of equipment, 48(2)–(3), 58
 - retaining records, 58
 - training records, 46
- emergency equipment, 45, 46(3), 48(1), 48(2)
- emergency response plan, 2.2, 55, 56(2), 115–116
- entry permit system, 47, 50, 58
- evacuation procedures, 53(4)–(5), 55
- first aid, 46(3)(a)
- hazard assessment, 45, 49, 52, 56, 58
- hoppers, safeguards, 316
- inerting, 54
- inspections and tests
 - atmosphere, 52
 - competent worker, 52
 - emergency equipment, 48(2)
 - for hazard assessment, 45(b)–(c), 52, 56(3)
 - monitoring of changing atmosphere, 52(3.1)
 - personal protective equipment, 48(2), 58
- lifeline, 48(1)(a)
- personal protective equipment
 - inspection of, 48(2), 58
 - provision for, 45(d)–(e), 48(1)(b)–(e), 48(2), 53(2)
- purging, 53
- remote monitoring station
 - conditions for requirement for, 56(3)
 - emergency power, 56(6)(d)
 - live display of inside and outside, 56(6)(b)
 - monitoring equipment inside, safety requirements, 56(7)
 - physical location, 56(6)(a)
 - system for summoning assistance, 56(6)(e)
 - two-way continuous communication, 56(6)(c), 56(7)
 - worker outside other than tending worker, 56(7)
- respiratory protection equipment, 54(2)
- safe entry and exit, 57
- safety and protection, 48
- tending worker
 - compliance with code of practice, 44(3)
 - conditions for requirement for, 56(3)
 - continuous communication, 56(4)
 - designation of, 56(1)
 - present until replaced or workers have left, 56(5)
 - records of workers in space, 56(4)
 - system for summoning assistance, 56(2)
 - training, 56(2)
- traffic hazards, 51
- training, 46, 53, 56(2)
- unauthorized entry, 50
- ventilation, 53
- water dangers, 49
- Connecting Components for Personal Fall Arrest Systems (PFAS) (CSA), 835(d)**
- connectors**
 - standards for fall arrest system, 143(1)
- constructed portable ladders** *See* ladders
- construction**
 - first aid, high hazard work, 178, 181(1), Schedule 2, Tables 3 and 7
- Construction and Demolition Operations — Personnel and Debris Nets (ANSI), 320(1)(a)**
- Construction and Test of Electric Cranes and Hoists (CSA), 93(b)**
- consumer products**
 - WHMIS not to apply, 395(5)(e)
- contact lenses, 230**
 - See also* eye protection
- containers**
 - for compressed gas cylinders for welding from vehicles, 172
 - for diesel fuel, 705
 - fire and explosion hazards
 - static electricity, 163(2.1)
 - storage of flammable substances, 163(2)
 - underground mines, 693.3
 - for gas samples, 784
 - for hoisting, 74
 - for sharps, 526
 - standards, 163(2)
- containers for explosives**
 - defined
 - containers, 1
 - exclusion in definition of magazine, 1
 - avalanche control, 515
 - mines
 - separate containers, 517.4
 - warning signs on containers, 517.4
 - mines and mine sites
 - tools, 480
 - transportation in closed containers, 517.95
 - unauthorized access to explosives, 468(5), 468.52, 470.3
 - underground mines, 517.95

- containers for hazardous products (WHMIS), 398–402**
 defined
 bulk shipment, 394.1
 container, 394.1
 bulk shipments, 398(7)
 decanted products, 400–401
 label requirements, 398–403
 laboratory samples, 403
 placards, 398(5), 401, 402
 portable containers, 400(2)
 transfer of hazardous products, 402
 See also Workplace Hazardous Materials Information System (WHMIS)
- Containers, Safety (ULC), 163(2)(d)**
- contaminant** *See* biohazardous materials;
 decontamination of workers; fire and explosion hazards; occupational exposure limit (OEL); radiation exposure
- continuous reading direct reading instruments**
 OEL measurements by, 20(2)
- continuous-feed machinery** *See* feeding materials into machinery
- contractors, prime** *See* prime contractors
- contractors on health and safety committee** *See* joint health and safety committee
- control devices**
 defined
 control system isolating device, 1
 controls on machinery, 368
- control of hazardous energy** *See* hazardous energy control
- control zone**
 defined, 1
 definition in fall protection system, 1
 crossing a zone, 161(4)–(5)
 marking of, 161(6)
 unauthorized persons, 161(8)
 unguarded edges, 161(1), 161(3), 161(5)
 use of travel restraint system, 161(7)
 See also elevating platforms and aerial devices
- convenience store workers** *See* retail fuel and convenience store worker safety
- conveyors**
 defined, 1
 crossing over or under moving belts, 372–373
 elevated belts, 372, 373(3)
 transfer of hazardous products, 402
 See also mines and mine sites, conveyors
- cosmetics under Food and Drug Act**
 WHMIS not to apply, 395(5)(b)
- costs**
 audiometric testing, 223(1)
 blood lead level test, 43(3)
 health assessments for asbestos, silica or coal dust exposure, 40(11)
- coveralls as protective clothing**
 duty to use, 228
 use of, 242–243
 See also personal protective equipment (PPE)
- covers for openings**
 covering openings, 314(1)(a)
 guardrails and toe boards, 314(1)(b)
 temporary covers, 314(2)–(3)
 warning signs, 314(3)
 See also safeguards and warnings
- cow's tail**
 defined, 1
 standards, 819
 See also rope access work
- crane booms for pile driving equipment**
 inspections and certifications, 290
 See also pile driving equipment and practices
- cranes, 59–73**
 defined, 1
 A-frame safe practices, 75
 application of Code, 59
 certification by engineer
 not commercially manufactured, 60, 62
 repairs and modifications, 65(3)(f), 73
 collision prevention, 67
 containers for hoisting, 74
 documents
 log books, 64(4), 65, 73(2)
 procedures preventing collisions, 67
 gin pole safe practices, 75
 hoisting lines, 70
 identification of components, 61, 62(1), 73
 lift calculations, 68.1
 load charts, 64(2)
 load weight, 68
 loads over work areas, 69
 log books, 64(4), 65
 certification by engineer, 65(3)(f), 73
 contents, 65(3)
 each device, 65(1)
 inspections and tests, 65(3)(d)
 new owner transfer, 65(2)
 operator requirement, 64(4)
 paper or electronic for each device, 65(1)
 person doing work, 65(5)
 repairs and modifications, 73(2)

- signature, 65(4)
 - tower crane, correct entries confirmed, 65(6)
 - not commercially manufactured, 60, 62
 - operator requirements, 64
 - rated load capacity, 62
 - remote controls, 72(3)
 - repairs and modifications, 73
 - signal systems, 64(2), 71, 191
 - tag lines, 70
 - unsafe lift prevention, 66
 - See also* mobile cranes; overhead cranes; tower cranes
 - crawl board**, 129
 - crawler, tracked**, 270–271
 - rollover protective structures, 270
 - seatbelts and restraint systems, 271
 - See also* powered mobile equipment
 - crystalobalite**
 - in definition of silica, 1
 - OEL, Schedule 1, Table 2
 - See also* silica (respirable crystalline silica)
 - crocidolite asbestos, prohibition on use**, 32
 - crop production**
 - application of Code, 1.1
 - cross-braces**
 - shoring component dimensions, Schedule 9
 - crumbling soil** *See* soils and soil types
 - crystalline silica, respirable** *See* silica (respirable crystalline silica)
 - cultivation of land**
 - application of Code, 1.1
 - cups, single-use drinking**, 355(3)
 - See also* drinking fluids
 - cut-off saws**, 381
 - cutting** *See* compressed and liquefied gas; machinery
 - cutting back walls for excavations**, 449–451
 - See also* excavating and tunneling
 - cutting brush using a tree for support** *See* tree care operations
 - cutting disc** *See* grinders
 - cutting or welding** *See* welding or allied process
 - Cycling Helmets (CSA)**, 235
 - cylinders** *See* containers
- D rings**
- standards for fall arrest system, 143(1)
 - standards for industrial rope access work, 835
- dams**
- dangerous occurrences reports, 544
 - See also* water dangers
- Dangerous Goods Transportation and Handling Act**
- transporting explosives, 473(1)
 - WHMIS not to apply, 395(4)
- dangerous occurrences in mines** *See* mines and mine sites
- dangerous to life or health, immediately**
- defined, 1
 - See also* occupational exposure limit (OEL); oxygen content in air
- darkness** *See* high visibility safety apparel; light and darkness
- data sheets, safety** *See* safety data sheets (WHMIS)
- day boxes, explosives**
- defined, 1
 - mines
 - storage of explosives, 517.4(1)
 - storage of explosives, 517.96
 - unauthorized access to, 470.3
- dba**
- defined, 1
 - noise control design, 217
 - noise exposure limits, 218, 219(1), 221, Schedule 3, Table 1
 - See also* noise
- decanted hazardous products (WHMIS), 400–401**
- for immediate use, 400(2)
 - label requirements, 400–401
 - laboratory samples, 403
 - placards, 398(5), 401, 402
 - portable containers, 400(2)
 - transfer of hazardous products, 402
 - work site label required, 401
 - See also* work site labels (WHMIS); Workplace Hazardous Materials Information System (WHMIS)
- 3 decibel exchange rate**
- defined, 1
 - in definition of L_{ex} , 1
 - See also* noise
- decommissioning of oil, gas or geothermal wells**
- defined
 - in definition of well servicing, 1
 - application of Code, 750
 - See also* oil and gas wells
- decontamination of workers**
- defined
 - combustible liquid, 1
 - contaminant, 1
 - contaminated, 1
 - contaminated environment, 1
 - restricted area, 1

- articles and clothing, 23
- asbestos, silica, coal dust and lead, 28
- baths and showers, 23–24
- eye wash equipment, 24
- flammable or combustible liquid on clothing and skin, 164
- in lead exposure control plans, 41(2)(e)
- OEL overexposure, 23–24
- restricted areas, 29(4)(c)
- deflectors**
 - in powered mobile equipment, 269
- demolition, 415–422**
 - defined, 1
 - asbestos removal, 34, 36
 - certification by engineer
 - procedures for dismantling buildings, 421(1)(b)–(c)
 - competent worker in charge, 415
 - disconnecting utilities, 419
 - dismantling buildings and shafts, 421–422
 - accumulation of materials or debris, 421(2)
 - adjoining structures, 421(1)(b)
 - procedures certified by professional engineer, 421(1)(b)–(c)
 - removal of glass, 421(1)(a)
 - removal of hazardous materials, 34, 36, 417
 - removal of structural members, 421(1)(f)
 - shafts, 422
 - steel structures, 421(1)(e)
 - top down, 421(1)(d)
 - unintentional collapse, 421(1)(g)
- documents
 - demolition procedure for explosives, 418
 - demolition procedures, certified, 421(1)(b)–(c)
 - disconnection of utilities, 419
- explosives use, 418
- falling objects, protections, 416, 420
- first aid, high hazard work, 178, 181(1), Schedule 2, Tables 3 and 7
- hazardous substance removal, 417
- housekeeping on work sites, 421(2)
- location of equipment and offices, 416
- materials chute, 420
 - angle, 420(1)
 - warning signs, 420(2)(b)
 - workers not to enter area, 420(2)(a)
- shaft demolitions, 422
- warning signs for materials chute, 420(2)
- dentistry diagnostic x-ray equipment**
 - in definition of
 - designated radiation equipment, 1
 - ionizing radiation equipment, 1
 - certificate for designated radiation equipment, 291.7
 - monitoring worker exposure, 291.5–291.6
 - standards, 291.2
 - See also* designated radiation equipment; radiation exposure; x-ray equipment
- descenders**
 - standards for descent control device for PFAS, 146
 - standards for industrial rope access work, 839
- Descent Control Devices (CSA), 146, 148.1**
- Design of Active Fall-Protection Systems (CSA), 153(1), 156(1)(a)**
- designated radiation equipment**
 - defined
 - in definition of ionizing radiation equipment, 1
 - in definition of registration certificate, 1
 - designated radiation equipment, 1
 - monitoring worker exposure, 291.5–291.6
 - registration certificate, 291.7
 - compliance, 291.7(4)
 - exemptions, 291.7(3)
 - issuance, 291.7(1)–(2)
 - modifications to equipment and facilities, 291.7(5)
 - posting of certificate, 291.7(6)
 - requirement, 291.7(2)
 - See also* lasers; particle accelerators; radiation exposure; x-ray equipment
- designated signallers, 191**
 - defined, 1
 - additional signallers, 191(8)(a)
 - communication system as replacement, 191(8)(b)
 - cranes, hoists and lifting devices, 71
 - designation by employer, 191(1)
 - ensure no hazards, 191(4)
 - equipment operator to follow signals, 191(5), 191(7)
 - for felling of trees near roads, 522
 - only one signaller, 191(6)–(7)
 - for powered mobile equipment
 - by excavations, 459–460
 - generally, 267(2)
 - for powered mobile equipment in mines, 542
 - special clothing, 191(2)–(3)
 - STOP signals from non-designated signallers, 191(7)
 - See also* designated traffic controllers
- designated traffic controllers, 194**
 - handheld signal lights, when needed, 194(6)
 - public highway traffic control, 194(7)(h)
 - special clothing, 194(2)–(5)
 - tree felling by public roads, 522
- destruction of structures** *See* demolition
- detonators and detonation**
 - defined

- blasting area, 1
- blasting circuit, 1
- blasting mat, 1
- detonating cord, 1
- detonator, 1
- electric detonator, 1
- explosive, 1
- handling, 1
- lead wire, 1
- leg wire, 1
- misfire, 1
- perforating, 1
- prime, 1
- safety fuse, 1
- safety fuse assembly, 1
- shunt, 1
- avalanche control, 515
- blasters, 468
- blaster's report on, 468.51
- blasting mats, 502
- connecting down lines to trunk cords, 497
- disposal, 470.2
- electric detonators
 - leg wires before connection, 483
 - misfires, 509, 517.996
 - overhead power lines, 501
 - radiofrequency transmitters, 503, Schedule 10, Tables 1–2
 - same manufacturer for single circuit, 483(2)
 - stemming and leg wires, 494
 - testing before detonation, 495
 - transportation of, 473–473.1
 - unintended detonation by electrical energy, 490
 - unwinding leg wires, 489
- electromagnetic radiation, 501
- first aid, high hazard work, 178, 181(1), Schedule 2, Tables 3 and 7
- ignition precautions, 497.1
- length of fuse assembly, 504
- loss or theft, 468.52
- mines
 - detonating cords, 517.7
- mines, underground
 - detonated from surface, 517.998
 - misfires, 517.996
 - secondary blasting in, 517.9991(3)
- misfires, 509
- overhead power lines, 501
- priming, 481
- radiofrequency transmitters, minimum distances, 503, Schedule 10, Tables 1–2
- sequential firing, 492
- standards and specifications, 470, 509
- storage, 470.2
- testing before detonation, 495
- tools, 480
- transportation of detonators, 473–473.2
- unauthorized access to, 470.3
- waiting period, 509
- weather, adverse, 484, 501
- weatherproof compartments in vehicles, 473.1(1)
- worker protections, 509
- Deutsche Forschungsgemeinschaft (DFG)**
 - OEL measurements, 20(1)(g)
- diagnostic or therapeutic x-ray equipment**
 - in definition of designated radiation equipment, 1
 - in definition of ionizing radiation equipment, 1
 - certificate for designated radiation equipment, 291.7
 - monitoring worker exposure, 291.5–291.6
 - standards, 291.2
 - See also* radiation exposure; x-ray equipment
- 1,2 dibromoethane (ethylene dibromide)**
 - code of practice required, 26, Schedule 1, Table 1
 - OEL, Schedule 1, Table 2
- diesel fuel and diesel-powered equipment**
 - fuel storage near underground mines, 696
 - OEL, Schedule 1, Table 2
 - underground mines
 - diesel vehicle roads, 732
 - diesel-powered equipment, 697.4, 731
 - flammable gas levels, 731–732
 - housekeeping, 705
 - return airway, 713
 - standards, 697.4
 - underground fuel stations, 704–705, 713
- dikes**
 - dangerous occurrences reports, 544
 - See also* water dangers
- dining rooms** *See* lunch rooms
- direct reading instruments, continuous**
 - OEL measurements by, 20(2)
- direct supervision**
 - defined, 1
- Director**
 - defined
 - approved by a Director, 1
 - blasters' certificates, 468.1, 468.3
 - mining certificates, 749.4, 749.8
- Director of Medical Services**
 - in definition of
 - approved training agency, 1
 - audiometric technician, 1

- pulmonary function technician, 1
- agreements, acceptances and approvals
 - first aid training standards, 177
 - lead exposure, worker removal, 43(6)
- dirt** *See* soils and soil types
- discard disposal facility, mines and mine sites**
 - defined
 - in definition of mine site, 1
 - discard, 1
 - mine material and discards, 536, 541
 - See also* mines and mine sites
- disclosure exemptions** *See* confidential business information (WHMIS)
- diseases, notifiable** *See* asbestos; coal dust; lead and lead compounds; noise; silica (respirable crystalline silica)
- Display Fireworks Manual (NRC), 517.1(1)**
- distant work site**
 - defined
 - distant work site, 1
 - first aid requirements
 - low hazard work, 178, 181(1), Schedule 2, Tables 1 and 5
 - medium hazard work, 178, 181(1), Schedule 2, Tables 2 and 6
 - high hazard work, 178, 181(1), Schedule 2, Tables 3 and 7
 - See also* first aid and first aiders
- diving operations**
 - application of Code, 423
 - exclusion of sport diving, 423(2)
 - locking out intakes, pipes, tunnels, 437
 - standards, 424
- domestic violence**
 - protection of workers, 390.3
 - See also* violence and harassment
- domestic workers**
 - defined
 - domestic work, 1.2
 - domestic worker, 1.2
 - application of Code, 1.2
 - equipment, 1.2(3), 3.2, 12(a)–(b)
 - personal protective equipment, 1.2(3), 12(a)–(b)
 - potential worker exposure
 - application of Code, 1.2(3)
 - informing workers, 21(2)(a)
 - procedures to minimize exposure, 21(2)(a)
 - training workers, 21(2)(c), 21(3)
 - worker's use of procedures, 21(2)(d)
 - standards, certifications and specifications
 - availability, 1.2(3), 15.1
 - specifications and certifications, 1.2(3), 12(a)–(b)
- doors, 120**
 - building shafts, safeguards and warnings, 313(2)
 - good working order, 120(2)(a)
 - inside opening, 120(2)(b)
 - opening without effort or obstruction, 120(1)
 - See also* entrances, walkways, and stairways
- double-base clips** *See* cable clips
- double-pole scaffolds**
 - design and load, 324–325, 333, Schedule 6, Tables 1–4
 - See also* scaffolds and temporary work platforms
- double-saddle clips (fist clips)** *See* cable clips
- Douglas Fir Plywood (CSA), 457(1)(b)(i)**
- drawworks** *See* oil and gas wells
- drilled or bored underground shafts, 462–463**
 - See also* underground shafts
- drilling** *See* hot work
- drilling blast holes** *See* explosives, handling and storage
- drilling for oil, gas or geothermal energy**
 - application of Code, 750
 - See also* oil and gas wells
- drills, hand-held electrical**
 - use in mines, 572
- drinking fluids, 354–355**
 - adequate supply, 355(1)
 - first aid rooms, 178, Schedule 2, Table 4
 - no unreasonable restrictions, 354
 - potable water available, 355(2)
 - potable water labelled, 355(4)
 - single-use drinking cups, 355(3)
- drive belts on machinery, 370**
- drowning** *See* water dangers
- drugs under Food and Drug Act**
 - WHMIS not to apply, 395(5)(b)
- drums** *See* containers; rigging
- ducts** *See* buried or concrete-embedded facilities
- dumping block**
 - for powered mobile equipment, 459–460
 - for powered mobile equipment in mines, 542
- dust**
 - defined
 - combustible dust, 1
 - in definition of flammable substance, 1
 - incombustible dust, 1
 - incombustible dust in underground mines, 743
 - See also* coal dust; fire and explosion hazards; health assessments for exposure to asbestos, silica or coal dust; mines and mine sites

- ear damage** *See* audiometric testing; noise
- earplugs and earmuffs** *See* hearing protection devices
- earth-moving machinery**
lights and lighting, 264
See also powered mobile equipment
- Earth-moving machinery and mining — Autonomous and semi-autonomous machine system safety (ISO)**, 574.1
- Earthmoving Machinery — Falling-Object Protective Structures — Laboratory Tests and Performance Requirements (SAE)**, 272(2)(b)
- Earth-moving machinery — Lighting, signaling and marking lights, and reflex reflector devices (ISO)**, 594
- Earth-moving machinery — Roll over, protective structures — Laboratory tests and performance requirements (ISO)**, 270(2)(d)
- Earth-moving machinery — Wheeled or high-speed rubber-tracked machines — Performance requirements and test procedures for brake systems (ISO)**, 574(2)
- effective dose, maximum**
defined, 1
See also radiation exposure
- electric arc welding**
damage to rigging, 308
electric supply cable procedures, 171.1(6)
eye and face protection, 231
unattended electric welding machine, removal of electrode, 171.1(5)
See also welding or allied process
- electric detonator**
defined, 1
See also detonators and detonation
- electric utilities, 797–804**
defined
electric utility, 1
industrial power producer, 1
rural electrification association, 1
utility employee, 1
application of Code, 797
buried facilities, 448(2), 448(5.1)
coordinated work with other utilities, 802
emergencies, 804(3)
first aid, high hazard work, 178, 181(1), Schedule 2, Tables 3 and 7
notification of work near overhead power lines, 225(3)
protective equipment
aerial devices, 804(1)
flame resistant clothing, 232
footwear, 233
ladders, 127
safe work practices
electric utilities, 800
industrial power producers, 801
rural electrification associations, 800
standards and certifications
approach distances, 803(a)
protective devices or equipment, 799
safe work practices, 800
testing laboratories, 799(3)
utility disconnection for demolition, 419
work near equipment or power lines (above 750 v), 804
See also hazardous energy control
- electric utilities, overhead power lines**
in definition of electromagnetic radiation, 1
blasting operations, 501
coordinated work with other utilities, 802
notification of work near overhead power lines, 225(3)
power pole support when excavating, 454
rural electrification association, safe work practices, 225(3), 800
safe limit of approach distances, 225–227, Schedule 4, Table 1
standards, 800
transported loads, 226
utility worker exemption from safe distances, 227
when to contact power line operator, 225
- Electric Utilities Act**
in definition of electric utility, 1
- electrical storms** *See* weather
- electrical systems in mines** *See* mines and mine sites
- electrician**
defined, 1
- Electroacoustics — Sound Level Meters — Part 1: Specifications (IEC)**, 219(2)
- Electroacoustics — Sound Level Meters — Part 2: Pattern Evaluation Tests (IEC)**, 219(2)
- Electroacoustics — Sound Level Meters — Part 3: Periodic Tests (IEC)**, 219(2)
- Electroacoustics — Specifications for personal sound exposure meters (IEC)**, 219(2)
- electromagnetic radiation**
defined
in definition of ionizing radiation, 1
in definition of non-ionizing radiation, 1
electromagnetic radiation, 1
See also radiation exposure; radiofrequency transmitters

- elevated conveyors** *See* conveyors
- elevating platforms and aerial devices**, 346–353
- defined
 - aerial device, 1
 - boatswain's chair, 1
 - control zone, 1
 - temporary supporting structures, 1
 - boatswain's chairs, 351
 - certification by engineer
 - boatswain's chairs, 351(1)
 - fork-mounted platforms, 349(2)
 - permanent suspension powered platforms, 348(1)
 - temporary supporting structures, 352(3)–(4)
 - control zones
 - defined, 1
 - water dangers, 157
 - Director
 - alternative standard, approval, 347(9)
 - electrical equipment or lines with live line work
 - procedures, 804
 - fly form deck panels, 353
 - fork-mounted platforms, 349
 - logging industry structures, 525
 - manufacturer's specifications
 - boatswain's chairs, 351(1)
 - permanent suspension powered platforms, 348
 - personal fall arrest system, 156
 - restraining hoses and piping, 188
 - skeleton structures, 190
 - standards, 347
 - alternative, approval by Director, 347(9)
 - boom-supported platforms, 347(1)–(2)
 - manually propelled elevating platforms, 347(4)
 - mast-climbing work platforms, 347(6)
 - order pickers, 347(8)
 - permanent suspension powered work platforms, 348(1)
 - self-propelled elevating platforms, 347(3)
 - temporary supporting structures, 352(1)–(2)
 - vehicle mounted aerial devices, 347(5), 799(1)
 - temporary supporting structures, 352
 - worker safety, 346, 364
 - worker travelling in moving device, prohibition, 346
 - See also* personnel baskets and man baskets
- elevators** *See* building shafts
- emergency escape routes** *See* escape routes
- emergency first aider** *See* basic first aider
- emergency lighting**, 186(3)–(4)
- emergency medical responder**
- defined
 - in definition of advanced first aider, 1
 - in definition of first aider, 1
 - emergency medical responder, 1
 - availability and location, 181(2)
 - communication with, 181(2)
 - designation as first aider, 181(1)
 - high hazard work, 178, 181(1), Schedule 2, Tables 3 and 7
 - non-first aid duties, 181(2)
 - See also* advanced first aider; first aid and first aiders
- emergency medical treatment**
- in definition of health care facility, 1
 - See also* health care facility
- emergency response**, 115–118
- defined
 - emergency response plan, 1
 - communication systems
 - confined and restricted spaces, 48(1)(f), 56
 - emergency response plans, 116(g)
 - transportation to health care facility, 180(2)
 - confidential business information to medical professionals, 413–414
 - confined and restricted spaces
 - emergency equipment, 45(e), 46(3), 48(1)(d)–(e), 48(2)
 - emergency procedures, 55
 - remote monitoring station, 56
 - tending worker, 56
 - tests and inspections of emergency equipment, 48(2)
 - designation of workers, 117(1)
 - emergency lighting, 186(3)–(4)
 - emergency response plan, 115–116
 - alarms, 116(g)
 - communication systems, 116(g)
 - competent person to prepare, 2.2
 - current, 115(3)
 - emergency equipment, 116(c)
 - facilities, 116(e)
 - fire protection, 116(f)
 - first aid, 116(h)
 - identification and procedures, 116(a)–(b)
 - involvement of affected workers, 115(2)
 - personal protective equipment, 116(c)
 - requirement, 115
 - rescue and evacuation, 115(1), 116(i)–(j)
 - training, 116(d)
 - emergency washing equipment, 23
 - escape routes from work areas, 119(4)–(5)
 - evacuation procedures
 - confined and restricted spaces, 53(4)–(5), 55
 - emergency response plan, 115, 116(i)–(j)

- personal protective equipment, 118
- fall protection, 138
- hazardous products (WHMIS)
 - confidential business information to medical professionals, 413–414
 - laboratory samples, 403(2)
 - training in emergencies, 397(1)(f), 397(1)(g), 398(5)(c)
- hazards, emergency control, 10
- personal protective equipment
 - alternative equipment, 254
 - contents of plan, 116(c)
 - emergency escape equipment, 254
 - equipment use and provision, 118
 - inspections, 248(2)
- Prusik and similar knots, 150.3
- respiratory protective equipment, 248(2), 254
- training and simulation exercises, 117(2)–(4)
- training and simulation exercises, PFAS exemption, 138
 - See also* decontamination of workers; first aid and first aiders; mines and mine sites; oil and gas wells; underground mines
- emissions** *See* fugitive emissions
- employers on health and safety committee** *See* joint health and safety committee
- employers safety data sheets** *See* safety data sheets (WHMIS)
- energy, hazardous** *See* hazardous energy control
- Engineering and Geoscience Professions Act**
 - in definition of professional engineer, 1
- engineer's certification** *See* certification by professional engineer
- engines, internal combustion** *See* internal combustion engines
- entrances, walkways, and stairways**, 119–123
 - doors, 120
 - good working order, 120(2)(a)
 - inside opening, 120(2)(b)
 - opening without effort or obstruction, 120(1)
 - ramps, 121
 - runways, 121
 - safe entry and exit, 119
 - secondary escape routes, 119(4)–(5)
 - stairways, 122, 123
 - handrails on, 122(2), 123
 - rise heights, 122(1)(a)
 - temporary stairs, 122(3)
 - tread widths, 122(1)
 - toe boards and guardrails, 321(2)
 - walkways, runways and ramps, 121
 - strength, 121(1)(a)
 - toe boards and guardrails, 121(1)(d), 321(2)
 - traction, 121(2)
 - walkways to separate pedestrians from areas for powered mobile equipment, 259
 - width, 121(1)(b)–(c)
- entry permit system for confined and restricted spaces**, 47, 50, 58
- Environmental Protection Agency (EPA)**
 - OEL measurements, 20(1)(d)
- EPA Test Methods**
 - OEL measurements, 20(1)(d)
- equipment**
 - defined
 - equipment, 1
 - hazardous energy, 1
 - operate, 1
 - contact by clothing, PPE and any other thing, 362
 - for domestic workers, 1.2(3)
 - fire and explosion hazards, precautions, 165(3), 165(5)
 - for moving workers, 364
 - See also* hazardous energy control; machinery; personal protective equipment (PPE); respiratory protective equipment; specifications, certifications and standards; toilets and washing facilities; tools
- equivalent dose, maximum**
 - defined, 1
 - See also* ionizing radiation; radiation exposure
- escape routes**
 - haul roads in mine sites, 539(2)
 - from work areas, 119(4)–(5)
 - See also* emergency response; underground mines
- ethylene dibromide (1,2 dibromoethane)**
 - code of practice required, 26, Schedule 1, Table 1
- ethylene oxide**
 - code of practice required, 26, Schedule 1, Table 1
 - OEL, Schedule 1, Table 2
- evacuation** *See* emergency response; underground mines
- excavating and tunneling**, 441–464
 - defined
 - disturbing the ground, 441
 - excavation, 1
 - hand expose zone, 1
 - hard and compact soil, 442(1)
 - likely to crack or crumble soil, 442(2)
 - soft, sandy, or loose soil, 442(3)
 - spoil pile, 1
 - trench, 1

- buried or concrete-embedded facilities, 447–448
- certifications and specifications by engineer
- ground formation, certification, 449
 - soil stabilization, certification, 443(2)
 - specifications and certifications, generally, 12–15.1
 - temporary protective structures, specifications, 456
 - temporary protective structures in trenches, certifications, 457(4)–(5)
 - tunnel excavation, 464(1)
- cutting back walls, 450(1)(a), 450(1)(c), 451
- disturbing the ground, application of Code, 441
- entry and exit, 446, 455
- ground formation certification by engineer, 449
- marking an excavation, 444
- mechanical excavation equipment location, 448(1)–(2), 448(5)
- power pole support, 454
- powered mobile equipment access and block, 459–460
- protection methods, 450–451
- shoring component dimensions, 457, Schedule 9
- shoring component dimensions for excavations, Schedule 9
- soils
- soil classifications, 442
 - soil stabilization, 443
 - soil type, more than one, 442(4)
- solid rock, 450(2)
- spoil pile and loose materials, 452–453
- temporary protective structures, 456–458
- alternatives for trenches, 457, Schedule 9
 - installation and removal, 458
 - methods of protection, 450
 - as protection method, 450(1)(b)–(c)
 - shoring component dimensions, Schedule 9
 - specifications by engineer, 456
 - standards for lumber and plywood, Schedule 9
- tunnel excavation, 464
- water hazards, 445, 464(2)
- worker access, 446
- See also* buried or concrete-embedded facilities; soils and soil types; underground shafts
- excavation**
- in definition of pit, 1
 - See also* pit
- excess noise**
- defined, 1
 - See also* noise
- exploration for oil, gas or geothermal energy**
- application of Code, 750
 - See also* oil and gas wells
- explosive atmosphere**
- defined
 - in definition of combustible dust, 1
 - in definition of flammable substance, 1
 - explosive atmosphere, 1
 - as hazard, 161.1
 - well swabbing, 780(6)
 - See also* fire and explosion hazards; underground mines, fire and explosion prevention
- explosives**
- defined
 - blast hole, 1
 - blaster, 1
 - blasting area, 1
 - blasting circuit, 1
 - blasting machine, 1
 - blasting mat, 1
 - bootleg, 1
 - bore hole, 1
 - container, 1
 - controlled blasting, 1
 - day box, 1
 - detonating cord, 1
 - detonator, 1
 - direct supervision, 1
 - explosive, 1
 - handling, 1
 - leg wire, 1
 - lower explosive limit, 1
 - magazine, 1
 - misfire, 1
 - perforating, 1
 - permitted explosive, 1
 - prime, 1
 - secondary blasting, 1
 - seismic blasting, 1
 - shunt, 1
 - stemming, 1
 - avalanche control, 515
 - blaster's reports, 468.51, 468.52, 511(3)
 - community protection, 498, 498.1
 - demolition of buildings, 418
 - electromagnetic radiation, 501
 - explosive atmospheres as hazards, 161.1
 - fireworks, 517.1
 - first aid, high hazard work, 178, 181(1), Schedule 2, Tables 3 and 7
 - ignition sources, distance to explosives, 466
 - oil well blasting and perforating, 516
 - overhead power lines, 501
 - police report of loss or theft, 468.52

- pyrotechnic and special effects devices, 517.1
 radiofrequency transmitters, 503, Schedule 10, Tables 1 and 2
 secondary blasting, 517.2, 517.9991
 seismic blasting, 517
 standards, generally, 470, 470.1
 unauthorized access to, 468(5), 468.52, 470.3
 WHMIS not to apply, 395(5)(a)
See also blasters; blasting machines; mines and mine sites, explosives; underground mines, explosives
- explosives, handling and storage, 470–484**
- blaster's reports, 468.51
 blasting area, 498, 498.1
 blasting machine, 495, 505–506
 blasting mats, 502
 cartridge explosives, 479
 community protection, 498, 498.1
 damaged, deteriorated or unsafe explosives, 475
 detonators, 483
 drilling, 485–488
 bootlegs, 486
 excavating and drilling, 485
 inspection for misfires, 485(2), 486
 misfires, 510.1
 near blast holes, 485(1)
 priming after completion of, 481(3)
 safe positioning of workers, 488
 size of bore hole, 487
 water damage, 486.1
 firing, 498–506
 above-ground explosive, 502
 blasting machine, 505–506
 blasting mats, 502
 community protection, 498, 498.1
 determination of burning explosives, 499.1
 electromagnetic radiation, 501
 length of fuse assembly, 504
 overhead power lines, 501
 radiofrequency transmitters, 503, Schedule 10, Tables 1 and 2
 shunting the blasting cable, 503(2), 506
 waiting period, 509
 warnings, 499
 worker protection, 499, 499.1
 inspections of stored explosives, 475
 loading, 488.1–497.1
 connecting down lines to trunk cords, 497
 ignition precautions, 497.1
 leg wires, stemming, 494
 leg wires, unwinding, 489
 quantity of explosives, 488.1
 sequential firing, 492
 stemming and bore holes, 487, 517.99(3)
 tamping explosives, 491
 testing detonators, circuits and blasting machines, 495
 unintended detonation by electrical energy, 490
 magazines
 blaster's report at end of shift, 468.51
 light sources, 470.1(2)
 loss or theft of explosives, 468.52
 oldest explosives used first, 474
 removal from magazine, 470.4
 standards, 470, 470.1(1)
 storage of explosives, 470.2
 unused explosives returned to, 470.2(3)
 oldest used first, 474
 original packaging, 473(2), 479
 priming, 481
 quantities as appropriate, 477, 488.1
 signs, 473.1(3), 498.1
 standards and specifications, 470, 470.1(1), 470.2, 475(d)
 strength as appropriate, 477, 488.1
 surfaces for cutting, piercing, or sectioning, 477(3)
 tools, 480, 491
 unauthorized access to explosives, 468(5), 468.52, 470.3
 waiting periods, 509
 weather, adverse, 484, 501
 worker protections, 509
See also blasters; blasting machines; explosives, misfires and destruction; explosives, transportation in vehicles
- explosives, misfires and destruction, 509–513**
- blaster's reports, 468.51, 511(3)
 delay detonators, 509
 destruction or disposal, 470.2(1)
 drilling, 510.1
 electric detonators, 509
 excavators, 510.1
 inspections, 509, 511(6)
 safety fuse assembly, 509
 signs, 511(2)
 specifications, 470.2(1), 475(d), 509
 stemming removal, 517.996
 suspected misfires, 509
 undetonated explosives and misfires, 511
 waiting period, 509
 waste removal, 513
 withdrawal, 510
 worker protections, 509, 511

- worker's reports, 511(4)
 working around a misfire, 510.1
See also mines and mine sites, explosives;
 underground mines, explosives
- explosives, transportation in vehicles, 473–473.2**
 breakdown of vehicle, 473.2
 compartments, requirements, 473.1(1)
 competent worker, 473.1(2)
 electric conveyance, 517.95
 electric detonators, 473 (3)
 fire extinguishers, 473.1(4)
 original packaging, 473(2)
 protection from damage, 473(2)
 radiofrequency transmitters when placing or removing
 explosives, 503
 separation of detonators and explosives, 473.1
 signs, 473.1(3)
 standards, 473(1)
 unauthorized access to explosives, 468(5)
 underground mines, 517.95
 vehicle requirements, 473.1
 weatherproof compartments, 473.1
 workers, 468(2)
- Explosives — Magazines for Industrial Explosives
 (CAN), 470.1(1)**
- Explosives Act (Canada)**
 in definition of permitted explosive, 1
 transporting explosives, 473(1)
 WHMIS not to apply to explosives under, 395(5)(a)
- exports from Canada**
 hazardous products with placards, 401(1)(b)
- exposed worker**
 defined, 1
See also asbestos; coal dust; lead and lead
 compounds; restricted areas; silica (respirable
 crystalline silica)
- exposure limits, occupational (OEL)** *See* occupational
 exposure limit (OEL)
- extinguishers, fire** *See* fire extinguishers
- extraction of oil, gas or geothermal energy**
 application of Code, 750
See also oil and gas wells
- Eye and face protectors (CSA), 229**
- eye protection, 229–231**
 contact lenses, 230
 duty to use, 228, 229(2)
 electric arc welding, 231
 eye wash equipment, 24
 face piece respirators, 229(3), 250
 full face piece respiratory protection, 229(3)
 prescription eyewear, 229(2)–(2.3)
 respiratory protection equipment, 229
 standards, 229
See also personal protective equipment (PPE)
- face protection** *See* eye protection; respiratory
 protective equipment; skin
- facial hair**
 clean shaven for facial seals, 250(2)
 contact with tools, equipment and machinery, 362
- facial seals**
 in respiratory protective equipment, 229(3), 250
See also respiratory protective equipment
- facilities, changing** *See* changing rooms
- facilities, first aid** *See* first aid and first aiders
- facilities, health care** *See* health care facility
- facilities, lunch** *See* lunch rooms
- facilities, washing** *See* toilets and washing facilities
- facility, buried** *See* buried or concrete-embedded
 facilities
- fall arrest system, personal** *See* personal fall arrest
 system (PFAS)
- Fall arresters and vertical lifelines (CSA), 143(1), 144,
 147(1), 154**
- Fall arresters and vertical rigid rails (CSA), 144,
 147(1), 154**
- fall arresting device**
 defined, 1
See also personal fall arrest system (PFAS); personal
 protective equipment (PPE)
- fall protection systems, 138–161**
 defined
 anchor, 1
 anchorage, 1
 body belt, 1
 control zone, 1
 fall arresting device, 1
 fall protection system, 1
 fall restrict system, 1
 leading edge, 1
 swing drop distance, 1
 certification
 horizontal lifeline system, 153–153.1
 control zone, 161
 duty to use, 139
 equipment
 compatibility, 150
 inspection and maintenance, 150.1
 removal from service, 150.2
 fall protection plans, 140–141
 competent person to prepare plans, 2.2
 contents of plan, 140(2)

- when needed, 140(1)
- when to prepare, 140(3)–(4)
- worker training, 141
- horizontal lifeline systems, 153–153.1
- leading edge fall protection systems, 158
- life safety rope, 147
- personal protective equipment
 - duty to use, 228
 - harnesses, 142
 - inspection and maintenance, 150.1
 - removal from service, 150.2
 - rescue personnel, 138
 - standards, 142–144, 146–149
- procedures in place of, 159
- Prusik and similar knots, 150.3
- standards
 - body belts, 142.1(a)
 - connecting components, 143(1)
 - lanyards, 142.2(1)
 - shock absorbers, 142.3(1)
- training, fall protection plan, 141
- tree care operations, 793(1)(d), 794
- on vehicles and loads, 155
- water dangers, 157
- when required, 139, 141
- work positioning system, 160.1
 - See also* anchors; personal fall arrest system (PFAS); safety nets; travel restraint system
- Fall Protection Systems — American National Standard for Construction and Demolition Operations (ANSI/ASSE), 142.1(a)**
- Fall Restrict Equipment for Wood Pole Climbing (CSA), 149**
- fall restrict system**
 - defined
 - fall restrict equipment, 1
 - fall restrict system, 1
 - work positioning system, 1
 - body belt, 142.1, 149
 - fall restrict equipment, 149
 - wood pole climbing, 149
 - work positioning system, 160.1
- falling into holes** *See* openings and holes
- falling objects**
 - from demolition, 416, 420
 - in drilled or bored underground shafts, 462(3)–(4)
 - from elevated conveyor belts, 372, 373(3)
 - powered mobile equipment protective structures, 272–273
 - safeguards
 - hoists or scaffolds, safeguard specifications, 318(4)
 - overhead safeguard, 318(1)–(3)
 - toe boards, 321
 - openings and holes, 314
 - specifications, 321(1), 321(5)
 - when needed, 321(2)–(4)
 - warning signs and other devices, 318(4)
 - from welding or allied process, 171.1(4)
 - See also* demolition; forestry; safety nets
- falling objects protective structures (FOPS)**
 - for powered mobile equipment, 272–273
 - See also* powered mobile equipment
- falsework** *See* temporary supporting structures
- Falsework for Construction Purposes (CSA), 352(1)–(2)**
- family violence**
 - protection of workers, 390.3
 - See also* violence and harassment
- fans** *See* underground mines, ventilation systems; ventilation systems
- farming and ranching operations**
 - application of Act and Code, 1.1
 - in definition of all-terrain vehicle, 1
 - training of health and safety committee and representatives, 1.1(4)–(5), 201
- fastening tools, actuated**
 - safety precautions, 374
- f/cc (fibres per cubic centimeter of air)**
 - defined, Schedule 1, Table 2
 - See also* fibres
- feeding materials into machinery**
 - continuous-feed devices, 371
 - preventing machine activation, 366
 - push stick or block, safeguard, 319
 - See also* machinery
- feet** *See* footwear
- felling and bucking** *See* forestry
- feminine hygiene products disposal, 360(c)**
- fences** *See* safeguards and warnings
- ferrules, 301**
- fibres**
 - defined
 - in definition of flammable substance, 1
 - in definition of hazardous location, 1
 - f/cc (fibres per cubic centimeter of air), Schedule 1, Table 2
 - fibre, 1
 - OEL, Schedule 1, Table 2
 - OEL measurements (NIOSH), 20(3)
- fibres in manufactured goods** *See* fibre ropes; synthetic fibre ropes; synthetic fibre slings

- fibre ropes**
 on sawmill log carriages, 383(2)
 standards, synthetic fibre rope, 297(1)
- fighters** *See* violence and harassment
- fingers** *See* hand protection
- fire and explosion hazards**, 162–171
 defined
 combustible liquid, 1
 contaminated, 1
 explosive atmosphere, 1
 fibre, 1
 flammable liquids, 1
 flammable substances, 1
 flash point, 1
 hazardous location, 1
 hot taps, 1
 hot work, 1
 inerting, 1
 certification by engineer
 classification of work sites, 162.1(1)
 confined and restricted spaces, 52
 contaminated clothing and skin, 164
 documents
 classification of work sites, 162.1(1)(d)
 hot tap plan, 170(1)–(2)
 hot work permit, 169(2)
 prepared by competent person, 162.1(1)(d)
 flame resistant clothing, 232
 flammable or explosive atmospheres as hazards, 161.1
 hot taps, 170
 hot work, 169
 industrial furnaces and fired heaters, 168
 flammable substances, 163(2)(c)
 ignition after shutdown, 168(3)
 inserted blinds or double block and bleed systems, 168(2)
 operations in hazardous locations, 168(4)–(5)
 other safeguards, 168(6)
 safe operation, 168(1)
 inerting, 54
 internal combustion engines, 166
 combustion air intakes and exhaust discharges (not vehicles), 166(1)
 gas monitoring equipment, 166(6)
 general precautions, 166(2.1)
 no use in classified locations, 166(5)–(7)
 storage of flammable substances, 163(2)
 temperature of exposed surfaces (not vehicles), 166(2)–(3)
 vehicles, 166(4)
 powered mobile equipment
 flammable, combustible or explosive materials, 277
 refuelling, 279
 precautions, 163, 165
 air intakes, no storage near, 163(2)(c)
 boundary identifications, 165(4)
 equipment not to ignite substances, 165(3), 165(5)
 fences, 165(4)
 flammable substances in approved containers, standards, 163(2)(d)
 flammable substances not contacting oxygen, 165(6)–(7)
 flammable substances not released inadvertently, 165(6)–(7)
 flare stacks, flare pits and flares, safe distances, 167
 other safeguards, 165(7), 168(6)
 quantities insufficient for explosions, 163(2)(a)
 standards for classification of hazardous locations, 168(4)–(5)
 static electricity control, 163(2.1), 165(3), 165(5)
 transfer of liquids in metallic or conductive containers, 163(2.1)
 underground shafts, storage distance, 163(2)(b)
 warnings, 165(4)
 prohibitions, 162
 burning material near explosives, 466
 ignition sources distance when refuelling vehicles, 279(1)–(2)
 no entry or work when percent of substance present, 162(1)–(2)
 no improper storage of contaminated rags, 162(6)
 no open flames, 162(3.1)
 no smoking, 162(3)
 no smoking when refuelling vehicles, 279(1)–(2)
 no use near ignition sources, 162(4)
 no use of flammables in washing and cleaning operations, 162(5)
 refuelling vehicles when running, 279
 spray operations, 170.1
 standards
 for classification of hazardous locations, 162.1(1), 166(5)–(7), 168(4)–(5)
 for containers of flammable substances, 163(2)(d)
 for spray operations, 170.1(3)
 ventilation system, when needed, 386(d)
 well swabbing, 780(6)
 work sites classification, 162.1
See also coal mines, underground; compressed and liquefied gas; confined and restricted spaces; industrial furnaces and fired heaters; internal combustion engines; oil and gas wells; underground mines, fire and explosion

- prevention; ventilation systems; welding or allied process
- fire boxes of furnaces** *See* industrial furnaces and fired heaters
- fire extinguishers**
 - on vehicles transporting explosives, 473.1(4)
 - See also* emergency response
- Fire resistant hydraulic fluids (CSA)**, 693.3(5)–(7)
- fired heaters** *See* industrial furnaces and fired heaters
- firefighters and fire fighting**
 - footwear, standards, 233(5)
 - headwear, 237
 - mines, firefighting equipment training, 547
- Fire-performance and antistatic requirements for conveyor belting (CSA)**, 598
- Fire-performance and antistatic requirements for ventilation materials (CSA)**, 724
- fireworks, standards**, 517.1
- first aid and first aiders**, 177–184
 - defined
 - advanced care paramedic (ACP), 1
 - advanced first aider, 1
 - approved training agency, 1
 - basic first aider, 1
 - close work site, 1
 - distant work site, 1
 - emergency medical responder, 1
 - emergency response plan, 1
 - first aid, 1
 - first aider, 1
 - health care facility, 1
 - high hazard work, 1, Schedule 2, Table 3
 - illness or injury, 1
 - isolated work site, 1
 - low hazard work, 1, Schedule 2, Table 1
 - medium hazard work, 1, Schedule 2, Table 2
 - primary care paramedic, 1
 - advanced first aider
 - availability and location, 181(2)
 - communication with, 181(2)
 - high hazard work, 181, Schedule 2, Tables 3 and 7
 - non-first aid duties, 181(2)
 - availability, 178–179
 - close work sites
 - low hazard work, 178, 181(1), Schedule 2, Tables 1 and 5
 - medium hazard work, 178, 181(1), Schedule 2, Tables 2 and 6
 - high hazard work, 178, 181(1), Schedule 2, Tables 3 and 7
 - designation of first aiders, 181(1), Schedule 2, Tables 5–7
 - Director of Medical Services
 - training providers, approvals, 177
 - distant work sites
 - low hazard work, 178, 181(1), Schedule 2, Tables 1 and 5
 - medium hazard work, 178, 181(1), Schedule 2, Tables 2 and 6
 - high hazard work, 178, 181(1), Schedule 2, Tables 3 and 7
 - emergency communication system, 179
 - in emergency response plans, 116(h)
 - emergency transportation plan, 180
 - accompaniment by first aider, 180(3)–(4)
 - communication systems, 180(2)
 - competent person to prepare plan, 2.2
 - contents, 180(2)
 - when to prepare, 180(1)
 - employer agreements for joint provision, 178(4)
 - first aid kits and equipment
 - equipment and supplies, 178, Schedule 2, Tables 4–7
 - types and sizes of kits, 178(3), Schedule 2, Tables 4–7
 - first aid rooms, 178–179, Schedule 2, Tables 4–7
 - first aiders
 - number and type required, 178, 181(1), Schedule 2, Tables 5–7
 - isolated work sites
 - low hazard work, 178, 181(1), Schedule 2, Tables 1 and 5
 - medium hazard work, 178, 181(1), Schedule 2, Tables 2 and 6
 - high hazard work, 178, 181(1), Schedule 2, Tables 3 and 7
 - location, 178–179
 - medical settings, not to apply, 181(4)
 - mines and mine sites, emergency and rescue workers, 546
 - records
 - access to, 184
 - confidentiality, 184
 - list of designated first aiders, 181(1)
 - report on illness or injury, 182–184
 - retention period, 183(3)
 - worker's copies, 184
 - signs, 179
 - standards
 - first aid kits, 178(3)
 - training, 177(2)

- training
 - approved person or agency, 177, 181
 - first aider's completion of, 181(1)
 - standards, 177
- violence and harassment, 392
- worker's duty to report illness or injury, 182–183
 - See also* nurse with advanced first aid certificate
- First aid kits for the workplace (CSA)**, 178(3)
- First aid training for the workplace — Curriculum and quality management for training agencies (CSA)**, 177(2)
- fist clips**, 300(3)–(4)
- fit testing for facial seals**, 250
 - See also* respiratory protective equipment
- fixed ladders**, 130–132
 - defined, 1
 - certification by engineer
 - climb assist device, exemption, 132
 - material other than steel, 130(3)
 - design criteria, 130
 - fall protection systems, 154
 - in manholes, 131
 - rest platform exemption, 132
 - safety gates, 130(4)–(5)
 - shock absorbers in fall arrest systems, 142.3(4)
 - See also* ladders
- Fixed Ladders and Cages (PIP)**, 130(1)–(2)
- flags**
 - excavation markings, 444
 - for warning of trees to be felled, 522(b)
- flame resistant clothing**, 232
 - See also* personal protective equipment (PPE)
- Flameproof non-rail-bound diesel-powered machines for use in gassy underground coal mines (CSA)**, 697.4
- Flammable and Combustible Liquids Code (NFPA)**, 163(2)(d)
- flammable liquid**
 - defined, 1
 - See also* fire and explosion hazards
- flammable substances**
 - defined, 1
 - See also* fire and explosion hazards
- flares**
 - hazardous locations, safe distances, 167
 - public highway traffic control, 194(7)(e)
- flash point**
 - defined, 1
 - See also* fire and explosion hazards
- flashing lights and beacons**
 - falling objects warnings, 318(3)
 - public highway traffic control, 194(7)(d)
 - See also* warning devices and alarms
- Flemish eye splices**, 301(1)
- flexible horizontal lifeline systems** *See* horizontal lifeline systems
- Flexible Horizontal Lifeline Systems (CSA)**, 153(1)
- flotation devices** *See* personal flotation devices
- flour dust**
 - OEL, Schedule 1, Table 2
- fluids, drinking** *See* drinking fluids
- fly form deck panels**
 - defined, 1
 - certification by engineer, 353(4)
 - design and specifications, 353(1)–(2), 353(4)
 - erection drawings and procedures, available to workers, 353(3)–(4)
 - manufacturer's specifications, 353(4)
 - safety procedures, 353(5)–(6)
 - See also* elevating platforms and aerial devices; temporary supporting structures
- Food and Drugs Act (Canada)**
 - WHMIS not to apply to substances under, 395(5)(b)
- food processing**
 - application of Code, 1.1
 - first aid, high hazard work, 178, 181(1), Schedule 2, Tables 3 and 7
- footwear**, 233
 - appropriate for hazards, 233(1), 233(3)
 - duty to use, 228
 - firefighters, 233(5)
 - health or safety risks, 233(1.1)
 - standards, 233(2), 233(4)–(5)
 - toecaps, 233(2)–(4)
 - See also* decontamination of workers; personal protective equipment (PPE)
- FOPS (falling objects protective structures)**
 - for powered mobile equipment, 272–273
 - See also* powered mobile equipment
- forestry**, 518–525
 - documents
 - logging trucks hazard assessment, 524(3)
 - felling and bucking, 518–523
 - bucking, safe procedures, 518(5)
 - clear path of retreat, 518(1)
 - cutting timber, safe procedures, 518(4)
 - distance of workers from, 518(2)–(3)
 - distance of workers from self propelled feller, 518(3)
 - hand felling, 519
 - mechanized feller or limber, standards for operator protective structures, 520–521

- partially cut trees, 523
- first aid, high hazard work, 178, 181(1), Schedule 2, Tables 3 and 7
- logging trucks, 524–525
- road warnings, 522
- standards
 - operator protective structures, 521
- traffic safety
 - passing vehicle traffic control system, 525(2)–(4)
 - structures for safe transit, 525(1)
- warning signs, 522
 - traffic safety, 525(3)*See also* tree care operations
- forklift trucks**
 - load charts, 283
 - personal fall arrest systems, 156
 - seat belts, 284
 - standards, 347(8)*See also* powered mobile equipment
- fork-mounted platforms**
 - certification by engineer, 349(2)
 - design and specifications, 349(1)–(2)
 - safety procedures, 349(3)–(4)
 - worker on moving platform, prohibition, 349(4)*See also* elevating platforms and aerial devices
- forms** *See* temporary supporting structures
- frames of glasses** *See* eye protection
- free fall distance**
 - defined, 1*See also* personal fall arrest system (PFAS)
- free-standing scaffolds**
 - design, 334(1)
 - use in demolition work, 422*See also* scaffolds and temporary work platforms
- freezing soil for stabilization**, 443(2)–(3)
- fruit production**
 - application of Code, 1.1
- fuel dispensing in retail fuel stores**
 - application of Code, 392.1
 - fuel dispensing and prepayment, 392.6*See also* retail fuel and convenience store worker safety
- fuel storage**
 - oxygen fuel systems, prohibitions, 171(1)(b), 171(4)
 - powered mobile equipment
 - fuel tank in cab of, 274
 - portable fuel tanks, 277(1)
 - refuelling hazards, 279
 - storage near underground mines, 696
 - underground fuel stations, 704–705, 713
 - underground mines bulk storage, prohibitions, 696*See also* diesel fuel and diesel-powered equipment
- fugitive emissions**
 - defined, 394.1
 - safety data sheet, exemption, 405(2)
 - training in procedures, 397(1)(f), 398(5)(c)*See also* Workplace Hazardous Materials Information System (WHMIS)
- full body harness**
 - defined
 - cow's tail, 1
 - in definition of industrial rope access work, 1
 - in definition of work positioning system, 1
 - full body harness, 1
 - lanyard, 1
 - in personal fall arrest system, 142
 - standards
 - industrial rope access work, 834
 - standards, 142(1)
 - wood pole climbing, 149
 - working positioning systems, tree care, 795*See also* personal fall arrest system (PFAS); sit harness
- Full body harnesses (CSA)**, 142(1), 795(1)(c), 834(d), 848(c)
- furnaces** *See* industrial furnaces and fired heaters
- fuse assemblies** *See* detonators and detonation
- gallows frame roofer's hoist**, 97(6)–(7)
 - See also* roofer's hoists
- gantry, overhead cranes, standards**, 93–94
- gas, compressed and liquefied** *See* compressed and liquefied gas
- gas furnaces** *See* industrial furnaces and fired heaters
- gas lines** *See* buried or concrete-embedded facilities
- gas sample containers**, 784
- gas stations, retail**
 - application of Code, 392.1*See also* retail fuel and convenience store worker safety
- gates** *See* safeguards and warnings
- General requirements for certification of personnel engaged in industrial rope access methods (International Rope Access Trade Association)**, 826(a)
- generic name**
 - in definition of product identifier, 394.1*See also* Workplace Hazardous Materials Information System (WHMIS)
- geophysical surveys**
 - defined

- seismic blasting, 1
- survey equipment in definition of electromagnetic radiation, 1
- seismic blasting
 - fire extinguisher, 517(3)
 - first aid high hazard work, 178, 181(1), Schedule 2, Tables 3 and 7
 - open flame to warm water on seismic drill, 517
- geothermal operations**
 - defined
 - in definition of well servicing, 1
 - application of Code, 750
- gin poles**, 75
- glass windows and windshields**
 - in powered mobile equipment, 265
- glasses** *See* eye protection
- gloves**
 - duty to use, 228
 - use of, 242–243
- gob**
 - defined, 1
 - See also* coal mines, underground
- goggles** *See* eye protection
- goods, lifting** *See* lifting and handling loads
- Government Organization Act**, 171.1
- grain bins** *See* confined and restricted spaces
- grain dust**
 - OEL, Schedule 1, Table 2
- gravel**
 - in definition of mine, 1
 - in definition of pit, 1
 - See also* mines and mine sites
- gravitational energy**
 - in definition of hazardous energy, 1
 - See also* hazardous energy control
- green tags, scaffolds**, 326(1)(a)
- greenhouses and nurseries**
 - application of Code, 1.1
- grills in powered mobile equipment**, 269
- grinders, 375**
 - defined
 - grinder accessory, 1
 - hand held grinders, 375(1)(c), 375(2)
 - manufacturer's specifications, 375(1), 375(3)
 - tool rests, 375(3)–(4)
- grinding** *See* hot work
- ground falls in mines**
 - dangerous occurrences reports, 544
- guardrails**
 - bridges for crossing conveyor belts, 373(1)–(2)
 - in definition of safeguard, 1
 - fork-mounted work platforms, fall protection systems, 349(2)(b)
 - openings and holes, 314
 - securing of, 315(3)
 - specifications
 - guardrails, 315(1)
 - temporary guardrails, 315(2)
 - toe boards, 321(1)
 - toe boards, 321
 - for walkways, runways and ramps, 121(1)(d)
 - when required, 139
 - See also* safeguards and warnings
- guards** *See* safeguards and warnings
- GVW (manufacturer's rated gross vehicle weight)**
 - defined, 1
 - See also* vehicles
- hair**
 - clean shaven for facial seals, 250(2)
 - contact with tools, equipment and machinery, 362
- half-horse scaffolds**
 - design and specifications, 335, Schedule 6, Tables 5–6
 - See also* scaffolds and temporary work platforms
- hand cleaning facilities** *See* toilets and washing facilities
- hand expose zone**
 - defined, 1
 - exposing buried facilities, 448(1), 448(3)
 - See also* buried or concrete-embedded facilities
- hand protection**
 - contact with tools, equipment and machinery, 362
 - duty to use, 228
 - use of, 242–243
- hand shields** *See* eye protection
- hand signals** *See* designated signallers
- Hand Tools for Live Working up to 1000 V a.c. and 1500 V d.c. (ULC)**, 799(1)
- hand-held equipment and hand tools**
 - defined
 - hand tool, 1
 - electrical drills in mines, 572
 - grinders, 375
 - signal lights, 194(6)
- handling explosives** *See* explosives
- handling hazardous products** *See* Workplace Hazardous Materials Information System (WHMIS)
- handling loads** *See* lifting and handling loads

hand-operated hoists

holding suspended load, 80

See also hoists

handrails on stairways, 122–123**harassment** *See* violence and harassment**hard and compact soil** *See* soils and soil types**hard hats**, 234, 235, 239

See also headwear

harmful substances

in definition of contaminated, 1

in definition of immediately dangerous to life or health, 1

See also occupational exposure limit (OEL)

harness *See* full body harness; sit harness**haul roads, mines and mine sites**, 539**hazard assessment, elimination and control**, 7–10

definitions

hazard assessment, 1

classification of work sites, 162.1

combination of controls and PPE, 9(5)

documents

classification of work sites, 162.1(1)(d)

hazard assessment, 7

prepared by competent person, 162.1(1)(d)

emergency control, 10

harassment as hazard, 389

hierarchy of elimination and control

elimination, 9(1)

engineering controls, 9(2)

administrative controls, 9(3)

personal protective equipment (PPE), 9(4)–(5)

combination of controls and PPE, 9(5)

OEL, 21

personal protective equipment

combined PPE with other controls, 9(5)

correct for hazard, 228(1)(a)

duty to use PPE, 228

hazard assessment, 45, 228

hierarchy of, 9(4)–(5)

report of assessment, 7(2)–(3), 10(2)

violence as hazard, 389

when to assess, 7(1), 7(4)

worker participation, 8

See also occupational exposure limit (OEL);

personal protective equipment (PPE); violence and harassment

hazard class

defined, 394.1

in definition of significant new data, 394.1

hazard information

defined, 394.1

See also Workplace Hazardous Materials Information System (WHMIS)

hazardous energy control, 212–215.6

defined

hazardous energy, 1

isolate, 1

pig, 1

pigcatcher, 1

pigging, 1

secure, 1

confined and restricted spaces, 49

diving operations by intakes, pipes and tunnels, 437

group control procedures

personal locks, 215(3)–(7)

report posted on work site, 215(3)

requirement for, 215(1)–(2)

return to operation, 215(7), 215.3

group control procedures for complex operations

certification by engineer, 215.1(2)

personal locks, 215.1

requirement for procedures, 215.1(1)

worker's sign in and sign out, 215.1(2)

machinery, equipment or powered mobile equipment

isolation of hazardous energy, 212–215.3

manufacturer's specifications for isolation, 212

operation during control, 212(2)

verification of isolation, 213

personal locks

assignment by employer, 214

identification tags, 214

more than one lock per worker, 214(3)

records of workers and tags, 214(2)

removal of locks, 215.3

transfer of control of lock, 214(4), 214.1(4), 215(3), 215.1, 215.3(2)

use on energy-isolating devices, 214.1

pipings and pipelines

alternative systems, 215.5(5)

blanking or blinding systems, 215.5

certification by engineer, 215.5(5)

double block and bleed system, 215.5

isolation requirements, 215.4–215.5

pigging and testing, 215.6

remotely controlled systems, 215.2

reports

group control report posted on work site, 215(3)

list of personal locks and tags, 214(2)

return to operation, 215.3

standards, certification and specifications

- group control procedures for complex operations, 215.1(2)
- machinery, equipment or powered mobile equipment, isolation specifications, 212
- pipng and pipelines, 215.5(5)
- specifications and certifications, generally, 12–15.1
- tampering with safeguards, 311
- verification of isolation, 214.1(3)
- hazardous locations**
- defined, 1
- in definition of hot work, 1
- See also* fire and explosion hazards
- Hazardous Materials Information Review Act (Canada)***, 408, 409, 411(2), 412
- hazardous products (WHMIS)**
- defined
 - hazardous product, 394.1
 - manufactured article, 394.1
 - safety data sheet, 394.1
 - significant new data, 394.1
- WHMIS not to apply to
 - dangerous goods, 395(4)
 - hazardous waste, 395(3)(c), 396
 - manufactured articles, 395(3)(d)
 - tobacco or tobacco products, 395(3)(b)
 - wood or wood products, 395(3)(a)
- See also* Workplace Hazardous Materials Information System (WHMIS)
- Hazardous Products Act (Canada)***
- confidential business information, 412
- in definitions of
 - hazard class, 394.1
 - hazardous product, 394.1
 - safety data sheet, 394.1
 - supplier label, 394.1
- hazard class, 408
- safety data sheets, 404
- Hazardous Products Regulations (Canada)***
- labels required, 398(2)
- laboratory samples, 403
- hazardous waste**
- defined, 394.1
- identification of waste, 396
- storage and handling, 396
- training of workers, 396
- WHMIS not to apply, 395(3)(c)
- headwear, 234–239**
- defined
 - protective headwear, 1
- all-terrain vehicles, 236
- alternative means of protection, 239
- bicycles, 235
- bump hat, 238
- duty to use, 228, 234
- exemptions, 239
- firefighters, 237
- industrial headwear, 234, 235, 238
- motorcycles, 236
- motorized trail bike, 236
- rope access work, industrial, 831–833
- rope access work, non-industrial, 844–846
- skates, 235
- small utility vehicles, 236
- snow vehicles, 236
- standards, 234, 235
- See also* decontamination of workers; hearing protection devices; personal protective equipment (PPE); respiratory protective equipment
- health and safety committee** *See* joint health and safety committee; joint health and safety committee, representatives
- Health and Safety Executive of Great Britain (HSE)**
- OEL measurements, 20(1)(c)
- health and safety orientation, oil and gas wells, 751.1**
- health assessments for exposure to asbestos, silica or coal dust**
- contents of report, 40(2)
- costs, 40(11), 40(13)
- frequency of assessments, 40(6)–(8)
- information to worker, 40(3)
- performed during work hours, 40(12)
- privacy of information, 40(5)
- refusal by worker, 40(9)–(10)
- retention of records, 40(4)
- See also* asbestos; coal dust; silica (respirable crystalline silica)
- health assessments for exposure to lead**
- blood lead level test, 43
- See also* lead and lead compounds
- Health Canada**
- National Dose Registry, 1, 291.5(1)(d)
- standards for radiation exposure, 291.2, Schedule 12, Table 4
- WHMIS exemption from disclosure, 409–410
- health care**
- defined
 - biohazardous material, 1
 - health care facility, 1
 - load, 208(4)
 - medical sharp, 1
 - musculoskeletal injuries, 1

- parenteral contact, 1
- safe patient/client/resident handling, 1
- safety engineered medical sharp, 1
- sharps, 1
- blood lead level test, 43
- documents
 - policies and procedures, 528, 530
- lifting and handling loads, 208–211.1
 - adapting heavy or awkward loads, 209
 - appropriate equipment, 209.1
 - handling program, 209.2
 - hazard assessment, 210
 - prevention of injuries, 210–211.1
 - use of equipment provided, 208
- limited exposure, 529
- medical professionals
 - confidential information disclosure to, 413–414
- medical sharps
 - coming into effect, 525.2(1)
 - recapping needles, 527
 - safe work procedures, 525.2(4)–(6), 528
 - safety engineered medical sharps, 525.2(2)–(3)
 - sharps containers, 526
- policies and procedures
 - for post exposure management, 530
 - for safety, 528
- transportation to health care facility, 180
 - See also* biohazardous materials; first aid and first aiders; health assessments for exposure to asbestos, silica or coal dust
- health care facility**
 - defined
 - in definition of close work site, 1
 - in definition of distant work site, 1
 - in definition of isolated work site, 1
 - health care facility, 1, 291.3
- emergency transportation, 180
- first aid requirements, not to apply, 181(4)
- lasers, 291.3
- lifting and handling loads
 - adapting heavy or awkward loads, 209
 - appropriate equipment, 209.1
 - handling program, 209.2
 - work site design, 209.1
- Health Professions Act**
 - in definition of nurse, 1
- hearing** *See* audiometric testing; noise
- hearing protection devices**
 - defined, 1
 - fit testing, 222
 - in noise management programs, 221(g)
 - standards, 222
 - training of workers, 221(f)
 - See also* audiometric testing; noise; personal protective equipment (PPE)
- Hearing Protection Devices — Performance, selection, care, and use (CSA), 222**
- heaters** *See* industrial furnaces and fired heaters
- heavy duty scaffolds**
 - defined, 1
 - See also* scaffolds and temporary work platforms
- Helmet Standard for Use in Motorcycling (Snell), 236(1)**
- helmets** *See* headwear
- hexachlorobutadiene**
 - code of practice required, 26, Schedule 1, Table 1
- high hazard work**
 - defined, 1, Schedule 2, Table 3
 - first aid requirements, 178, 181(1), Schedule 2, Tables 3 and 7
 - See also* first aid and first aiders
- high lift trucks** *See* forklift trucks
- high pressure pipeline**
 - defined, 1
 - See also* piping and pipelines
- high visibility safety apparel**
 - defined, 1
 - designated signaller, 191(2)–(3)
 - vehicle traffic control, 194(2)–(5)
 - See also* personal protective equipment (PPE)
- highways**
 - mine excavations at safe distances from, 535
 - traffic control to protect workers, 194(7)
 - See also* roads; vehicle traffic control
- hitch knots, 150.3**
 - See also* personal fall arrest system (PFAS)
- hitting** *See* violence and harassment
- hoists, 59–87**
 - defined
 - cantilever hoists, 1
 - chimney hoist, 1
 - hoist, 1
 - material hoists, 1
 - tower hoist, 1
 - A-frame safe practices, 75
 - application of Code, 59
 - cantilever hoists, 76
 - certification by engineer
 - boom on tower hoist, 99
 - cantilever hoists, 76(a)
 - not commercially manufactured, 60, 62
 - repairs and modifications, 65(3)(f), 73

- chimney hoists, 77–79
 - equipment requirements, 77
 - operator responsibilities, 78
 - worker in lifting device, 79
- collision prevention, 67
- containers for hoisting, 74
- documents
 - load charts, 64(2)
 - log books, 64(4), 65
- gin pole safe practices, 75
- hand-operated hoists, 80
- hoisting lines, 70
- identification of components, 61, 62(1), 73
- load charts, 64(2)
- load weight, 68
- loads over work areas, 69
- log books, 64(4), 65
 - certification by engineer, 65(3)(f), 73
 - contents, 65(3)
 - each device, with exclusion, 65(1)–(1.1)
 - inspections and tests, 65(3)(d)
 - manually operated hoists, not to apply, 65(1.1)
 - new owner transfer, 65(2)
 - operator requirement, 64(4)
 - paper or electronic for each device, 65(1)
 - person doing work, 65(5)
 - signature, 65(4)
 - tower crane, correct entries confirmed, 65(6)
- manually operated hoists, 65(1.1)
- not commercially manufactured, 60, 62
- operator requirements, 64
- personnel hoists, 96
- pile hoisting, 286
- protection from falling objects, 318
 - building shaft hoist or tower hoist, 318(7)(a)
 - hoist cage in underground shaft, 318(7)–(8)
 - overhead safeguard, 318(1)–(2)
 - specifications, safeguard, 318(4)–(5)
 - warning signs and devices, 318(3)
- rated load capacity, 62
- remote controls, 72(3)
- repairs and modifications, 73
- rigging protection, 296
- safety latches, 303
- signal systems, 64(2), 71
- standards
 - personnel hoists, 96
- on suspended scaffolds, 341(6)
- tag lines, 70
- tower and building shaft hoists
 - certification by engineer, boom, 99
 - design, 99
 - protective enclosure, 98
 - safeguards, 318(7)(a)
 - underground mines, 749.1
 - unsafe lift prevention, 66
 - vehicle hoists
 - safe use, 113
 - standards, 112
 - winching operations, 114
 - See also* material hoists; rigging; roofer's hoists; underground shaft hoist
- holes** *See* openings and holes
- hooks**
 - damaged hooks, rejection criteria, 309
 - safety hooks on safety nets, 320(1)(b)
 - safety latches, 303
 - snap hooks, standards for fall arrest system, 143(1)
- hoppers**
 - safeguards and warnings, 316
 - See also* confined and restricted spaces
- horizontal lifeline systems**
 - defined, 1
 - installation of, 153–153.1
 - See also* anchors; personal fall arrest system (PFAS); travel restraint system
- horns**
 - falling objects warnings, 318(3)
 - See also* warning devices and alarms
- horses, raising and maintenance of**
 - application of Code, 1.1
- horticultural tractors, 270–271**
 - rollover protective structures, 270
 - seatbelts and restraint systems, 271
 - See also* powered mobile equipment
- hoses**
 - pile driving equipment, restraining hoses and connections, 287
 - restraining hoses and piping, 188
 - sliding prohibited, oil and gas wells, 756
 - specifications and certifications, 188
- hospital**
 - in definition of health care facility, 1
 - first aid requirements, not to apply, 181(4)
 - See also* health care facility
- hot taps**
 - defined, 1
 - hot tap plans, 170(1)–(2)
 - precautions, 170(4)
 - procedures, 170(3)
 - See also* fire and explosion hazards

hot work

- defined, 1
- permits, 169(2)(a)
- preparation of locations, 169(2)(b)
- safe procedures, 169(2)(c)
- testing of atmosphere, 169(2)(d), 169(3)

See also fire and explosion hazards

hours of darkness *See* light and darkness

household work, 1.2

See also domestic workers

housekeeping

- asbestos, 28
- clean work sites, 185
- coal dust, 28
- condition of facilities, 361
- demolition sites, 421(2)
- lead and lead compounds, 28
- mines and mine sites, 532, 600, 693.3, 705, 743
- mould exposure, 43.1
- pile driving equipment and practices, 289(b)
- powered mobile equipment, 256(3)(f), 275(2)
- safety precautions, generally, 185
- silica, 28

See also waste

HSE (Health and Safety Executive of Great Britain)

- OEL measurements, 20(1)(c)

Human Pathogens and Toxins Act

- in definition of biohazardous material, 1

hydraulic energy

- in definition of hazardous energy, 1

See also hazardous energy control

hydraulic equipment

- excavations, temporary protective structure alternatives, 457(2)
- underground mines, fire-resistant fluids, 693.3(5)–(7)

hydrazines

- code of practice required, 26, Schedule 1, Table 1
- OEL, Schedule 1, Table 2

hydrogen sulphide

- code of practice required, 26, Schedule 1, Table 1
- drill stem testing, 779(3)
- OEL, Schedule 1, Table 2

Hyperbaric Facilities (CSA), 424**hypodermic needles**

- recapping needles, 527

See also medical sharps

ice, working on, 195**ignition sources near explosives, 466****illness or injury**

- defined
 - in definition of health care facility, 1
 - illness or injury, 1
 - musculoskeletal injury, 1
- access to records, 184
- duty to report, 182
- musculoskeletal injuries, prevention, 210–211.1
- record of, 183–184
- See also* first aid and first aiders; violence and harassment

immediately dangerous to life or health

- defined, 1
- See also* occupational exposure limit (OEL); oxygen content in air

inclement weather *See* weather

incombustible dust

- defined, 1
- in underground mines, 743

industrial facilities

- first aid, high hazard work, 178, 181(1), Schedule 2, Tables 3 and 7

industrial furnaces and fired heaters, 163, 168

- hazardous locations, standards for classification, 168(4)–(5)
- precautions against fires and explosions
 - flammable substances, 163(2)(c)
 - ignition after shutdown, 168(3)
 - inserted blinds or double block and bleed systems, prohibitions, 168(2)
 - operations in hazardous locations, 168(4)–(5)
 - other safeguards, 168(1), 168(6)
- See also* fire and explosion hazards

industrial minerals

- in definition of mine, 1
- in definition of mine site, 1
- See also* mines and mine sites

industrial power producers

- defined
 - industrial power producer, 1
 - utility employee, 1
- coordinated work with other utilities, 802
- safe work practices, 801
- See also* electric utilities

Industrial protective headwear — Performance, selection, care and use (CSA), 234, 831(1)(a), 831(2)(a)

industrial radiofrequency heaters

- in definition of electromagnetic radiation, 1

Industrial Robots and Robot Systems — General Safety Requirements (CSA), 384(1)

- Industrial Rope Access Technique (ARAA)**, 826(c)
- industrial rope access work**
 defined, 1
 in definition of occupational rope access work, 1
See also rope access work
- industrial tractors**, 270–271
 rollover protective structures, 270
 seatbelts and restraint systems, 271
See also powered mobile equipment
- industrial x-ray equipment**
 certificate for designated radiation equipment, 291.7
 in definition of designated radiation equipment, 1
 in definition of ionizing radiation equipment, 1
 monitoring worker exposure, 291.5–291.6
 standards, 291.2(e)
See also designated radiation equipment; radiation exposure; x-ray equipment
- inert mine material** *See* incombustible dust
- inerting**
 defined, 1
 in confined spaces, 54
- inflating tires** *See* tire servicing
- information access and privacy for workers**
 asbestos, silica or coal dust exposure records, 40(5)
 audiometric testing records, 223(5)
 health information in emergencies, 413–414
 health information in reports of illness or injury, 184
 violence and harassment incidents, 390.1(c)–(d), 390.5(c)
- information confidentiality for businesses** *See* confidential business information (WHMIS)
- information system for hazardous materials** *See* Workplace Hazardous Materials Information System (WHMIS)
- injury** *See* illness or injury
- in-line skating headwear**, 235
- inspect machinery, isolating hazardous energy to** *See* hazardous energy control
- Installing Poles (Insulating Sticks) and Universal Tool Attachments (Fittings) for Live Working (ULC)**, 799(1)
- Institut de recherch  Robert-Sauv  en sant  et en s curit  du travail (IRSST)**
 OEL measurements, 20(1)(e)
- instructional signs**
 logging industry vehicle traffic control, 525(3)
- integrating sound level meter, standards**, 219(2)
- intermediate first aider**
 defined
 in definition of first aider, 1
 intermediate first aider, 1
 low hazard work, 178, 181(1), Schedule 2, Tables 1 and 5
 medium hazard work, 178, 181(1), Schedule 2, Tables 2 and 6
 high hazard work, 178, 181(1), Schedule 2, Tables 3 and 7
See also first aid and first aiders
- internal combustion engines**
 combustion air intakes and exhaust discharges, 163(2)(c)(ii), 166(1)
 flammable substances, 163(2)(c), 166(2)–(3)
 gas monitoring equipment, 166(6)
 hazardous locations, classification of, 166(5)–(7)
 storage of flammable substances, 163(2)
 vehicles with, 166(4)–(7)
See also fire and explosion hazards; hot work
- International guidelines on the use of rope access methods for industrial purposes (International Rope Access Trade Association)**, 823(a)
- International Organization for Standardization (ISO)**
 OEL measurements, 20(1)(f)
- ionizing radiation**
 defined
 in definition of equivalent dose, 1
 in definition of millisievert (mSv), 1
 in definition of National Dose Registry, 1
 ionizing radiation, 1
 ionizing radiation equipment, 1
 direct supervision, 291.6
 maximum dose limits, 291.4, Schedule 12, Tables 1–2
 monitoring worker exposure, 291.5–291.6
 prevention and protection, 291, 291.1
See also radiation exposure
- ionizing radiation equipment**
 defined, 1
See also designated radiation equipment; particle accelerators; x-ray equipment
- irradiation x-ray equipment**
 defined
 in definition of designated radiation equipment, 1
 in definition of ionizing radiation equipment, 1
 certificate for designated radiation equipment, 291.7
 monitoring worker exposure, 291.5–291.6
See also designated radiation equipment
- IRSST Workplace Air Contamination Sampling Guide**
 OEL measurements, 20(1)(e)
- ISO (International Organization for Standardization)**
 OEL measurements, 20(1)(f)

- isocyanates**
code of practice required, 26, Schedule 1, Table 1
OEL, Schedule 1, Table 2
- isolated**
defined, 1
See also hazardous energy control
- isolated work site**
defined
high hazard work, 1, Schedule 2, Tables 3 and 7
isolated work site, 1
first aid requirements
low hazard work, 178, 181(1), Schedule 2, Tables 1 and 5
medium hazard work, 178, 181(1), Schedule 2, Tables 2 and 6
high hazard work, 178, 181(1), Schedule 2, Tables 3 and 7
See also first aid and first aiders
- isolating piping and pipelines** *See* piping and pipelines
- isolation of energy** *See* hazardous energy control
- isolation of worker** *See* working alone
- jackets as protective clothing**
duty to use, 228
use of, 242–243
See also life jackets
- jib**
defined, 1
electrical components and functions, standards, 93
overhead cranes, standards, 93–94
preventing damage by crane or boom truck, 92
See also booms and boom trucks
- joint health and safety committee, 196–201**
defined
union, 196.1(1)
application of the Act (ss.13 and 14), 196
co-chairs, 196.2, 197(a)
dispute resolution process, 197
farming and ranching operations, 1.1(4)–(5), 201
harassment prevention plan, 390.4, 390.7
meetings
frequency, 197(d)
minutes, 198
quorum, 199
records, 197(d), 198(2)
special meetings, 198, 199.2
members
determination of, 196.1(4)–(6)
non-unionized workers, 196.1(2), 196.1(4)–(6)
pay for committee work, 199.3
posting names and contact information, 199.1
records, 199.1
time away for committee work, 199.3
unionized workers, 196.1(1), 196.1(3)–(6)
OEL overexposure, reports, 22(3)
terms of reference
co-chairs, 196(2), 197(a)
dispute resolution, 197(g)
meetings, 197(d)–(e)
member not fulfilling duties, 197(g)
member replacement, 197(f)
member selection, 197(b)
records, 197(d)
term of office, 197(c)
- training
farming and ranching operations, 1.1(4)–(5), 201
on members' responsibilities, 201(a)
rights of workers, 201(c)
in WHMIS, 397(2)
work site party obligations, 201(b)
violence prevention plan, 390, 390.7
WHMIS (hazardous products)
safety data sheet availability, 407, 411
training in, 397(2)
See also joint health and safety committee, representatives
- joint health and safety committee, representatives, 196–201**
application of the Act (ss.13 and 14), 196
harassment prevention plans, 390.4, 390.7
OEL overexposure, reports, 22(3)
payment for time away for duties, 199.3
posting of names and contact information, 199.1
special meetings, 199.2
time away for duties, 199.3
training
committee member responsibilities, 201(a)
farming and ranching operations, 1.1(4)–(5), 201
rights of workers, 201(c)
in WHMIS, 397(2)
work site party obligations, 201(b)
violence prevention plans, 390(2), 390.7
WHMIS (hazardous products)
safety data sheet availability, 407, 411
training in, 397(2)
See also joint health and safety committee
- kits, first aid, 178–179, Schedule 2, Tables 4–7**
- knives** *See* sharps
- knots**
Prusik and similar knots, 150.3
tree care operations, 796

lab coats

duty to use, 228

use of, 242–243

See also personal protective equipment (PPE)

labels (WHMIS)

defined, 394.1

See also supplier labels (WHMIS); work site labels (WHMIS)

laboratory samples of hazardous products (WHMIS)

defined

hazard class, 394.1

laboratory sample, 394.1

mixture, 394.1

emergencies, 403(2)

exemptions, 403

label information, 403(1)–(2)

manufacturer's samples, 403(4)

See also Workplace Hazardous Materials Information System (WHMIS)

ladderjack scaffolds

defined, 1

design and specifications, 336

platforms, 330

See also scaffolds and temporary work platforms

ladders, 124–137

defined

fixed ladder, 1

portable ladder, 1

crawl board, safe use, 129

installation of shoring, stringers or bracing in excavations, 458(1)–(2)

painting, prohibition, 126

portable ladders, 133–137

constructed ladders, design criteria, 134

personal fall arrest systems, 137

positioning and securing, 136

working from top 2 rungs, prohibition, 133

protective coatings, 126(2)

roof ladder, safe use, 129

on scaffolding

vertical ladders, 327

working from ladders, 328

single rail, prohibition, 125

standards, 135

uses

on extending booms, 128

near energized electrical equipment, 127

restrictions, 124

See also fixed ladders

lancet

defined as medical sharp, 1

See also sharps

land cultivation

application of Code, 1.1

Land Surveyors Act

in definition of surveyor, 1

landings

portable ladders used with, 136(c)

landscaping operations

application of Code, 1.1

lane control devices

public highway traffic control, 194(7)(c)

lanyards

defined, 1

adjustable lanyard for work positioning, 148

appropriate material, 142.2(2)–(3)

standards, 142.2(1)

lasers

defined

in definition of designated radiation equipment, 1

in definition of health care facility, 291.3

lasers, 1

maximum exposure limits, 291.4, Schedule 12, Table 3

standards

in definition of designated radiation equipment, 1

in facilities other than health care, 291.3(2)(b)

in health care facilities, 291.3(2)(a)

See also radiation exposure

latches, safety

on hooks, 303

lawnmowers, ride-on *See* ride-on lawnmowers**lead and lead compounds**

defined

exposed worker, 1

lead, 1

restricted area, 1

blood lead level test, 43

code of practice required, 26, Schedule 1, Table 1

costs of blood lead level test, 43(3)

decontamination methods, 28(c), 41(2)(e)

decontamination of protective clothing, 30

Director of Medical Services

lead exposure, worker removal, 43(6)

documents

exposure control plan, 41

hazard assessment, 41

exposure control plan, 41

competent person to prepare plan, 2.2

contents of plan, 41(2)

- updating and maintenance of plan, 41(2)(h)
 - when needed, 41(1)
 - hazard assessment, 41(2)(b)
 - health monitoring, 41(2)(f)
 - housekeeping, 28(b)
 - minimization of release, 28(a)
 - OEL, Schedule 1, Table 2
 - records, 41(2)(g)
 - refusal to take blood lead level test, 43(4)–(5)
 - removal of worker, 43(6)
 - restricted areas
 - authorized persons, 29(1), 29(2)(b)
 - decontamination of workers, 29(4)(c)
 - emergencies, 29(5)
 - no eating, drinking or smoking, 29(2)(c)
 - personal protective equipment, 29–30
 - protection of worker's street clothing, 29(4)
 - protective clothing for workers, 29(4), 30
 - signs, 29(2)–(3)
 - tests, air monitoring and surface testing, 42
 - training of workers, 41(2)(c)
 - waste and unnecessary accumulations, 28(b)
- lead wire**
- defined, 1
 - See also* blasting machines
- leading edge**
- defined, 1
 - in definition of fall protection system, 1
 - fall protection systems, 158
 - See also* fall protection systems
- leaks** *See* fugitive emissions
- leg protection**
- duty to use, 228
 - personal protective equipment, 242
 - See also* personal protective equipment (PPE)
- leg wires**
- defined, 1
 - See also* detonators and detonation
- L_{ex} (level of worker's total exposure to noise)**
- defined, 1
 - noise exposure limits, 218, 219(1), 221, Schedule 3, Table 1
 - See also* noise
- life jackets, 240–241**
- defined, 1
 - duty to use, 228
 - standards, 240
 - use of devices, 241
 - use with fall protection system, 157
 - See also* personal protective equipment (PPE); water dangers
- life safety rope, 147**
- one worker per rope, 147(4)
 - standards, 147(1)
 - swing drop distance limits, 147(3)
 - use in fall protection system, 147(2)–(4)
 - See also* fall protection systems
- lifelines**
- defined, 1
 - for confined and restricted spaces, 48(1)(a)
 - See also* horizontal lifeline systems; personal fall arrest system (PFAS)
- lifting and handling loads, 208–211.1**
- defined
 - load, 208(4)
 - musculoskeletal injuries, 1
 - safe patient/client/resident handling, 1
 - adapting heavy or awkward loads, 209
 - appropriate equipment, 209.1
 - handling program, 209.2
 - hazard assessment, 210
 - prevention of injuries, 210–211.1
 - use of equipment provided, 208
- lifting devices, 59–75**
- A-frame safe practices, 75
 - application of Code, 59
 - certification by engineer
 - not commercially manufactured, 60, 62
 - repairs and modifications, 65(3)(f), 73
 - collision prevention, 67
 - containers for hoisting, 74
 - documents
 - load charts, 64(2)
 - log books, 65
 - gin pole safe practices, 75
 - in health care facilities, 209.1
 - hoisting lines, 70
 - identification of components, 61, 62(1), 73
 - load charts, 64(2)
 - load weight, 68
 - loads over work areas, 69
 - log books, 65
 - certification by engineer, 65(3)(f), 73
 - contents, 65(3)
 - each device, 65(1)
 - inspections and tests, 65(3)(d)
 - new owner transfer, 65(2)
 - operator requirement, 64(4)
 - paper or electronic for each device, 65(1)
 - person doing work, 65(5)
 - signature, 65(4)
 - tower crane, correct entries confirmed, 65(6)

- not commercially manufactured, 60, 62
- operator requirements, 64
- rated load capacity, 62
- remote controls, 72(3)
- repairs and modifications, 73
- scissor lifts, 156
- signal systems, 64(2), 71
- tag lines, 70
- travel restraint system, 156(2)
- unsafe lift prevention, 66
- light and darkness**
 - defined
 - high visibility safety apparel, 1
 - hours of darkness, 1
 - emergency lighting, 186(3)–(4)
 - explosives, handling and storage
 - light sources, 470.1(2)
 - flashing lights and beacons
 - falling objects warnings, 318(3)
 - public highway traffic control, 194(7)(d)
 - light sources protected from damage, 186(2)
 - oil and gas wells
 - drill stem testing, 779(5)
 - light sources, 780(6)
 - well swabbing in darkness, 780(6)
 - powered mobile equipment, 264
 - sufficient for safety, 186(1)
 - See also* high visibility safety apparel
- light duty scaffolds**
 - defined, 1
 - See also* scaffolds and temporary work platforms; swingstage scaffolds
- Lighting and Marking of Construction, Earthmoving Machinery (SAE)**, 264(2)
- lightning** *See* weather
- likely to crack or crumble soil** *See* soils and soil types
- limb and body protection**, 242–243
 - See also* personal protective equipment (PPE)
- limestone**
 - OEL, Schedule 1, Table 2
- limit devices on tower cranes**, 101–102
- Limits of Human Exposure to Radiofrequency Electromagnetic Fields in the Frequency Range from 3kHz to 300 GHz (Health Canada)**, Schedule 12, Table 4
- Lineman's Body Belt and Lineman's Safety Strap (CSA)**, 149
- liquefied gas** *See* compressed and liquefied gas
- liquids**
 - defined
 - combustible liquid, 1
 - flammable liquids, 1
 - See also* fire and explosion hazards
- Live Working — Conductive Clothing for Use at Nominal Voltage Up to 800 kV A.C. and +/- 600 kV D.C. (ULC)**, 799(1)
- Live Working — Gloves of Insulating Materials (ULC)**, 799(1)
- Live Working — Insulating Foam Filled Tubes and Solid Rods for Live Working (ULC)**, 799(1)
- load blocks for mobile cranes**, 92.1
 - See also* mobile cranes
- loaders**, 270–271
 - rollover protective structures, 270
 - seatbelts and restraint systems, 271
 - See also* powered mobile equipment
- locking out and tagging**
 - after safeguard removal, 311(4)
 - diving operations by intakes, pipes and tunnels, 437
- locomotives in underground mines**, 706
- log carriage, sawmill**, 383
- logging trucks**, 524–525
 - hazard assessment, 524(3)
 - loads that exceed manufacturer's specifications, 524(3)
 - passing vehicle traffic control system, 525(2)–(4)
 - road warnings, 522
 - structures for safe transit, 525(1)
 - See also* forestry
- loose materials**
 - in excavations, 452–453
- loose soil** *See* soils and soil types
- low hazard work**
 - defined, 1, Schedule 2, Table 1
 - first aid requirements, 178, 181(1), Schedule 2, Tables 1 and 5
 - See also* first aid and first aiders
- low lift trucks** *See* forklift trucks
- lower explosive limit**
 - defined, 1
- lumber**
 - defined, 1
 - See also* wood or wood products
- lunch rooms**
 - clean and sanitary facilities, 361(1)
 - storage of other materials, 361(2)
- machinery**, 362–385
 - defined
 - hazardous energy, 1
 - machinery, 1
 - operate, 1

- actuated fastening tools, 374
- alarm systems for starting, 365
- alternative safeguards, 310(4)–(5)
- certification by engineer
 - machinery for moving workers, 364
- contact by clothing, PPE and any other thing, 362
- controls, 368
- drive belts, 370
- feeding materials into machinery
 - continuous-feed devices, 371
 - preventing machine activation, 366
 - push stick or block, safeguards, 319
- grinders, 375
- immobilizing machines, 369
- machines close together, precautions, 363
- manufacturer's specifications
 - grinders, 375(1), 375(3)
 - machinery for moving workers, 364
- for moving workers, 364
- operator responsibilities, 367
- preventing machine activation, 366
- push stick or block, safeguard, 319
- safeguards and warnings, 310–312
 - alternative protections, 311(3)
 - alternative work procedures, 310(4)–(5)
 - locking out and tagging, 311(4)
 - machine failure, 317
 - no safeguards, 312
 - personal protective equipment, 312(2)
 - push stick or block to feed machinery, 319
 - removing safeguards, 311
 - toe boards around top of pit with machine, 321(4)
 - when safeguards are needed, 310(2)–(3)
- warning signs and alarms
 - for automatic starts, sign, 310(6)
 - starting machinery, alarm, 365
- See also* conveyors; hazardous energy control; robots; saws and sawmills; vehicles
- magazines** *See* explosives, handling and storage
- magnesium**
 - light metal alloys in underground mines, prohibition, 693.1
- man baskets** *See* personnel baskets and man baskets
- manholes**
 - fixed ladders in, 131
 - See also* buried or concrete-embedded facilities; confined and restricted spaces
- manual lifting and handling** *See* lifting and handling loads
- Manual of Uniform Traffic Control Devices for Canada**, 194(7)(i)
- Manually Propelled Elevating Aerial Platforms (ANSI)**, 347(4)
- manufactured article**
 - defined, 394.1
 - WHMIS not to apply, 395(3)(d)
- manufacturer specifications**
 - in definition of specifications, 1
 - See also* specifications, certifications and standards
- manufacturers of hazardous products** *See* Workplace Hazardous Materials Information System (WHMIS)
- manufacturer's rated capacity**
 - defined, 1
 - See also* specifications, certifications and standards
- marl**
 - in definition of pit, 1
- masonry walls**
 - stabilization, 192
- Mast Climbing Work Platforms (ANSI)**, 347(6)
- mast-climbing elevating platforms**
 - standards, 347(6)
 - See also* elevating platforms and aerial devices
- material hoists**, 81–87
 - defined, 1
 - braking system, 86
 - gate interlocks, 83
 - location protected, 87
 - operator responsibilities, 84
 - rider restriction, 82
 - safety codes, 81
 - signal systems, 85
 - buildings more than 20 metres high, 85(2)
 - electrical or mechanical systems, 85
 - operator and signaller communication, 85
 - See also* hoists
- material-lifting aerial devices**
 - on motor vehicle, standards, 347(5)
 - See also* elevating platforms and aerial devices
- materials chute**
 - at demolition work site, 420
- materials information system, hazardous** *See* Workplace Hazardous Materials Information System (WHMIS)
- Measurement of noise exposure (CSA)**, 219(1)
- mechanical energy**
 - in definition of hazardous energy, 1
 - See also* hazardous energy control
- mechanized feller or limber**, 520
 - See also* forestry
- medical alert bracelets**, 362(3)
- medical care** *See* first aid and first aiders; health care

medical clinic

in definition of health care facility, 1
 first aid requirements, not to apply, 181(4)
See also health care facility

medical patients, lifting

defined in safe patient/client/resident handling, 1
 appropriate equipment, 209.1
 handling program, 209.2
 hazard assessment, 210
 prevention of injuries, 210–211.1
See also lifting and handling loads

medical sharps

defined
 medical sharp, 1
 parenteral contact, 1
 safety engineered medical sharp, 1
 sharps, 1
 recapping needles, 527
 safe work procedures, 525.2(4)–(6), 528
 safety engineered medical sharps, 525.2(2)–(3)
See also biohazardous materials

medium hazard work

defined, 1, Schedule 2, Table 2
 first aid requirements, 178, 181(1), Schedule 2, Tables
 2 and 6
See also first aid and first aiders

mesh, wire

in safeguards, specifications, 322

metal mesh slings

rejection criteria, 307
 standards, 297

metal scaffolding

specifications and certifications, 331
See also scaffolds and temporary work platforms

metals

light metal alloys in underground mines, prohibition,
 693.1

methane, underground mines, 517.99(2)–(3),

517.9991, 712, 730

See also underground mines, fire and explosion
 prevention

methyl bromide

code of practice required, 26, Schedule 1, Table 1
 OEL, Schedule 1, Table 2

methyl hydrazine

code of practice required, 26, Schedule 1, Table 1
 OEL, Schedule 1, Table 2

mg/m³

defined, Schedule 1, Table 2

millisievert (mSv)

defined
 in definition of effective dose, 1
 in definition of equivalent dose, 1
 millisievert, 1
 maximum dose limits for ionizing radiation, 291.4,
 291.6, Schedule 12, Tables 1–2
See also radiation exposure

minerals

in definition of mine, 1
 in definition of mine site, 1
 in definition of processing plant, 1
 in definition of quarry, 1
See also mines and mine sites

mines and mine sites

definitions
 blasting area, 1
 blasting machine, 1
 blasting mat, 1
 combustible dust, 1
 conveyor, 1
 discard, 1
 electrician, 1
 explosive, 1
 explosive atmosphere, 1
 gob, 1
 incombustible dust, 1
 mine, 1
 mine level, 1
 mine material, 1
 mine plan, 1
 mine shaft, 1
 mine site, 1
 mine tunnel, 1
 mine wall (surface mine), 1
 outlet, 1
 portable power cables, 1
 portal, 1
 processing plant, 1
 quarry, 1
 split, 1
 surface mine, 1
 tunnel, 1
 underground mine, 1
 underground shaft, 1
 underground shaft hoist, 1
 ventilation stopping, 1
 working face, 1
 workings, 1
 building safety, 532
 dangerous occurrences reports, 544

- dam or dike dangers, 544(g)
- electrical equipment failures, 544(d)
- incidents with hoists, sheaves, shafts or headframes, 544(f)
- outbursts and inrushes, 544(e)
- underground ventilation system stoppages, 544(b)
- unexpected subsidence or ground fall, 544(a)
- worker withdrawal in emergencies, 544(c)
- dumping blocks, powered mobile equipment, 542
- dust control
 - combustible dust, 601
 - conveyors, 601
 - drilling dust, 537
 - housekeeping, 532
- electrical equipment and systems
 - dangerous occurrences reports, 544
 - electrician or supervised worker, 560(3)
 - hand-held drills, 572
 - portable or temporary equipment, 560(5)
 - standards and specifications, 560(1)–(2)
 - testing, 560(3)–(4)
- emergency response
 - basic first aiders, 546
 - emergency and rescue workers, 546
 - firefighting equipment training, 547
 - first aid, high hazard work, 178, 181(1), Schedule 2, Tables 3 and 7
- excavations, 535, 541(3)
- first aid, high hazard work, 178, 181(1), Schedule 2, Tables 3 and 7
- haul roads
 - berms, 539(3)
 - emergency escape routes, 539(2)
 - safe travel, 539(1)
- housekeeping, 532, 600, 693.3, 705, 743
- mine material and discards, 536, 541
- mine plans, 533
- mine walls, 541
- reports
 - dangerous occurrences reports, 544
 - employer to ensure reports, 534
 - retention period, 534
- standards, certifications, procedures and specifications
 - conveyors, 598
 - electrical equipment and systems, 560(1)–(2)
 - employer to implement, 533.1
 - mine walls, 541
 - specifications and certifications, generally, 12–15.1
- water dangers, 544, 749
 - See also* surface mines; underground mines
- mines and mine sites, conveyors, 598–604**
 - automatic fire suppression system, 598
 - belt-slip detection device, 599
 - combustible dust, 601
 - distance surrounding belts, 600
 - emergency stopping system, 599
 - fire resistance, 598
 - housekeeping, 600
 - inspections, 604
 - riding belts prohibited, 603
 - standards and certifications
 - automatic fire suppression system, 598
 - underground mines
 - carbon monoxide monitors, 693.9
 - clearance for spill removal, 693.5
 - construction materials, fire-resistant, 693.4, 693.5
 - conveyor transfer points, 693.3(4)
 - fire-warning devices, 693.3(4)
 - gas and dust control, 742(1)–(2)
 - ventilation stoppages, 715
- mines and mine sites, explosives, 517.3–517.91**
 - application of Code, 517.3
 - blast holes, 517.7–517.91
 - blasters, 517.4–517.91
 - blasting cables, 517.6–517.7
 - blasting machines, 517.5, 517.991
 - containers, 517.4
 - day boxes, 517.4
 - detonating cords, 517.7
 - detonators, 517.4
 - dust from drilling, 537
 - electrical cables and wires, 517.6
 - magazine, 517.4
 - misfires and electric blasting, 509(6)
 - mobile radio transmitters, 517.9
 - signs on day boxes and containers, 517.4(2)
 - signs to turn off mobile radio transmitters, 517.9
 - specifications for detonating cords, 517.7(3)
 - standards for blasting machines, 517.5(1)
 - stemming, 517.8
 - storage and removal, 517.4
 - unattended blast holes, 517.91
 - unintended detonation, protection from, 517.4(2)
 - warning sign on unattended blast hole, 517.91
 - warnings of blasting, 517.9
 - See also* detonators and detonation; explosives; underground mines, explosives
- mines and mine sites, rubber-tired, self-propelled equipment, 574–594**
 - autonomous powered mobile equipment, 574.1
 - brake systems

- air brakes, 577
- dual brakes, 579
- hydraulic brakes, 577, 578, 693.3(5)–(7)
- periodic tests, 585
- standards, 574
- emergency energy, 577
- hydraulic fluids, fire precautions, 693.3(5)–(7)
- lights, 592, 594
- line of sight, 593
- rear dump boxes, 591(2)
- shock absorbing seats, 591(1)
- standards
 - autonomous powered mobile equipment, 574.1
 - brakes and steering, 574, 590
 - lights, 592, 594
- steering systems
 - auxiliary pump and steering, 588, 589, 590
 - standards, 574(3), 590
- surface mines, 574(2)
- underground coal mines, 742(3)
- underground mines, 574(1)
- underground mines, clearances, 697.3
- unintentional movement prevention, 591(1)(b)
- misfires**
 - defined, 1
 - See also* explosives, misfires and destruction; underground mines, explosives
- mittens**
 - duty to use, 228
 - use of, 242–243
- mixture**
 - defined, 394.1
 - claim for disclosure exemption, 408
- mobile communications systems**
 - defined
 - in definition of electromagnetic radiation, 1
 - See also* radiofrequency transmitters
- mobile cranes**
 - defined, 1
 - boom and jib stops, 92
 - counterweights and outriggers, 90, 92.2
 - documents
 - load charts, 63(1)
 - log books, 65
 - preventing damage procedures, 92
 - engineer control of non-destructive testing, 89
 - load blocks, 92.1
 - load charts, 63(1)
 - log books, 65
 - personnel baskets, standards, 88–88.1
 - preventing damage, 92
 - standards, 88–88.1, 92.1
 - warning devices, 91, 267
 - See also* cranes
- mobile equipment** *See* powered mobile equipment
- mobile radiofrequency transmitters**
 - explosives, minimum distances, 503, Schedule 10, Table 2
- mobile work site**
 - toilets and washing facilities, 356(b)
- monorail**
 - overhead cranes, standards, 93–94
- mopeds**
 - headwear, 236
- motor graders, 270–271**
 - rollover protective structures, 270
 - seatbelts and restraint systems, 271
 - See also* powered mobile equipment
- motor vehicles** *See* powered mobile equipment; snow vehicles; vehicles
- Motorcycle Helmets (FMVSS), 236(1)(a)**
- motorcycles**
 - headwear, 236
- motorized trail bike**
 - headwear, 236
- mould exposure, 43.1**
- mountaineering**
 - in definition of non-industrial rope access work, 1
 - See also* rope access work, non-industrial (mountaineering, caving, canyoning, sport climbing)
 - Mountaineering and Climbing Equipment — Connectors (UIAA), 835(c), 849(b)**
 - Mountaineering and Climbing Equipment — Dynamic Ropes (UIAA), 818(b), 819(1)(b)**
 - Mountaineering and Climbing Equipment — Harnesses (UIAA), 847(c)**
 - Mountaineering and Climbing Equipment — Helmets (UIAA), 831(1)(d), 831(2)(e), 844(b)**
 - Mountaineering and Climbing Equipment — Low Stretch Ropes (UIAA), 817(c)**
 - Mountaineering and Climbing Equipment — Rope Clamps (UIAA), 837(b), 838(c)**
 - Mountaineering equipment — Connectors — Safety requirements and test methods (CEN), 143(1), 835(b), 849(a)**
 - Mountaineering equipment — Dynamic mountaineering ropes — Safety requirements and test methods (CEN), 818(a), 819(1)(a)**
 - Mountaineering equipment — Harnesses — Safety requirements and test methods (CEN), 847(b)**

- Mountaineering equipment — Helmets for mountaineers — Safety requirements and test methods (CEN)**, 831(1)(c), 831(2)(d), 844(a)
- Mountaineering equipment — Rope clamps — Safety requirements and test methods (CEN)**, 837(a), 838(b)
- mousing on hooks**, 303
- mouth bit and nose-clamp respirators**
as emergency escape equipment, 254
- movement of workers**
safety precautions, 364
- mSv** *See* millisievert (mSv)
- mud gun**, 776(3)
- musculoskeletal injury**
defined, 1
prevention of injuries, 210–211.1
See also illness or injury; lifting and handling loads
- mushroom farms**
application of Code, 1.1
- mustaches** *See* facial hair
- National Dose Registry**
defined, 1
reports to, 291.5(1)(d)
See also radiation exposure
- National Institute for Occupational Safety and Health (NIOSH)**
defined, 1
in definition of respirable particulate, 1
OEL measurements, 20(1)(a)
- natural gas and oil wells** *See* oil and gas wells
- needle-beam scaffolds**
design and specifications, 337
See also scaffolds and temporary work platforms
- needles**
defined as medical sharp, 1
recapping needles, 527
See also sharps
- NIOSH (National Institute for Occupational Safety and Health)**
in definition of
respirable particulate, 1
total particulate, 1
OEL measurements, 20(1)(a), 20(3)
respiratory protective equipment approval, 246(a)
- noise**
defined
audiometer, 1
dBA, 1
excess noise, 1
hearing protection device, 1
 L_{ex} , 1
noise, 1
3 decibel exchange rate, 1
assessment of noise exposure, 219–220
competent person, 219(3)
contents of records, 220(1)
measurement instruments, 219(3)
noise dosimeter levels, 219
provision of record to worker, 220(2)
retention of records, 220(2)
when to assess, 219(1), 219(4)
design of noise control, 217
duty to reduce, 216
hearing protection devices, 222
fit testing, 222
noise management programs, 221(f)–(g)
standards, 222
noise dosimeter, standards, 219(2)
noise exposure limits, 218, 219(1), 221, Schedule 3, Table 1
noise management program
annual review, 221(j)
areas exceeding noise exposure limits, 221(b), 221(h)
audiometric testing and records, 221(i), 224
education of workers, 221(d)
hearing protection devices, 221(g), 222
measurement of exposure, 221(c)
methods of noise control, 221(e)
procedures, 221(a)
signs in work areas, 221(h)
training in use of measures and devices, 221(f)–(g)
signs to warn workers, 221(h)
standards
fit testing for hearing protection devices, 222(b)
hearing protection devices, 222
integrating sound level meter, 219(2)
noise dosimeter, 219(2)
noise exposure assessment, 219(2)–(3)
sound level meters, 219(2)
training in use of measures and devices, 221(f)–(g)
when to use noise control design, 217
See also audiometric testing; personal protective equipment (PPE)
- non-industrial rope access work**
defined, 1
in definition of occupational rope access work, 1
See also rope access work, non-industrial (mountaineering, caving, canyoning, sport climbing)

non-ionizing radiation

- defined
 - in definition of radiation, 1
 - non-ionizing radiation, 1
- maximum exposure limits, 291.4(3)–(4), Schedule 12, Tables 3–4
- See also* radiation exposure

Non-rail-bound diesel-powered machines for use in non-gassy underground mines (CSA), 697.4

- notifiable diseases** *See* asbestos; coal dust; lead and lead compounds; noise; silica (respirable crystalline silica)

nozzle guards

- for airless spray machinery, 170.1(5)–(6)

nuclear energy

- defined
 - in definition of hazardous energy, 1
 - nuclear particles in definition of ionizing radiation, 1
 - particle accelerators in definition of designated radiation equipment, 1
- licensed dosimetry service provider, 291.5(1)
- WHMIS not to apply to nuclear substance under Nuclear Safety and Control Act, 395(5)(d)
- See also* designated radiation equipment; hazardous energy control; radiation exposure

Nuclear Safety and Control Act (Canada)

- included in definition of designated radiation equipment, 1
- WHMIS not to apply to nuclear substance under, 395(5)(d)

nurse

- defined, 1
- in health care facilities, 181(4)
- occupational health nurses and audiometric testing, 223(2)

nurse with advanced first aid certificate

- defined
 - in definition of advanced first aider, 1
 - in definition of first aider, 1
- availability and location, 181(2)
- communication with, 181(2)
- designation as first aider, 181(1)
- high hazard work, 178, 181(1), Schedule 2, Tables 3 and 7
- medium hazard work, 178, 181(1), Schedule 2, Tables 2 and 6
- non-first aid duties, 181(2)
- training, 181(1)(b), 181(3)
- See also* first aid and first aiders

nurseries and greenhouses

- application of Code, 1.1

nursing home

- first aid requirements, not to apply, 181(4)
- Nursing Homes Act*, 181(4)

O rings

- standards for fall arrest system, 143(1)
- standards for industrial rope access work, 835

Occupational and Educational Personal Eye and Face Protection Devices (ANSI), 229**occupational exposure limit (OEL), 16–22**

- defined
 - carcinogen, Schedule 1, Table 2
 - hazard assessment, 1
 - immediately dangerous to life or health, 1
 - mg/m³ (milligrams per cubic metre), Schedule 1, Table 2
 - occupational exposure limit, 1
 - particulate not otherwise regulated, 1
 - ppm (parts per million), Schedule 1, Table 2
 - restricted area, 1

code of practice

- chemical substances, 26(1), Schedule 1, Table 1
- uncontrolled release procedures, 26(2)

decontamination of workers, 23**Director**

- 8-hour OEL adjustments, approval, 18(3)
- review of OEL limits, 19

documents

- code of practice for chemical substances, 26(1), Schedule 1, Table 1

- code of practice for respiratory protective equipment, 245

- code of practice for uncontrolled release procedures, 26(2)

- hazard assessment, 21

- measurements of airborne concentrations, 20(4)
- overexposure report, 22

- eating, drinking or smoking in contaminated areas, prohibition, 25

- hazard assessment, 21

measurements of airborne concentrations

- competency of person taking measurements, 20(2.1)
- continuous reading direct reading instruments for, 20(2)

- DFG methods, 20(1)(g)

- EPA methods, 20(1)(d)

- fibres, 20(3)

- HSE methods, 20(1)(c)

- IRSST methods, 20(1)(e)

- ISO methods, 20(1)(f)
- NIOSH methods, 20(1)(a), 20(3)
- OSHA methods, 20(1)(b)
- records, 20(4)
- OEL list, Schedule 1, Table 2
- potential exposure, 21
- review of OEL limits, 19
- storage of harmful substances, 27
- substance interaction, Schedule 1, Table 2
- training of workers, 21(2)–(3)
- ventilation system, when needed, 386
- worker exposure
 - exceeds 8-hour OEL but less than 15-minute OEL, 16(3)
 - informed workers, 21(2)–(3), 22(2)
 - list of chemical substances and OEL, 16(1)
 - multiple substances, 17
 - no 15-minute OEL is established, 16(4)
 - no OEL is established, 16(2)
 - not to exceed ceiling limit, 16(3.1)
 - not to exceed OEL, 16(1)
 - shifts longer than 8 hours, 18
- worker overexposure, 22
 - hazard assessment, 22(2)
 - measurements, 22(1)
 - report to health and safety representative, 22(3)
 - report to joint health and safety committee, 22(3)
 - See also* lead and lead compounds; ventilation systems
- Occupational Health and Safety Act**
 - defined, Act, 1
- Occupational Health and Safety Code**
 - coming into force, 6
- occupational health nurse**
 - consultations in audiometric testing, 223(2)
- occupational rope access work**
 - defined, 1
 - See also* industrial rope access work; non-industrial rope access work; rope access work
- Occupational Safety and Health Administration Standard (OSHA)**
 - OEL measurements, 20(1)(b)
- Occupational Safety Code for Diving Operations (CSA), 424**
- OEL** *See* occupational exposure limit (OEL)
- oil and gas exploration**
 - application of Code, 750
- oil and gas wells, 750–784**
 - defined
 - cathead, 1
 - drill stem test, 1
 - hours of darkness, 1
 - perforating, 1
 - rotary table, 1
 - snubbing, 1
 - snubbing unit, 1
 - swabbing unit, 1
 - well servicing, 1
 - well stimulation, 1
 - well swabbing, 1
 - application of Code, 750
 - blasting, 516
 - catheads, 771
 - darkness, operations in
 - drill stem testing, 779(5)
 - well swabbing operations, 780(6)
 - derricks and masts
 - certifications, 753(2)
 - counterweights, 775
 - erection or bringing down, 754
 - guy lines and anchors, 763
 - hoist weight indicators, 768
 - inspections, 754
 - operating load, 753
 - repairs and modifications, 753
 - sliding prohibited, 756
 - tubular storage, 765
 - drill stem testing, 779
 - drilling equipment
 - drawworks controls and brakes, 766–767
 - emergency escape, 762
 - exits from enclosures, 119, 761
 - guy lines and anchors, 763
 - hoist weight indicators, 768
 - inspections and repairs, 755–755.1
 - inspections and safety check, 758
 - reports on inspections and repairs, 755–755.1
 - travelling blocks, 769–770
 - drilling rigs and service rigs
 - drawworks controls and brakes, 766–767
 - emergency escape, 762
 - exits from enclosures, 119, 761
 - guy lines and anchors, 763
 - hoist weight indicators, 768
 - inspections and safety check, 758
 - rig tank or pit enclosures, 777
 - rotary table danger zone, 770, 773–774
 - worker lifting and rescue, 770
 - emergencies
 - access to escape equipment, 762(3)
 - anchored lines for escape, 762(2)
 - emergency escape line, 758

- emergency escape means, 762
- emergency response plan, 115–116, 751.1(d)
- inspections of escape means, 762
- personal protective equipment, 118
- rescue and evacuation workers, 117–118
- training, 117
- use of travelling blocks, 770
- work site organization, 752.1
- worker lifting and rescue, 770
- explosives, 516
- fire or explosion hazards
 - drill stem testing, 779
 - firefighting equipment, 752.3
 - ignition sources, 777
 - purging lines, 752.2
- first aid, high hazard work, 178, 181(1), Schedule 2, Tables 3 and 7
- fixed ladders, rest platform exemption, 132
- freezing weather, 776(1), 776.1(5)
- gas sample containers, 784
- guy lines and anchors, 763
- health and safety orientation, 751.1
 - emergency response plan, 751.1(e)
 - hazard controls, 751.1(c)
 - hazard reporting procedures, 751.1(f)
 - hazards, site-specific, 751.1(a)
 - hazards, undue, 751.1(g)
 - other matters, 751.1(h)
 - personal protective equipment, 751.1(d)
 - work procedures, required, 751.1(b)
 - work refusals, processes for, 751.1(g)
- inspections and tests
 - drawworks brakes, 767
 - drill stem testing, 779
 - emergency escape means, 762
 - equipment, 758
- mine excavations at safe distances from, 535
- mines, distances from wells, 748
- oil well blasting and perforating, 516
- perforating, 516
- personal protective equipment
 - emergency workers, 118
 - health and safety orientation, 751.1(d)
- piping systems and incompressible fluids, 776–776.1
 - disassembling system components, 776.1(4)
 - drill stem testing, 779
 - fire or explosion hazards, 777
 - freezing protections, 776(1), 776.1(5)
 - hydrogen sulphide, 779(3), Schedule 1, Tables 1 and 2
 - isolation of piping or pipelines, 215.4–215.6, 776.1(4)–(5)
 - mud guns, 776(3)
 - piping connections, 776.1(3)
 - positive displacement pumps, 776
 - pressure hazards, controlling, 776.1
 - pressure relief devices, 776(1)
 - rig tank or pit enclosures, 777
 - standards, 776(2)
 - well stimulation, 782
- rented or leased equipment suppliers, 755.1
- reports
 - equipment inspections and repairs, 755–755.1
 - rented or leased equipment, 755.1
- safety devices
 - emergency escape line, 758(2)
 - fastening devices for rig erection, 758(2)
 - guards, handrails, platforms and stairways, 758(2)
 - inspections and safety check, 758
 - travelling blocks, 769–770
- signs, warnings and markings
 - drawworks controls, 766
 - guy lines, 763
 - operating load of derrick or mast, 753(1)
- sliding prohibited, 756
- snubbing units
 - drawworks controls and brakes, 766–767
 - emergency escape, 762
 - exits from enclosures, 119, 761
 - guy lines and anchors, 763
 - hoist weight indicators, 768
 - inspections and safety check, 755–755.1, 758
 - reports on inspections and tests, 755–755.1
 - travelling blocks, 769–770
- standards, certifications and specifications
 - derrick and mast repairs and modifications, 753
 - explosives for blasting and perforating, 516(2)
 - guy lines and anchors, 763
 - hoist weight indicators, 768
 - pipes, 776(2)
 - pressure relief devices, 776(1)
 - specifications and certifications, generally, 12–15.1
 - travelling blocks, tuggers and raising systems, 770
- swabbing units, 780
 - in darkness, 780(6)
 - drawworks controls and brakes, 766–767
 - emergency escape, 762
 - exits from enclosures, 119, 761
 - fluids piped to batteries, skid tanks, mobile trailers and tank trucks, 780
 - hoist weight indicators, 768

- inspections and safety check, 755–755.1, 758
- reports on inspections and tests, 755–755.1
- tank truck engine, 780(3), 780(5)
- travelling blocks, 769–770
- weather monitoring, 780(6)
- tong safety, 773(3), 774
- trailer pipe racks, 765
- tubular storage, 765
- tuggers, 770
- weather, freezing, 776(1), 776.1(5)
- well servicing, 781
 - brakes, 767
 - distances from rig tank, 781(2)
 - drawworks controls and brakes, 766–767
 - emergency escape, 762
 - exits from enclosures, 119, 761
 - guy lines and anchors, 763
 - hoist weight indicators, 768
 - inspections and safety check, 758
 - oil savers, 781(4)
 - pressure test of lines, 781(3)
 - rented or leased equipment, 755.1
 - reports on inspections and repairs, 755–755.1
 - travelling blocks, 769–770
- well stimulation, 782
- work site organization, 752.1
- workers
 - health and safety orientation, 751.1
 - sliding prohibited, 756
- working alone, 393–394, 752
- oil sands**
 - in definition of mines, 1
 - exclusion in definition of quarry, 1
 - See also* mines and mine sites
- openings and holes**
 - covers for openings
 - covering openings, 314(1)(a)
 - guardrails and toe boards, 314(1)(b)
 - temporary covers, 314(2)–(3)
 - warning signs, 314(3)
 - fixed ladders in manholes, 131
 - guardrails, 314(1)(b), 315
 - materials chutes at demolition sites, 420
 - temporary covers, 314(2)–(3)
 - toe boards, 314(1)(b), 321
 - underground shafts
 - fences and gates, 461(3)–(4)
 - safeguards around surface openings, specifications, 318(6)
 - warning signs, 314(3)
 - See also* safeguards and warnings
- operate**
 - defined, 1
 - See also* machinery
- Operation, Inspection, Maintenance, and Repair of Drilling and Well Servicing Structures (API)**, 763
- Operator Protection for General Purpose Industrial Machines (SAE)**, 270(2)(b), 272(2)(c)
- Operator Protective Structure Performance Criteria for Certain Forestry Equipment (SAE)**, 521
- Operator Restraint System for Off Road Work Machines (SAE)**, 271
- ore cars**
 - transfer of hazardous products, 402
- OSHA Standard (Occupational Safety and Health Administration)**
 - OEL measurements, 20(1)(b)
- outlets, mine**
 - defined, 1
 - emergencies and evacuation, 701
 - See also* underground mines
- outrigger scaffolds**
 - defined, 1
 - design and specifications, 338
 - See also* scaffolds and temporary work platforms
- outriggers**
 - concrete pump trucks, 290.2(3)
 - ladders on extending booms, 128
 - mobile crane or boom truck, 90, 92.2
- oval rings**
 - standards for fall arrest system, 143(1)
 - standards for industrial rope access work, 835
- overexertion** *See* illness or injury
- overhead cranes**
 - codes, travelling cranes, 93–94
 - codes for maintenance and inspection, 106
 - safe movement, travelling cranes, 95
 - See also* cranes
- overhead power lines**
 - in definition of electromagnetic radiation, 1
 - blasting operations, 501
 - coordinated work with other utilities, 802
 - notification of work near overhead power lines, 225(3)
 - power pole support when excavating, 454
 - rural electrification association, safe work practices, 225(3), 800
 - safe limit of approach distances, 225–227, Schedule 4, Table 1
 - standards, 800
 - transported loads, 226
 - utility worker exemption from safe distances, 227

- when to contact power line operator, 225
- Overhead Protection for Agricultural Tractors — Test Procedures and Performance Requirements (SAE)**, 272(2)(a)
- overuse of muscles** *See* illness or injury
- oxy-fuel gas welding** *See* welding or allied process
- oxygen, compressed** *See* compressed and liquefied gas
- oxygen content in air**
- defined
 - confined space, 1
 - immediately dangerous to life or health, 1
 - respiratory protective equipment, 1
 - in confined and restricted spaces, 52, 55(3), 56(3)
 - first aid room, oxygen therapy units, Schedule 2, Table 4
 - flammable substances, 165, 730
 - OEL and substance interaction, Schedule 1, Table 2
 - oxygen content, 52(1), 55(3), 56(3), 244(1), 252, 253, 254
 - respiratory dangers, 244(1)(b), 253(a)
 - testing the atmosphere, 52, 730
 - underground mines, 730
 - ventilation systems, 386(e)
 - See also* respiratory protective equipment
- packages** *See* containers
- pallets and storage racks**, 187
- damage prevention, 187(4)
 - no danger to workers, 187(1)
 - report of damage to storage rack, 187(3)
 - support for loads, 187(2)
- paramedic, advanced care** *See* advanced care
- paramedic (ACP); first aid and first aiders
- Paramedics Profession Regulation**
- in definition of
 - advanced care paramedic, 1
 - emergency medical responder, 1
 - primary care paramedic, 1
- parenteral contact**
- defined, 1
 - See also* medical sharps
- particle accelerators**
- defined
 - in definition of designated radiation equipment, 1
 - in definition of ionizing radiation equipment, 1
 - certificate for designated radiation equipment, 291.7
 - monitoring worker exposure, 291.5–291.6
 - See also* designated radiation equipment; radiation exposure
- particulate materials**
- defined
 - in definition of fibre, 1
 - particulate not otherwise regulated, 1
 - respirable particulate, 1
 - total particulate, 1
 - OEL for respirable particulates, Schedule 1, Table 2
 - ventilation system, when needed, 386(c)
 - See also* fibres
- Particulates Not Otherwise Regulated, Respirable (NIOSH)**
- in definition of respirable particulate, 1
- Particulates Not Otherwise Regulated, Total (NIOSH)**
- in definition of total particulate, 1
- patient/client/resident handling**
- defined in safe patient/client/resident handling, 1
 - See also* lifting and handling loads
- pedal cycling headwear**, 235
- pedestrian traffic** *See* entrances, walkways, and stairways
- perchlorates**
- code of practice required, 26, Schedule 1, Table 1
 - OEL, Schedule 1, Table 2
- permanent (generally)**
- defined, 1
- permanent suspension powered work platform**, 348
- defined, 1
 - certification by engineer, 348(1)(b)
 - standards, 348
 - See also* elevating platforms and aerial devices
- permitted explosive**
- defined, 1
 - See also* mines and mine sites, explosives
- Personal energy absorbers and lanyards (CSA)**, 142.2
- (1)(a), 142.3 (1)(a), 148
- personal fall arrest system (PFAS)**
- defined
 - cow's tail, 1
 - fall arresting device, 1
 - fall protection system, 1
 - free fall distance, 1
 - full body harness, 1
 - horizontal lifeline system, 1
 - lanyard, 1
 - lifeline, 1
 - personal fall arrest system, 1
 - shock absorber, 1
 - swing drop distance, 1
 - total fall distance, 1
 - adjustable lanyard for work positioning, 148
 - anchors

- independence of, 152.3
- permanent, 152
- temporary, 152.1(2)
- certification
 - horizontal lifeline system, 153–153.1
- clearance, maximum arresting force and swing, 151
- control zones, 161
- descent control device, 146
- equipment compatibility, 150
- equipment inspection and maintenance, 150.1
- equipment removal from service, 150.2
- fall arresters, standards, 144
- full body harness, 142
- horizontal lifeline systems, 153–153.1
- personal protective equipment
 - duty to use, 228
 - inspection and maintenance, 150.1
 - removal from service, 150.2
- portable ladders, requirement, 137
- Prusik and similar knots, 150.3
- rope adjustment device for work positioning, 148.1
- self retracting devices, 145
- shock absorbers, 142.3
- standards
 - connecting components, 143(1)
 - full body harness, 142(1)
 - full body harness, tree care, 795
 - for shock absorbers or shock absorbing lanyards, 142.3(1)
 - sit harness, 847
- swingstage scaffolds, 345(4)–(5)
- water dangers, 157
- when required, 139, 141
- work positioning system, 160.1
 - See also* fall protection systems; personnel baskets and man baskets
- personal flotation devices, 240–241**
 - defined, 1
 - duty to use, 228
 - standards, 240
 - use of devices, 241
 - use with fall protection system, 157
 - See also* water dangers
- personal protective equipment (PPE), 228–255**
 - defined
 - fall arresting device, 1
 - hearing protection device, 1
 - high visibility safety apparel, 1
 - life jacket, 1
 - personal fall arrest system, 1
 - personal flotation device, 1
 - protective headwear, 1
 - respiratory protective equipment, 1
 - safeguard as not PPE, 1
 - work positioning system, 1
 - air purifying equipment, 252–253
 - combined with other controls, 9(5)
 - condition of equipment, 228(1)(c)
 - confined and restricted spaces, 45, 48, 53
 - contact with tools, equipment and machinery, 362
 - coveralls, 242–243
 - emergency response
 - alternative equipment, 254
 - contents of plan, 116(c)
 - emergency escape equipment, 254
 - equipment use and provision, 118
 - inspections, 248(2)
 - employer
 - duty to ensure worker’s use of PPE, 3.2, 9(4)–(5), 225
 - duty to follow specifications, 12
 - eye protection, 229–231
 - fall protection
 - full body harness, 142
 - harnesses, 795
 - inspection and maintenance, 150.1
 - removal from service, 150.2
 - rescue personnel, 138
 - standards, 142–144, 146–149
 - flame resistant clothing, 232
 - footwear, 233
 - hazard elimination and control
 - combined PPE with other controls, 9(5)
 - correct for hazard, 228(1)(a)
 - duty to use PPE, 228
 - hazard assessment, 45, 228
 - hierarchy of, 9(4)–(5)
 - headwear, 234–239
 - hearing protection devices, 222
 - high visibility safety apparel, 191(2)–(3), 194(2)–(5)
 - hot taps, 170(3)(e)
 - inspections, 228
 - life jackets, 157, 240–241
 - limb and body protection, 242
 - machinery without safeguards, 312
 - maintenance, 12, 228
 - modifications to, 12
 - musculoskeletal injuries, prevention, 211.1(2)
 - personal flotation devices, 240–241
 - restricted areas (asbestos, silica, coal dust or lead), 29–30
 - rope access work

- alternative equipment, 805–806
- industrial safe work practices, 825
- removal from service, 820
- rescue if failure of, 821–822
- safe work plan, 809
- standards, 817, 819
- training, 811, 822
- worker rescue, 821–822
- skin protection, 243
- standards and specifications
 - approved equipment, identifying marks, 15
 - earlier editions of standards, 3.1
 - following specifications, 12
 - generally, 12–15.1
- tree care operations, 792
- underground mines, self-rescue PPE, 702, 703.3, 703.4
- vehicle traffic control, 194(2)–(5)
- workers
 - duty to follow specifications, 12
 - duty to use, 3.2, 9(4)–(5), 228
 - PPE not to endanger worker, 228(3)
 - training of, 228(1)(d)
- See also* decontamination of workers; eye protection; headwear; life jackets; personal fall arrest system (PFAS); respiratory protective equipment; work positioning system
- Personal protective equipment against falls from a height — Connectors (CEN)***, 143(1), 835(a)
- Personal protective equipment against falls from a height — Descender devices (CEN)***, 146, 839(a)
- Personal protective equipment against falls from a height — Energy absorbers (CEN)***, 142.3(1)
- Personal protective equipment against falls from a height — Full body harnesses (CEN)***, 142(1), 795(1)(e), 834(b), 848(a)
- Personal protective equipment against falls from a height — Lanyards (CEN)***, 142.2(1), 819(2)
- Personal protective equipment against falls from a height — Part 2: Guided type fall arresters including a flexible anchor line (CEN)***, 144, 838(a)
- Personal protective equipment for prevention of falls from a height — Sit harnesses (CEN)***, 795(1)(b), 847(a)
- Personal protective equipment for the prevention of falls from a height — Low stretch kernmantle ropes (CEN)***, 147(1), 817(a)
- Personal protective equipment for work positioning and prevention of falls from a height — Belts for work positioning and restraint and work positioning lanyards (CEN)***, 142.1 (a), 148
- personal vehicles**
 - for work purposes, 290.1
- personnel baskets and man baskets**
 - chimney hoists, 77(g), 79
 - mobile cranes, standards, 88–88.1
 - for mobile cranes, standards, 88–88.1
 - personal fall arrest system, 75.1
 - suspended personnel baskets, 75.1
- personnel hoists**
 - standards, 96
 - See also* hoists
- persons, lifting**
 - defined in safe patient/client/resident handling, 1
 - See also* lifting and handling loads
- Pest Control Products Act (Canada)***
 - WHMIS not to apply to products under, 395(5)(c)
- pet boarding and raising**
 - application of Code, 1.1
- PFAS** *See* personal fall arrest system (PFAS)
- physicians**
 - consultations in audiometric testing, 223(2)
- physician's office**
 - in definition of health care facility, 1
 - first aid requirements, not to apply, 181(4)
 - See also* health care facility
- pigging and testing of pipelines** *See* piping and pipelines
- pile driving equipment and practices, 285–290**
 - brake bands and clutches, 288
 - chocking, 285
 - housekeeping, timber piles, 289(b)
 - inspections, maintenance, and certifications
 - brake bands and clutches, 288
 - crane booms, 290
 - pile hoisting, 286
 - restraining hoses and connections, 287
 - riding on loads, prohibition, 286(2)
 - timber piles, 289
 - See also* powered mobile equipment
- pilot vehicles**
 - public highway traffic control, 194(7)(f)
- PIP**
 - defined, 1
- pipe racks on trailers, 765**
- Pipe Threads, General Purpose (Inch) (ASME)***, 776(2)
- Pipeline Act***, 448(3)
 - in definition of pipeline, 1

piping and pipelines

defined

- bulk shipment, 394.1
- buried facility, 1
- drill stem test, 1
- hand expose zone, 1
- hazardous energy, 1
- high pressure pipeline, 1
- hot tap, 1
- pig, 1
- pigcatcher, 1
- pigging, 1
- pipeline, 1

diving operations, locking out, 437

excavating buried or concrete-embedded facilities, 447–448

first aid, high hazard work, 178, 181(1), Schedule 2, Tables 3 and 7

hazardous energy control

- alternative systems, 215.5(5)
- blanking or blinding systems, 215.5
- certification by engineer, 215.5(5)
- double block and bleed system, 215.5
- isolation requirements, 215.4–215.5
- pigging and testing, 215.6
- restraining hoses and piping, 188

mine excavations at safe distances from, 535

pigging and testing, 215.6

restraining hoses and piping, 188

sliding prohibited, 756

specifications and certifications

- restraining hoses and piping, 188(2)

transfer of hazardous products, 402

tubular storage, 765

See also buried or concrete-embedded facilities; confined and restricted spaces; hazardous energy control; hot taps; oil and gas wells

pit

defined

- in definition of mine, 1
- in definition of mine site, 1
- in definition of surface mine, 1
- pit, 1

brakes on rubber-tired, self-propelled equipment, provisions not to apply, 577–579

mine walls, 541

specifications and procedures

- mine walls, 541

See also surface mines

pits, confined *See* confined and restricted spaces**placards (WHMIS)**

conditions for use, 398(5), 401(1)

content and location, 401

transfer of hazardous products, 402

See also Workplace Hazardous Materials Information System (WHMIS)

plans

competent person to prepare plan, 2.2

platforms

building shafts, safeguards

main and secondary work platforms, 313(1)

no platform at doorway, safety structures, 313(2)

falling objects protections

cantilever hoist platforms, 318(5)

toe boards, 321

portable ladders used with, 136(c)

on suspended scaffolds, 341(7)

See also elevating platforms and aerial devices; scaffolds and temporary work platforms

pneumatic energy

in definition of hazardous energy, 1

See also hazardous energy control

pneumoconiosis *See* health assessments for exposure to asbestos, silica or coal dust**police**

report of loss or theft of explosives, 468.52

polishing disc *See* grinders**Portable Containers for Gasoline and Other Petroleum Fuels (CSA)**, 163(2)(d)**portable containers for hazardous products**, 400–401

See also Workplace Hazardous Materials Information System (WHMIS)

Portable elevating work platforms (CSA), 347(4)**portable ladders**

defined, 1

See also ladders

Portable Ladders (CSA), 135(a)**portable power cables**

defined, 1

See also mines and mine sites

portable two-way radios, base stations and repeaters

in definition of radiofrequency transmitters, 1

See also radiofrequency transmitters

portal

defined, 1

See also underground mines

potable water *See* drinking fluids**poultry, raising and maintenance of**

application of Code, 1.1

power in mines *See* mines and mine sites

- power lines and poles** *See* electric utilities, overhead
power lines
- power producers, industrial** *See* industrial power producers
- powered mobile equipment, 256–279**
defined
in definition of hazardous energy, 1
powered mobile equipment, 1
all-terrain vehicles, 280–282
bulkheads, 268
certification by engineer
falling objects protective structures, 272(3), 273
modification of ROPS, 273
refuelling practices for motor vehicles or watercraft, 279(4)
rollover protective structures, 270(3)
clearance distances, 258(2)
dangerous movements
bulkheads and protective structures, 268
clearance distances, 258(3)
entry restrictions, 258(3)
precautions, 258(1)
during worker transportation, 275(2)
direct supervision, 256
documents
inspection records, 260(5)
operator's manual for ATV or snow vehicle, 281
procedures for rollover protection, 270(3)
dumping block in mines, 542
elevated parts, 261
excavations, access and block, 459–460
exhaust gases not to enter enclosed body, 275(4)
extending booms, ladders, 128
falling objects protective structures, 272–273
flammable, combustible or explosive materials, 277–279
flying or projecting objects, protections, 269
forklift trucks, 283–284
fuel tank in cab, 274
guards and screens, 269
hazardous energy control
isolation of hazardous energy, 212–215.3
manufacturer's specifications for isolation, 212
operation during control, 212(2)
verification of isolation, 213
hazardous loads, 277
housekeeping, 256(3)(f), 275(2)
inspection and maintenance
by competent worker, 260(1)
elevated parts, 261
hazards, 260(3)
manufacturer's specifications, 260(2)
records, 260(5)
report to employer, 260(4)
visual inspections, 257, 257.1, 267(2)
lights, 264
maintenance, 260–261, 277
operator responsibilities, generally, 256
authorized operator, 256(1)
full control of equipment, 256(3)(c)
housekeeping, 256(3)(f)
report on conditions, 256(3)(a)
safe operation, 256(3)(b)
seat belt use, 256(3)(d)–(e)
starting engines, 262
unattended equipment, 263
visual inspection, 257, 257.1
pedestrian traffic, 259
refuelling, 279
dispensing flammable fuels, 279
ignition sources, distances, 279(1)(b), 279(2)(b)
no smoking, distances, 279(1)(a), 279(2)(a)
riding on loads, 276, 286(2)
rollover protective structures (ROPS), 270–271
certification by engineer, 270(3)
seatbelts and restraint systems, 271
standards, 270(2)
when needed, 270(1)
seats, 266(c)
snow vehicles, 280–282
specifications and certifications
falling objects protective structures, 273
inspections, 260(2)
isolation for hazardous energy control, 212
load and slope limitations for ATVs and snow vehicles, 282
refuelling practices for motor vehicles or watercraft, 279(4)
rollover protective structures, 270(3), 273
standards
falling objects protective structures, 272(2)
glazing materials, 265(2)
lights on earthmoving construction machinery, 264(2)
portable fuel tanks, 277(1)
rollover protective structures, 270(2)
seat belts and restraint systems for equipment with ROPS, 271(1)
starting engines, 262
stop devices, 266(a), 267(1)(c)
tank trucks, 278, 402
tire servicing, 193

- competent worker, 193(1)
 manufacturer's service manuals, availability, 193(2)
 tire inflation methods, precautions, 193(3)–(6)
- traffic control system, 267(2)
- trailer hitch safety devices, 266(d)
- unattended equipment, 263
- walkways, 259
- warning system to workers, 266(b), 267
- weather protections during worker transportation, 275(3)
- wheel and tire assemblies
 competent worker, 193(1)
 manufacturer's service manuals, availability, 193(2)
 tire inflation methods, precautions, 193(3)–(6)
- windows and windshields, 265
- worker in training, 256(2)
- worker transportation, 275
See also hazardous energy control; pile driving equipment and practices
- power-fed circular saws**, 380, Schedule 8, Table 1
- PPE** *See* personal protective equipment (PPE)
- ppm (parts per million)**
 defined, Schedule 1, Table 2
- Practice for Occupational and Educational Eye and Face Protection (ANSI)***, 229
- precious and semi-precious minerals**
 in definition of mine, 1
 in definition of mine site, 1
See also mines and mine sites
- pregnant workers**
 information on radiation hazards, 291(c)
 radiation exposure, 291.6, Schedule 12, Table 1
See also radiation exposure
- prescription eyewear**
 eye protection, 229(2)–(2.3)
See also eye protection
- primary care paramedic**
 defined
 in definition of advanced first aider, 1
 in definition of first aider, 1
 primary care paramedic, 1
 designation as first aider, 181
 high hazard work, 178, 181(1), Schedule 2, Tables 3 and 7
See also advanced first aider; first aid and first aiders
- prime (explosives)**
 defined, 1
See also detonators and detonation
- prime contractors**
 in definition of first aider, 1
 first aid services, supplies, equipment, 178–182
- oil and gas wells, 751.1–752.3
- prime movers** *See* powered mobile equipment
- privacy of business information** *See* confidential business information (WHMIS)
- privacy of worker information** *See* information access and privacy for workers
- processing plant, mines and mine sites**
 defined
 in definition of high hazard work, Schedule 2, Table 3
 in definition of mine site, 1
 discard, 1
 processing plant, 1
 building safety, 532
 first aid, high hazard work, 178, 181(1), Schedule 2, Tables 3 and 7
 mine material and discards, 536, 541
See also mines and mine sites
- product identifier**
 defined, 394.1
 claim for disclosure exemption, 408
 in definition of work site label, 394.1
See also Workplace Hazardous Materials Information System (WHMIS)
- professional engineer**
 defined, 1
 in definition of specifications, 1
See also certification by professional engineer
- propane**
 OEL, Schedule 1, Table 2
 underground mines, propane heaters and installations, 693.3(1), 695
- protective clothing** *See* footwear; headwear; personal protective equipment (PPE)
- protective enclosure** *See* safeguards and warnings
- protective headwear** *See* headwear
- protective structures, temporary** *See* temporary protective structures
- Protection and Safety for Industrial X-ray Equipment: Safety Code 34 (Health Canada)***, 291.2(e)
- Protective Clothing and Equipment for Wildland Fire Fighting (NFPA)***, 233(5)(c), 237(b)
- Protective Ensemble for Structural Fire Fighting (NFPA)***, 233(5)(b), 237(a)
- Protective footwear (CSA)***, 233(2), 233(4)–(5)
- Protective Frames for Wheel-type Agricultural Tractors — Test Procedures and Performance Requirements (OSHA)***, 270(2)(e)
- pruning trees** *See* tree care operations
- Prusik and similar knots**, 150.3
See also personal fall arrest system (PFAS)

- Public Health Act**, 356(a)
- public highway traffic control**, 194(7)
- pulmonary function technician**
 defined, 1
 in health assessments, 40(2)
See also health assessments for exposure to asbestos,
 silica or coal dust
- pump jack scaffolds**
 platforms, 330
See also scaffolds and temporary work platforms
- pump truck, concrete** *See* concrete pump trucks
- puncture resistant footwear**, 233(2)–(4)
- purge**
 defined, 1
- push sticks**
 for feeding machinery, 319
- pyrotechnics special effects**, 517.1
- quarry**
 defined
 in definition of mine, 1
 in definition of mine site, 1
 quarry, 1
 first aid, high hazard work, 178, 181(1), Schedule 2,
 Tables 3 and 7
See also mines and mine sites; surface mines
- quartz**
 in definition of silica, 1
See also silica (respirable crystalline silica)
- radar**
 in definition of electromagnetic radiation, 1
- radiation**
 defined
 in definition of laser, 1
 radiation, 1
See also designated radiation equipment;
 electromagnetic radiation; ionizing radiation;
 lasers; non-ionizing radiation; radiation
 exposure
- radiation equipment**
 defined, 1
See also designated radiation equipment
- radiation exposure**, 291–291.7
 defined
 authorized radiation health registration agency, 1
 authorized radiation protection inspection agency, 1
 designated radiation equipment, 1
 effective dose, 1
 electromagnetic radiation, 1
 equivalent dose, 1
 ionizing radiation, 1
 laser, 1
 millisievert (mSv), 1
 National Dose Registry, 1
 non-ionizing radiation, 1
 radiation, 1
 radiation equipment, 1
 radiation facility, 1
 radiation source, 1
 registration certificate, 1
 certificate for designated equipment
 compliance, 291.7(4)
 exemptions, 291.7(3)
 issuance, 291.7(1)–(2)
 modifications to equipment and facilities, 291.7(5)
 posting of certificate, 291.7(6)
 requirement, 291.7(2)
- Director
 issuance of certificate, 291.7(1)–(2), 291.7(4)
- electric arc welding, 231
- maximum dose limits
 body organ or tissue, 291.1, Schedule 12, Table 2
 effective dose, 291.1, Schedule 12, Table 1
 equivalent dose, 291.1, Schedule 12, Table 2
 ionizing radiation, 291.1, 291.4(1)–(2), 291.6,
 Schedule 12, Tables 1–2
 shielding, 291.1
- maximum exposure limits
 lasers, 291.4, Schedule 12
 non-ionizing radiation, 291.4(3)–(4), Schedule 12,
 Tables 3–4
 radiofrequency electromagnetic fields, 291.4,
 Schedule 12, Table 4
- monitoring worker exposure, 291.5–291.6
 informed workers, 291.5(1)(c)
 ionizing radiation equipment, 291.5(2)
 licensed providers, 291.5(1)(a)
 National Dose Registry reports, 291.5(1)(d)
 records access, 291.5(1)(a)
 records retention, 291.5(1)(b)
 registration certificate requirement, 291.5(2)
- pregnant workers, 291(c), 291.1, 291.6, Schedule 12,
 Table 1
- radiation facilities, 291.1, 291.7(5)
- safe work practices, 291, 291.1
- shielding, 291.1, Schedule 12, Tables 1–2
- students, 291.1, 291.6, Schedule 12, Table 1
- WHMIS not to apply to nuclear substances, 395(5)(d)
- young workers, 291.1, 291.6, Schedule 12, Table 1
See also lasers; x-ray equipment

- radiation facility**
 defined, 1
 laser radiation, 291.3
 modifications to facilities, 291.7(5)
 shielding design, 291.1
See also designated radiation equipment; radiation exposure
- radiation source**
 defined, 1
See also designated radiation equipment; radiation exposure; x-ray equipment
- Radiation Protection in Dentistry: Recommended Safety Procedures for the Use of Dental X-ray Equipment: Safety Code 30 (Health Canada), 291.2(c)***
- Radiation Protection in Veterinary Medicine: Recommended Safety Procedures for Installation and use of Veterinary X-ray Equipment: Safety Code 28 (Health Canada), 291.2(a)***
- radio towers**
 in definition of radiofrequency transmitters, 1
- radiofrequency electromagnetic fields**
 maximum exposure limits, 291.4, Schedule 12, Table 4
- radiofrequency transmitters**
 defined
 in definition of actively transmitting, 1
 radiofrequency transmitter, 1
 explosives, minimum distances
 fixed transmitters, 503, Schedule 10, Table 1
 mobile transmitters and cell phones, 503, Schedule 10, Table 2
 explosives at mines
 warnings, mobile transmitters turned off, 517.9
- railways**
 in definition of bulk shipment, 394.1
- ramps, 121**
 strength, 121(1)(a)
 toe boards and guardrails, 121(1)(d), 321(2)
 traction, 121(2)
 width, 121(1)(b)–(c)
See also entrances, walkways, and stairways
- ranching operations** *See* farming and ranching operations
- razing structures** *See* demolition
- reaction vessel (WHMIS)**
 safety data sheet, exemption, 405(2)
 transfer of hazardous products, 402
- Recommendations of the International Commission on Radiological Protection (ICRP)***
 in definition of
 effective dose, 1
 equivalent dose, 1
- Recommended Practice for Oilfield Explosives Safety (API), 516(2)***
- recreational sports**
 defined
 non-industrial rope access work, 1
 sport diving, 423(2)
See also rope access work, non-industrial (mountaineering, caving, canyoning, sport climbing)
- recycling materials**
 in definition of hazardous waste, 394.1
- red tags, scaffolds, 326(1)(c)**
- refuelling vehicles**
 powered mobile equipment, 279
- refuelling vehicles, retail stores** *See* retail fuel and convenience store worker safety
- registered emergency medical responder** *See* emergency medical responder
- registered nurses** *See* nurse; nurse with advanced first aid certificate
- registered primary care paramedic** *See* primary care paramedic
- registration certificate**
 defined, 1
See also designated radiation equipment
- Regulation**, *See* Occupational Health and Safety Regulation
- reinforcing steel rod**
 as makeshift fittings or attachments, 304(a)
- remote control signal stations**
 in definition of electromagnetic radiation, 1
- remote controls**
 in definition of control system isolating device, 1
 lifting devices, 72(3)
 underground mines, equipment, 706
- remote monitoring station**
 defined, 1
 tending worker, 56
See also confined and restricted spaces
- repair machinery, isolating hazardous energy to** *See* hazardous energy control
- representatives, joint health and safety committee**
See joint health and safety committee, representatives

Requirements for the Safe Use of Baggage X-ray

Inspection Systems: Safety Code 29 (Health Canada),
291.2(b)

rescue and evacuation *See* emergency response;
underground mines

resident handling

defined in safe patient/client/resident handling, 1
See also lifting and handling loads

residential construction

placement of roofing materials, 187.1
See also roofing

respirable crystalline silica *See* silica (respirable
crystalline silica)

respirable particulate

defined, 1
OEL list, Schedule 1, Table 2
See also particulate materials; respiratory protective
equipment

respiratory disease *See* health assessments for
exposure to asbestos, silica or coal dust;
respiratory protective equipment

respiratory protective equipment, 244–255

defined, 1
abrasive blasting operations, 255
air line respiratory protective equipment
air quality, 249
facial seal, 250
for immediate danger, 251
for no immediate danger, 252
air purifying equipment, 252–253
air quality, 249
approval of equipment, 246
code of practice, 245
documents
code of practice, 245
equipment standards, approval, 246(b)
duty to use, 228, 244(4)
emergency response
escape equipment, 248(2), 254
PPE in emergency plan, 116(c)
eye protection, 229(3)
face piece
effective facial seals, 250
eye protection, 229(3)
inspections, 248
oil and gas wells
emergency response, 752
provision by employer, 244(3)
self-contained breathing apparatus
facial seal, 250
for immediate danger, 251

for no immediate danger, 252
quality of breathing air, 249
standards
breathing air, 249
equipment, 246–247
face piece and facial seals, 229(3), 250(1)
storage, use and inspections, 248
supplied air equipment for confined spaces, 54(2)
testing for facial seal, 250(1)
training in use of, 245(2)
when needed
airborne biohazardous material, 244(1)–(4)
conditions to consider, 244(2)
emergency escape equipment, 254(1)
for immediate danger, 252
low oxygen concentration, 244(1)(b)
no immediate danger, 253
OEL list, 244(1)(a)
requirement to provide, 244(1)

rest platforms

fixed ladder exemption, 132

restraining devices

in powered mobile equipment with ROPS, 271(2)

restraint system, travel *See* travel restraint system

restricted areas, 29

defined, 1
authorized persons, 29(1), 29(2)(b), 37
decontamination of workers, 29(4)(c)
in definition of exposed worker, 1
emergencies, 29(5)
harmful substances, 29(2)
no eating, drinking or smoking, 29(2)(c)
personal protective equipment, 29–30
prohibited activities, 29(2)(c)
protection of worker's street clothing, 29(4)
protective clothing for workers, 29(4), 30
signs, 29(2)–(3)
training of workers, 37
See also asbestos; coal dust; lead and lead
compounds; silica (respirable crystalline silica)

restricted spaces

defined, 1
See also confined and restricted spaces

retail fuel and convenience store worker safety,

392.1–392.6
application of Code, 392.1
communications systems, 392.2(g), 392.5
confidentiality, 390.1(c)–(d)
fuel dispensing and prepayment, 392.6
investigation and reports, 390.1
review of plans and training, 392.4

- training of workers, 391, 392.3, 392.4
- violence prevention plan, 390, 392.2
 - building access, 392.2(d)
 - cash handling, 392.2(a)
 - communications systems, 392.2(g)
 - competent person to prepare plans, 2.2
 - employer's consultation with workers, 390(2)
 - high-value items, 392.2(b)
 - night hours, 392.2(b)
 - policies and procedures, 390(1)
 - signs, 392.2(f)
 - time lock safe, 392.2(b)
 - training of workers, 392.3, 392.4
 - video surveillance, 392.2(e)
 - visibility, 392.2(c)
- violence prevention policy, 390.1
 - confidentiality, 390.1(c)–(d)
 - corrective actions, 390.1(b)
 - elimination or control of hazard, 390.1(a)
 - investigation of incidents, 390.1(b)
- violence prevention procedures, 390.2
 - disclosure of information, 390.2(c)
 - elimination or control of hazard, 390.2(a), 390.2(f)
 - immediate help, 390.2(d)
 - information about hazard, 390.2(b)
 - information to parties involved, 390.2(g)
 - investigation and reports, 390.2(f)
 - reports by workers, 390.2(e)
- worker's rights under other laws, 390.1(e)
- working alone, 392.2(g), 392.5
 - See also* violence and harassment
- ride-on lawnmowers**, 270–271
 - rollover protective structures, 270
 - seatbelts and restraint systems, 271
 - See also* powered mobile equipment
- rigging**, 292–309
 - breaking strength
 - if worker raised or lowered, 292(1)
 - other situations, 292(1)
 - cable clips, 300, Schedule 5
 - certification by engineer
 - breaking strength, 292(2)
 - electric arc damage, 308
 - load ratings, 293(1)
 - makeshift rigging and welding, 304
 - double-base clips, 300(4)
 - double-saddle clips, 300(3)
 - electric arc damage, rejection criteria, 308
 - ferrules, 301
 - fist clips, 300(3)
 - hooks, 303, 309
 - inspections, 294
 - load ratings, 293
 - makeshift rigging and welding, 304
 - matching components, 302
 - noncompliance, prohibition, 295
 - rejection criteria
 - damaged hooks, 309
 - electric arc damage, 308
 - metal mesh slings, 307
 - synthetic fibre slings, 305
 - wire rope, 306
 - rigging blocks, matching components, 302(5)
 - rigging protection, 296
 - rope
 - matching components, 302(2)–(3)
 - rope wound on drum, 299
 - safety factors, 292.1
 - safety latches on hooks, 303
 - slings
 - metal mesh, rejection criteria, 307
 - standards, 297
 - synthetic fibre slings, 297(1), 298, 305
 - specifications
 - cable clips, 300(2)
 - damaged hooks, exceeds specifications, 309
 - end fittings and connectors, 302(4)
 - load ratings, 293(1)
 - rope wound on drum, 299(2)
 - wire ropes, sheaves, spools and drums as matching components, 302(1)
 - spreader bars, 297(3)–(4)
 - standards
 - breaking strength, 292(1)
 - slings, 297
 - U-bolt type clips, 300(1)
 - wire ropes, matching components, 302(1)–(4)
 - wire ropes, rejection criteria, 306
 - damage, wear or corrosion, 306(1)
 - nonrotating wire rope, 306(4)
 - running wire rope, 306(2)
 - stationary wire rope, 306(3)
 - See also* wire ropes
 - rigid frame dumpers** *See* powered mobile equipment
 - rigid horizontal lifeline systems** *See* horizontal lifeline systems
 - Rigid Protective Covers for Live Working on a.c. Installations (ULC)**, 799(1)
 - rigs** *See* oil and gas wells
 - rings, finger** *See* hand protection
 - riveting** *See* hot work

roads

forestry warnings, 522

See also highways; vehicle traffic control

roads, mines and mine sites

defined

access road in definition of mine site, 1

haul roads

berms, 539(3)

emergency escape routes, 539(2)

safe travel, 539(1)

underground mines

airborne dust control, 742(3)

diesel vehicle roads, 732

dust control on roadways, 742–743

return air roadways, 693.8(4)

roadway for rubber-tired vehicles, 742(3)

underground mines, coal

dust control on roadways, 742–743

robots

standards, 384(1)

teaching a robot, 385

roller skating headwear, 235

rollers and compactors *See* powered mobile equipment

rolling scaffolds, 334

design, 334(1)

preventing movement, 334(3)

prohibition against worker on rolling scaffold, 334(2)

See also scaffolds and temporary work platforms

rollover protective structures (ROPS) *See* powered mobile equipment

Rollover Protective Structures (ROPS) for Agricultural, Construction, Earthmoving, Forestry, Industrial and Mining Machines — Part 1: General Requirements (CSA), 270(2)(a)

Rollover Protective Structures (ROPS) for Agricultural, Construction, Earthmoving, Forestry, Industrial and Mining Machines — Part 2: Testing Requirements for ROPS on Agricultural Tractors (CSA), 270(2)(a)

Rollover Protective Structures (ROPS) for Agricultural, Construction, Earthmoving, Forestry, Industrial and Mining Machines — Part 3: Testing Requirements for ROPS on Construction, Earthmoving, Forestry, Industrial, and Mining Machines (CSA), 270(2)(a)

Rollover Protective Structures (ROPS) for Wheeled Agricultural Tractors (SAE), 270(2)(c)

roofing

placement of roofing materials, 187.1

roof ladder, safe use, 129

roofing brackets, 339

See also roofer's hoists

roof and side support *See* underground mines

roofer's hoists

application of Code, 59(2)

certification by engineer

not commercially manufactured, 60, 62

repairs and modifications, 73

collision prevention, 67

containers for hoisting, 74

documents

load charts, 64(2)

gallows frame roofer's hoist, design, 97(6)–(7)

hoisting lines, 70

identification of components, 61, 62(1), 73

inspections, 97(3)

load charts, 64(2)

load weight, 68

loads over work areas, 69

not commercially manufactured, 60, 62

operator requirements, 64

rated load capacity, 62

remote controls, 72(3)

repairs and modifications, 73

safe use and design, 97

counterweights, 97(1)–(2)

gallows frame roofer's hoist, 97(6)–(7)

inspections, 97(3)

load limits, not to exceed, 97(5)

safety pins for bolts and pins, 97(4)

vertical lifting only, 97(5)

signal systems, 64(2), 71

tag lines, 70

unsafe lift prevention, 66

See also hoists

rooms, changing *See* changing rooms

rooms, first aid *See* first aid and first aiders

rooms, lunch *See* lunch rooms

rooms, washing facilities in *See* toilets and washing facilities

rope access work, 805–849

defined

anchor, 1

anchorage, 1

cow's tail, 1

industrial rope access work, 1

non-industrial rope access work, 1

occupational rope access work, 1

anchorage strength

industrial work, 828–829

application of Code, 824

- arrest force, maximum, 828
- ascenders, 837
- back-up devices, 838
- certification by engineer
 - removal from service, 820
- connecting components, 835
- descenders, 839
- descent control device for fall arrest system, 146
- documentation
 - safe work plan, 808–810
 - worker's personal logbook, 827
- emergency rescue, 811, 821–822
- equipment and tools, 813–814
- exemptions
 - emergency rescue, 806
 - fall protection systems, 807
 - training, 805
- fall protection, 811
- full body harness, 142, 834
- hazard assessment, 811
- head protection, 831–833
- high stretch or dynamic ropes, 816, 818
- inspections and maintenance, 815
- logbook, worker's
 - contents, 827(3)
 - currency, 827(4)
 - inspection of, 827(4)
 - requirement, 827(1)
 - signatures, 827(2)
- personal protective equipment
 - alternative equipment, 805–806
 - maintenance, 811(b)
 - removal from service, 820
 - rescue if failure of, 821–822
 - safe work practices, 825
 - self rescue, 822
 - training, 811(b), 811(d), 822
- removal from service, 820
- ropes
 - cow's tail, 819
 - high stretch or dynamic ropes, 816, 818
 - low stretch or static ropes, 816–817
- safe work plan
 - availability, 810
 - competent person to prepare plan, 2.2
 - conditions for, 808
 - specifications, 809
- safe work practices
 - hazard assessment, 811(a)
 - personal protective equipment, 811(b), 811(d)
 - rescue procedures, 811(d)
 - training, 811(b)
 - work positioning and fall protection systems, 811(c)
- safety, secondary, belay, or backup lines, 830
- specifications
 - removal from service, 820
- standards
 - ascenders, 837
 - back-up devices, 838
 - carabiners, 836
 - connecting components, 835
 - cow's tail, 819
 - full body harness, 142(1), 834
 - head protection, 831
 - high stretch or dynamic ropes, 818, 819(1)
 - low stretch or static ropes, 817
 - safe work practices, 823–824
 - worker competency, 826
- trained workers present, requirement, 825
- training of workers, 811–812, 822, 826
- worker's personal logbook, 827
 - See also* full body harness; personal fall arrest system (PFAS)
- rope access work, industrial**, 828–829
- rope access work, non-industrial (mountaineering, caving, canyoning, sport climbing)**, 840–849
 - defined, 1
 - anchorage strength, 843
 - Director
 - safe work practices, approval, 840
 - fall factor, 842
 - head protection, 844–846
 - standards
 - connecting components, 849
 - full body harness, 848
 - head protection, 844–846
 - sit harness, 795(1)(b), 847
 - worker competency, 841
 - training of workers, 841
 - See also* rope access work
- rope adjustment device for work positioning**, 148.1
 - See also* personal fall arrest system (PFAS)
- ropes**
 - boatswain's chairs, 351(3)–(4)
 - in horizontal lifeline systems, 153–153.1
 - in needle-beam scaffolds, 337(3)–(4)
 - on sawmill log carriages, 383(2)
 - in scaffolding, 324(2)
 - synthetic fibre ropes, standards, 297(1)
 - wound on drum, 299
 - See also* rope access work

- ROPS (rollover protective structures)** *See* powered mobile equipment
- rotary table**
 defined, 1
 danger zone, 770, 773–774
See also oil and gas wells
- rubber-tired, self-propelled equipment** *See* mines and mine sites, rubber-tired, self-propelled equipment
- running wire rope**
 rejection criteria, 306(2)
- runways, 121**
 strength, 121(1)(a)
 toe boards and guardrails, 121(1)(d), 321(2)
 traction, 121(2)
 width, 121(1)(b)–(c)
See also entrances, walkways, and stairways
- rural electrification association**
 defined
 in definition of utility employee, 1
 rural electrification association, 1
 coordinated work with other utilities, 802
 overhead power lines
 notification of work near, 225(3)
 safe limit of approach distances, 225–226, Schedule 4, Table 1
 standards for work performed by employees, 800
See also electric utilities
- Rural Utilities Act**
 in definition of rural electrification association, 1
- Saddles, Pole Clamps (Stick Clamps) and Accessories for Live Working (ULC), 799(1)**
- safe limit of approach distances from overhead power lines, 225–226, Schedule 4, Table 1**
- safe patient/client/resident handling**
 defined, 1
See also lifting and handling loads
- Safe Practices for Rope Access Work (Society of Professional Rope Access Technicians), 823(b)**
- Safe Use of Lasers in Health Care (CSA), 291.3(2)**
- safeguards and warnings, 310–322**
 defined
 safeguard, 1
 alternative safeguards, 310(4)–(5), 311(3)
 bins, 316
 building shafts, 313
 certification by engineer
 supporting structure for safety nets, 320(2)
 chutes, 316
 demolition work sites, materials chute warnings, 420
 excavation markings, 444
 falling objects, protections, 318
 flying particles, safeguards, 317
 generally, 310
 guardrails, specifications, 315
 guards in powered mobile equipment, 269
 holes or openings, 314
 hoppers, 316
 locking out and tagging, 311(4)
 openings or holes, 314
 public highway traffic control methods, 194
 safety nets, 320
 standards
 safety nets, 320(1)(a)
 supporting structures
 safety nets, 320(2)
 tampering with safeguards on machinery, 311
 toe boards, 321
 openings and holes, 314(1)–(2)
 specifications, 321(1), 321(5)
 when needed, 321(2)–(4)
 warning signs
 automatic machinery starts, 310(6)
 falling objects, 318(3)
 open building shaft, 313(3)
 temporary covers, 314(3)
 wire mesh, specifications, 322
See also hazardous energy control; machinery
- Safety Code for Material Hoists (CSA), 81**
- Safety Code for Personnel Hoists (CSA), 96**
- Safety Code for Suspended Elevating Platforms (CSA), 348**
- Safety Code on Mobile Cranes (CSA), 88–88.1, 92.1**
- Safety Codes Act, 695(1)**
- safety committee for the work site** *See* joint health and safety committee
- safety data sheets (WHMIS), 404–414**
 defined
 fugitive emission, 394.1
 product identifier, 394.1
 safety data sheet, 394.1
 supplier, 394.1
 in definition of work site label, 394.1
 availability, 407
 confidential business information, 408–414
 claim for disclosure exemption, 408–410
 confidentiality of information, 411–414
 interim procedures before notice, 409
 procedures after notice of exemption, 410
 employer's data sheet, 405
 exemptions, 404(1)–(2), 405(2)
 format, 405(3)

- requirement, 404(1)–(2), 405(1)
 significant new data, updates, 406
 supplier's data sheet, 404
 training in content and significance, 397(1)(b)
See also Workplace Hazardous Materials Information System (WHMIS)
- safety engineered medical sharps**
 defined, 1
See also medical sharps
- safety fuses** *See* detonators and detonation
- safety glass**
 in powered mobile equipment, 265
- Safety Glazing Material for Glazing Motor Vehicles and Motor Vehicle Equipment Operating on Land Highways — Safety Standard* (ANSI), 265(2)(b)**
- safety hooks on safety nets**, 320(1)(b)
- Safety in Welding, Cutting and Allied Processes* (CSA), 171.1(1), 172(1)**
 in definition of welding or allied process, 1
- safety latches on hooks**, 303
- safety nets**
 certification by engineer of supporting structure, 320(2)
 in definition of
 fall protection system, 1
 safeguard, 1
 specifications, 320(1)
 water dangers, 157
- safety precautions, generally**, 185–195
 certification by engineer
 skeleton structures, 190
 unrestrained hoses or piping, 188(2)
 designated signallers, 191
 emergency lighting, 186(3)–(4)
 housekeeping, 185
 ice, working on, 195
 lighting, 186
 manufacturer's specifications
 unrestrained hoses or piping, 188(2)
 masonry walls stabilization, 192
 pallets, 187
 securing equipment and materials, 189
 storage racks, 187
 tire servicing, 193
- Safety Procedures for the Installation, Use and Control of X-ray Equipment in Large Medical Radiological Facilities: Safety Code 35* (Health Canada), 291.2(f)**
- Safety Requirements and Guidance for Analytical X-ray Equipment: Safety Code 32* (Health Canada), 291.2(d)**
- Safety requirements for personal fall arrest systems, subsystems and components* (ANSI/ASSE), 142(1), 142.2(1), 142.3(1), 143(1), 144, 147(1), 154(1), 795(1)(d), 834(c), 838(d), 848(b)**
- safety rope, life** *See* life safety rope
- Safety Standard for Bicycle Helmets* (CPSC), 235**
- Safety Standard for Cableways, Cranes, Derricks, Hoists, Hooks, Jacks, and Slings* (ASME), 297(1)**
- Safety Standard for Low Lift and High Lift Trucks* (ASME), 347(8)**
- Safety Standard for Maintenance and Inspection of Overhead Cranes, Gantry Cranes, Monorails, Hoists and Trolleys* (CSA), 94**
- samples, laboratory** *See* laboratory samples of hazardous products (WHMIS)
- sand**
 in definition of mine, 1
 in definition of pit, 1
See also mines and mine sites
- sandy soil**
 soft, sandy, or loose soils, 442(3), 451
 soil type, shoring components, 457, Schedule 9
See also soils and soil types
- saws and sawmills**, 376–383
 band saw wheels
 certification by engineer, 379(1), 379(3)
 manufacturer's specifications, rim thickness, 379(1)
 testing for cracks, 379(2)
 band saws
 band saw wheels, 379
 blade crack limits, 378, Schedule 8, Table 2
 retensioning, 378(3)
 shake band saw blades, cracked, 378(4)
 chainsaws
 chain adjustments, 376(2)
 footwear protection, 233(2)–(4)
 specifications, 376(1)
 circular saws
 blade crack limits, 377, Schedule 8, Table 1
 power-fed circular saws, 380
 sawmill head rig, 382
 cut-off saws, 381
 first aid, high hazard work, 178, 181(1), Schedule 2, Tables 3 and 7
 sawmill head rig, 382
 sawmill log carriage, 383
 ropes, rejection criteria, 383(2)
 safety devices, 383(1), 383(4)

- sawyer's lever, 383(3)
- top saw, sawmill, 382(2)
- scaffolds and temporary work platforms, 323–345**
 - defined
 - heavy duty scaffold, 1
 - ladderjack scaffold, 1
 - light duty scaffolds, 1
 - outrigger scaffold, 1
 - scaffolds, 1
 - bracket scaffolds, 332
 - certification by engineer
 - bracket scaffolds, 332(1)(a)
 - loads, 325(3)–(4)
 - metal scaffolding, 331(a)
 - suspended scaffolds, 341(2)
 - swingstage scaffolds, 342(1)
 - design, 324–325
 - double-pole scaffolds, 324–326, 333, Schedule 6, Tables 1–4
 - fixed ladder on, 130
 - free-standing scaffolds, 334, 422
 - half-horse scaffolds, 335, Schedule 6, Tables 5–6
 - hoarded masonry walk-through scaffold frames, 324(4)
 - inspections and tests
 - plank loads, 329(4)(b)
 - planks, 329(4)(a)
 - suspended scaffolds, 341(4)
 - ladderjack scaffolds, 336
 - ladders
 - access ladders on, 130(6)
 - vertical ladders, 327
 - working from, 328
 - loads
 - limits, 325
 - plank load tests, 329(4)(b)
 - workers informed, 325(5)
 - metal scaffolding, 331
 - needle-beam scaffolds, 337
 - outrigger scaffolds, 338
 - planks
 - specifications, 329
 - unpainted lumber, 324(3)
 - platforms, 330
 - protection from falling objects
 - overhead safeguards, 318(1)–(2)
 - specifications, 318(4)–(5)
 - toe boards, 321(3)
 - warning signs and devices, 318(3)
 - protection from powered mobile equipment or vehicles, 324(5)
 - rolling scaffolds, 334
 - roofing brackets, 339
 - safeguards
 - toe boards, 321(3)
 - single-pole scaffolds, 324–326, 340, Schedule 6, Tables 7–8
 - specifications
 - bracket scaffolds, 332(1)(a)
 - ladders on ladderjack scaffolds, 336(1)
 - metal scaffolding, 331(a)
 - planks, 329(1)
 - suspended scaffolds, 341(2)
 - swingstage scaffolds, 342(1)
 - standards, 323
 - suspended scaffolds, 341
 - tagging requirements
 - colour-coded tags, 326(1)
 - expiry, 326(4)
 - information on tag, 326(1), 326(5)
 - when needed, 326(2)–(3)
 - when not to use scaffold, 326(6)–(7)
 - unpainted lumber in wood scaffolds, 324(3)
 - See also* elevating platforms and aerial devices; platforms; swingstage scaffolds
- scalpels**
 - defined as medical sharp, 1
 - See also* medical sharps
- scissor lift fall restraint system, 156**
- scissors** *See* sharps
- scrapers, self-propelled wheeled, 270–271**
 - rollover protective structures, 270
 - seatbelts and restraint systems, 271
 - See also* powered mobile equipment
- screens**
 - in powered mobile equipment, 269
 - in powered mobile equipment with ROPS, 271(2)
 - See also* eye protection
- screw jacks**
 - alternatives to temporary protective structures, 457(2)
- seat belts**
 - forklift trucks, 284
 - standards for powered mobile equipment with ROPS, 271(1)
 - use in powered mobile equipment, 256(3)(d)–(e)
 - use in powered mobile equipment with ROPS, 271
- secondary blasting**
 - defined, 1
 - bore holes, 517.2
 - underground mines, 517.9991
- secondary escape routes, 119(4)–(5)**

- secure**
 defined, 1
See also hazardous energy control
- securing equipment and materials**, 189
- security x-ray equipment**
 certificate for designated radiation equipment, 291.7
 in definition of designated radiation equipment, 1
 monitoring worker exposure, 291.5–291.6
See also radiation exposure; x-ray equipment
- seismic blasting**
 defined, 1
 direct supervision, 517(2)
 fire extinguisher, 517(3)
 first aid, high hazard work, 178, 181(1), Schedule 2, Tables 3 and 7
 open flame to warm water on seismic drill, 517
- Selection, Use, and Care of Respirators (CSA)***, 247, 250(1)
- self locking connectors**
 standards for fall arrest system, 143(1)
 standards for industrial rope access work, 835
- self propelled mechanized feller**
 distance of workers from, 518(3)
See also forestry
- self propelled rubber-tired equipment** *See* mines and mine sites, rubber-tired, self-propelled equipment
- self-contained breathing apparatus**, 249–252
 in definition of respiratory protective equipment, 1
 facial seal, 250
 for immediate danger, 251
 for no immediate danger, 252
 quality of breathing air, 249
See also respiratory protective equipment
- self-contained toilets**, 375(2)–(3)
- self-propelled, rubber-tired equipment in mines** *See* mines and mine sites, rubber-tired, self-propelled equipment
- Self-Propelled Boom Supported Elevating Work Platforms (CSA)***, 347(1)
- Self-Propelled Elevating Work Platforms (ANSI)***, 347(3)
- Self-Propelled Elevating Work Platforms (CSA)***, 347(3)
- self-propelled wheeled scrapers**, 270–271
 rollover protective structures, 270
 seatbelts and restraint systems, 271
See also powered mobile equipment
- Self-retracting devices (CSA)***, 145
- separation distances in explosives**, 503, Schedule 10, Tables 1–2
See also radiofrequency transmitters
- service machinery, isolating hazardous energy to** *See* hazardous energy control
- service rigs** *See* oil and gas wells
- service shafts** *See* building shafts
- sewage** *See* buried or concrete-embedded facilities
- shackles on hooks**
 safety latches, 303
 safety nets, 320(1)(b)
- shaft hoist, underground** *See* underground shaft hoist
- shafts, building** *See* building shafts
- shafts, mine** *See* underground shafts
- shake band saw blades, cracked**, 378(4)
- sharps**
 defined
 medical sharp, 1
 parenteral contact, 1
 safety engineered medical sharp, 1
 sharps, 1
 containers, 526
 hazard elimination and control, 525.1
 medical sharps
 coming into effect, 525.2(1)
 safe work procedures, 525.2(4)–(6)
 safety engineered medical sharps, 525.2(2)–(3)
 recapping needles, 527
See also health care
- shaving** *See* facial hair
- sheaves**
 matching components, 302
- shields**
 in definition of safeguard, 1
 in powered mobile equipment, 269
 radiation exposure, 291.1, Schedule 12, Tables 1–2
See also radiation exposure; safeguards and warnings
- shock absorbers**, 142.3
 defined, 1
 in personal fall arrest systems, 142.3
 standards, 142.3(1)
See also personal fall arrest system (PFAS)
- shoes** *See* footwear
- shoring**
 alternatives to temporary protective structures, 457
 installation and removal, 458
 lumber and plywood standards, Schedule 9
 shoring component dimensions, Schedule 9
 soil stabilization, 443
See also temporary protective structures; temporary supporting structures
- shoulder belts**
 in powered mobile equipment with ROPS, 271(2)

- showers and shower rooms** *See* toilets and washing facilities
- signal systems** *See* designated signallers; designated traffic controllers
- significant new data (WHMIS)**
 defined, 394.1
 for safety data sheets, 406
 for supplier or work site labels, 398(3)
See also Workplace Hazardous Materials Information System (WHMIS)
- significant threshold shift**
 defined, 1
 audiometric testing, 223
- signs** *See* warning signs
- silica (respirable crystalline silica)**
 defined
 in definition of coal dust, 1
 in definition of incombustible dust, 1
 in definition of restricted area, 1
 exposed worker, 1
 silica, 1
 abrasive blasting use, 39
 code of practice required, 26, Schedule 1, Table 1
 decontamination methods, 28(c)
 health assessment of exposure, 40
 contents of report, 40(2)
 costs, 40(11), 40(13)
 frequency of assessments, 40(6)–(8)
 information to worker, 40(3)
 performed during work hours, 40(12)
 privacy of information, 40(5)
 refusal by worker, 40(9)–(10)
 retention of records, 40(4)
 housekeeping, 28(b)
 minimization of release, 28(a)
 OEL, Schedule 1, Table 2
 restricted areas
 authorized persons, 29(1), 29(2)(b)
 decontamination of workers, 29(4)(c)
 emergencies, 29(5)
 harmful substances, 29(2)
 no eating, drinking or smoking, 29(2)(c)
 personal protective equipment, 29–30
 prohibited activities, 29(2)(c)
 protection of worker's street clothing, 29(4)
 protective clothing for workers, 29(4)
 signs, 29(2)–(3)
 signs for restricted area, 29(2)–(3)
See also health assessments for exposure to asbestos, silica or coal dust
- silos** *See* confined and restricted spaces
- single-pole scaffolds**
 design and load, 324–325, 340, Schedule 6, Tables 7–8
See also scaffolds and temporary work platforms
- sit harness**
 in definition of non-industrial rope access work, 1
 standards for non-industrial rope access work, 847
 standards for tree care operations, 795(1)(b)
See also rope access work, non-industrial (mountaineering, caving, canyoning, sport climbing)
- skating headwear**, 235
- skeleton structures**, 190
 certification by engineer, 190(1), 190(3)
 competent worker, 190(4)
 erection drawings and procedures, contents, 190(2)
See also elevating platforms and aerial devices
- skidders**, 270–271
 rollover protective structures, 270
 seatbelts and restraint systems, 271
See also powered mobile equipment
- skidoos** *See* snow vehicles
- Skilled Trades and Apprenticeship Education Act**
 in definition of electrician, 1
- skin**
 defined
 in definition of medical sharp, 1
 in definition of parenteral contact, 1
 contamination with flammable or combustible liquids, 164
 duty to use PPE, 228
 emergency equipment, 24
 facial seals, 250
 flame resistant clothing, 232
 ionizing radiation, maximum equivalent dose, Schedule 12, Table 2
 OEL list for chemical substances, Schedule 1, Table 2
 protection of, 243, 310
 weather protections during worker transportation, 275(3)
See also medical sharps; personal protective equipment (PPE); safeguards and warnings
- Sleeves of Insulating Material for Live Working (ULC)**, 799(1)
- sliding hitch knots**, 150.3
See also personal fall arrest system (PFAS)
- sliding prohibited, oil and gas wells**, 756
- slings**
 metal mesh slings, rejection criteria, 307
 standards, 297
 synthetic fibre slings

- labels, 298(1)
- not subjected to pull tests beyond capacity, 298(2)
- rejection criteria, 305
- standards, 297(1)
- small utility vehicles**
 - defined, 1
 - headwear, 236
- smartphones** *See* cellular telephones
- smoke**
 - ventilation system, when needed, 386(c)
- smoking tobacco**
 - prohibitions
 - fire and explosion hazards generally, 162(3)
 - restricted areas, 29(2)(c)
 - when refuelling vehicles, 279(1)–(2)
 - smoking history in health assessments, 40(2)
- snap hooks**
 - standards for fall arrest system, 143
- snow vehicles**, 281–282
 - defined, 1
 - documents
 - operator's manual, 281
 - safe work procedures on sloping ground, 282(2)
 - headwear, 236
 - load and slope limitations, 282
 - operator's manual, 281
 - specifications
 - load and slope limitations, 282(2)
- snubbing units** *See* oil and gas wells
- soap for washing** *See* toilets and washing facilities
- sod farms**
 - application of Code, 1.1
- soft, sandy or loose soil** *See* soils and soil types
- Softwood Lumber (CSA)**
 - in definition of lumber, 1
- soils and soil types**, 442–443, 451
 - defined
 - hard and compact soil, 442(1)
 - likely to crack or crumble soil, 442(2)
 - soft, sandy, or loose soil, 442(3)
 - alternatives for soil stabilization, 443(2)
 - certification by engineer
 - alternatives for soil stabilization, 443(2)
 - classification, 442
 - cutting back walls, 450(1)(a), 451
 - hard and compact soil, 442(1), 451(a)
 - likely to crack or crumble soil, 442(2), 451(b)
 - more than one soil type, 442(4)
 - natural freezing for soil stabilization, prohibition, 443(3)
 - shoring component dimensions, 457, Schedule 9
 - soft, sandy, or loose soil, 442(3), 451(c)
 - soil stabilization, 443
 - See also* excavating and tunneling
- sole penetration protection in footwear**, 233(2)–(4)
 - See also* footwear
- sorting hooks**, 303(3)
- sound** *See* audiometric testing; hearing protection devices; noise
- Special Effects Pyrotechnics Manual (NRC)**, 517.1(2)
- Specification for Audiometers (ANSI)**
 - in definition of audiometer, 1
- Specification for industrial safety helmets (CEN)**, 831(2)(c)
- Specification for Performance Requirements for Protective Footwear (ASTM)**, 233(2), 233(4)
- Specification for Personal Noise Dosimeters (ANSI)**, 219(2)
- Specification for Protective Helmets for Vehicle Users (BSI)**, 236(1)(b)
- specifications, certifications and standards**
 - defined
 - approved to, 1
 - certified by a professional engineer, 1
 - manufacturer's rated capacity, 1
 - professional engineer, 1
 - specifications, 1
 - approved equipment, identifying marks, 15
 - certification by engineer
 - fit and safe for workers, 14(2)
 - following by employer, 12(b)–(d)
 - frequency, 13(2)(b)
 - safe procedures and equipment, 13(2)
 - written, stamped and signed, 14
 - specifications
 - employer to follow, 12
 - standards
 - approved equipment, identifying marks, 15
 - equipment, 3.2
 - performance of duty by worker, 3.3
 - personal protective equipment, 3.1
 - previous editions of referenced standards, 3.1
- spectacles** *See* eye protection
- split** *See* underground mines, ventilation systems
- spoil pile**
 - defined, 1
 - loose materials from excavations, 452–453
- spools, matching components**, 302

- sport climbing**
in definition of non-industrial rope access work, 1
See also rope access work, non-industrial (mountaineering, caving, canyoning, sport climbing)
- sport diving**, 423(2)
- sport headwear** *See* headwear
- spousal violence**
protection of workers, 390.3
See also violence and harassment
- spray operations**, 170.1
flammable substances, not to ignite, 170.1(2)
nozzle guards for airless spray machinery, 170.1(5)–(6)
outside of spray booths, standards for, 170.1(3)–(4)
spraying asbestos, prohibition, 32(2)
ventilation systems, 170.1(1), 170.1(4)
- spreader bars**
standards, 297(3)–(4)
See also rigging
- spring-loaded safety latch hooks**, 303(4)
- spruce pine fir (S-P-F)**
in definition of lumber, 1
- stairways** *See* entrances, walkways, and stairways
- stairwells** *See* building shafts
- standard first aider** *See* intermediate first aider
- Standard for Protective Headgear for Use in Bicycling (Snell)***, 235
- Standard for Protective Headgear for Use in Non Motorized Sports (Snell)***, 235
- Standard Grading Rules for Canadian Lumber (NLGA)***
in definition of lumber, 1
- Standard on Electric Utility Workplace Electrical Safety for Generation, Transmission, and Distribution (ULC)***, 227, 800, 803(a)
- Standard on Fire Service Life Safety Rope and System Components (NFPA)***, 795(1)(a), 817(b), 834(a), 835(e), 837(c), 839(b)
- Standard on Life Safety Rope and Equipment for Emergency Services***, 146, 147(1), 148.1
- Standard Practice for Calibration of Standards and Equipment for Electrical Insulating Materials Testing (ASTM)***, 799(3)
- Standard Specification for Helmets Used in Recreational Bicycling or Roller Skating (ASTM)***, 235
- Standard Specification for Reinforced Concrete Manhole Sections (ASTM)***, 131
- Standard Test Method for Vapour Pressure of Petroleum Products (Reid Method) (ASTM)***
in definition of flammable liquid, 1
- standards** *See* specifications, certifications and standards
- stationary wire rope**
rejection criteria, 306(3)
- steel chain**
standards, 297(1)
- steel ferrules**, 301(1)
- steel-toed boots** *See* footwear
- Steering for Off-Road, Rubber-Tired Machines (SAE)***, 590
- stemming**
defined, 1
stemming and bore holes, 487, 517.99(3)
stemming and leg wires, 494
underground mines, misfires, 517.996
- stepladders** *See* ladders
- STOP signals**
from non-designated signallers, 191(7)
- storage** *See* buried or concrete-embedded facilities; confined and restricted spaces; containers; storage racks and pallets
- storage battery locomotives in underground mines**, 706
- storage facilities, mine and mine sites**
in definition of mine site, 1
safety of building, 532
See also mines and mine sites
- storage of hazardous products** *See* Workplace Hazardous Materials Information System (WHMIS)
- storage racks and pallets**, 187
damage prevention, 187(4)
no danger to workers, 187(1)
report of damage to storage rack, 187(3)
support for loads, 187(2)
tubular storage, oil and gas wells, 765
- storms** *See* weather
- street clothing**
compressed or liquefied gas, use to blow substances, 171(8)(d)
with flame resistant clothing, 232(2)
in restricted areas, protection of worker's street clothing, 29(4)
See also worker's clothing
- stringers**
alternatives to temporary protective structures, 457
installation and removal, 458
lumber and plywood standards, Schedule 9

- shoring component dimensions, Schedule 9
See also temporary protective structures; temporary supporting structures
- strip mining**
 defined
 in definition of mine site, 1
 in definition of surface mine, 1
See also mines and mine sites; surface mines
- styrene in styrene resin fabrication**
 code of practice required, 26, Schedule 1, Table 1
- subsidence in mines**
 dangerous occurrences reports, 544
- substances**
 defined
 contaminant, 1
 contaminated, 1
 in definition of OEL, 1
 substances, 394.1
 substance interaction, Schedule 1, Table 2
 code of practice required, 26(1), Schedule 1, Table 1
 OEL list for chemical substances, Schedule 1, Table 2
See also occupational exposure limit (OEL);
 Workplace Hazardous Materials Information System (WHMIS)
- supervision, direct**
 defined, 1
- supplied air respiratory protection equipment** *See*
 respiratory protective equipment
- supplier**
 defined, 394.1
See also Workplace Hazardous Materials Information System (WHMIS)
- supplier labels (WHMIS), 398–403**
 defined
 label, 394.1
 significant new data, 394.1
 supplier, 394.1
 supplier labels, 394.1
 arrival of product without label, requirement for work site label, 398(6)–(7)
 employer not to remove, modify or alter label, 398(2)
 laboratory samples, 403
 manufacturer's requirement for label, 399
 placards
 conditions for use, 398(5), 401(1)
 content and location, 401
 transfer of hazardous products, 402
 replacement of illegible or missing label, 398(4)
 requirement for labels, 399–403
 significant new data, label updates, 398(3)
 storage without label, conditions, 398(5), 401, 402
- training in content and significance, 397(1)(a), 398(5)(c)
- transfer of hazardous products, 402
See also confidential business information (WHMIS); Workplace Hazardous Materials Information System (WHMIS)
- supplier's material safety data sheet (WHMIS)** *See*
 safety data sheets (WHMIS); Workplace Hazardous Materials Information System (WHMIS)
- supplies, lifting** *See* lifting and handling loads
- supporting structures, temporary** *See* temporary supporting structures
- surface mines**
 defined
 mine wall, 1
 pit, 1
 quarry, 1
 surface mine, 1
 combined with underground mines, 686
 electrical equipment and systems
 electrician or supervised worker, 560(3)
 portable or temporary equipment, 560(5)
 standards and specifications, 560(1)–(2)
 testing, 560(3)–(4)
 mine walls, 541
 powered mobile equipment, dumping blocks, 542
 rubber-tired, self-propelled equipment, 574
 soil stabilization, 443
 specifications, certifications and procedures
 brakes and steering on rubber-tired, self-propelled equipment, 574
 electrical equipment and systems, 560(1)–(2)
 employer to implement, 533.1
 generally, 12–15.1
 mine walls, 541
See also mines and mine sites; mines and mine sites, conveyors; mines and mine sites, explosives; pit
- surveyor**
 defined
 in definition of mine plan, 1
 surveyor, 1
- suspended elevating platforms**
 standards, 348
See also elevating platforms and aerial devices
- suspended loads over work areas, 69**
- suspended outrigger scaffolds**
 design and specifications, 338
See also scaffolds and temporary work platforms

- suspended scaffolds**, 341
 defined, 1
 daily inspections, 341(4)
 design and specifications, 341
See also scaffolds and temporary work platforms
- swabbing units**
 defined, 1
See also oil and gas wells
- swing drop distance**
 defined, 1
See also fall protection systems; personal fall arrest system (PFAS)
- swingstage scaffolds**, 342–345
 certification by engineer, 342(1)(a)
 design and specifications, 342–343
 escape device, 344(3)–(4)
 hoisting equipment, 344(1)–(2)
 inspections, 345(1)
 manually operated secondary mechanism, 344(3)–(4)
 manufacturer's specifications, 342(1)(a)
 personal fall arrest systems, 345(4)–(5)
 safety procedures and devices, 344–345
 suspension rope, 344(4)–(5)
 use for light duty, 343(1)
See also scaffolds and temporary work platforms
- synthetic fibre ropes**
 boatswain's chairs, 351(3)
 standards, 297(1)
See also ropes
- synthetic fibre slings**
 labels
 manufacturer's information, 298(1)(a)–(b)
 safe working load, 298(1)(c)
 type and material of construction, 298(1)(d)
 not subjected to pull tests beyond capacity, 298(2)
 rejection criteria, 305
 standards, 297(1)
- tag lines on loads**, 70
- tags** *See* scaffolds and temporary work platforms
- tank cars and trucks**, 278, 402
- tanks** *See* containers
- Technical Handbook for Professional Mountain Guides (ACMG)**, 841(a)
- telephone lines** *See* buried or concrete-embedded facilities
- telephones** *See* cellular telephones; communication systems
- telescopic aerial devices**
 on motor vehicle, standards, 347(5)
See also elevating platforms and aerial devices
- television and radio towers**
 in definition of radiofrequency transmitters, 1
See also radiofrequency transmitters
- temporary, generally**
 defined, 1
- temporary anchors**
 personal fall arrest system, 152.1(2), 152.3
 travel restraint systems, 152.1(1)
- temporary protective structures**
 defined, 1
 alternatives for soil stabilization, 443(3)
 certification by engineer
 tunnel excavations, 464
 excavating and tunneling
 alternative structures, 457
 as protection method, 450(1)(b)–(c)
 specifications of professional engineer, 456
 trenches, standards for shoring, stringers and bracing, Schedule 9
 underground shafts, 461(1)–(2)
 temporary covers, 314(2)
 tunnel excavations, 464
See also excavating and tunneling
- temporary stairs**, 122(3)
- temporary supporting structures**, 352
 defined, 1
 certification by engineer, 352(3)–(4)
 masonry walls stabilization, 192
 standards, 352(1)–(2)
- temporary work platforms** *See* scaffolds and temporary work platforms
- temporary work sites**
 toilets and washing facilities, 356(b)
- tending worker**
 defined, 1
See also confined and restricted spaces
- test machinery, isolating hazardous energy to** *See* hazardous energy control
- testing the atmosphere in confined spaces**, 52
- therapeutic or diagnostic x-ray equipment**
 certificate for designated radiation equipment, 291.7
 in definition of designated radiation equipment, 1
 in definition of ionizing radiation equipment, 1
 monitoring worker exposure, 291.5–291.6
 standards, 291.2
See also designated radiation equipment; radiation exposure; x-ray equipment
- thermal energy**
 in definition of hazardous energy, 1
See also hazardous energy control
- threats** *See* violence and harassment

- 3 decibel exchange rate**
 defined, 1
 in definition of L_{ex} , 1
See also noise
- three-wheeled all-terrain vehicles**
 prohibition on work sites, 280
- thrustout materials landing platform**
 in definition of temporary supporting structures, 1
See also temporary supporting structures
- ticket** *See* supplier labels (WHMIS); work site labels (WHMIS)
- timber** *See* forestry
- timber piles**, 289
See also pile driving equipment and practices
- tire servicing**, 193
 competent worker, 193(1)
 manufacturer's service manuals, availability, 193(2)
 tire inflation methods, precautions, 193(3)–(6)
- titanium**
 light metal alloys in underground mines, prohibition, 693.1
- tobacco**
 WHMIS not to apply to, 395(3)(b)
See also smoking tobacco
- Tobacco and Vaping Products Act (Canada)**, 395(3)(b)
- toe boards**, 321
 in definition of safeguard, 1
 openings and holes, 314
 specifications, 321(1), 321(5)
 when needed, 321(2)–(4)
See also safeguards and warnings
- toecaps**, 233(2)–(4)
- toilets and washing facilities**, 354–361
 feminine hygiene products disposal, 360(c)
 food establishments, exceptions, 356(a)
 hand cleaning facilities, 359–360
 circular wash fountains, 359(3)
 clean and operational, 361(1)
 hand drying, 360(b)
 hand soap, 360(b)
 number required, 359
 mobile or temporary work sites, 356(b)
 no unreasonable restrictions, 354
 number required, 357, Schedule 7
 showers and shower rooms
 clean and operational, 361(1)
 emergency washing equipment, 23
 storage of other materials, 361(2)
 storage of other materials, 361(2)
 toilet paper, 360(a)
 toilets, 357
 accessibility, 357(5)
 clean and operational, 361(1)
 drainage, 358(1)–(2)
 maintenance of self-contained units, 358(3)
 number required, 357, Schedule 7
 one facility for both sexes, 357(2)
 separate facilities by sex, 357(1), Schedule 7
 urinals, 357(3)–(4)
 waste receptacles, 360
See also decontamination of workers; drinking fluids
- tools**
 defined
 actuated fastening tool, 1
 hand tool, 1
 actuated fastening tool, 374
 contact by clothing, PPE and any other thing, 362
 grinders, 375
- torso protection**
 personal protective equipment, 242
- total fall distance**
 defined, 1
See also personal fall arrest system (PFAS)
- total particulate**
 defined, 1
See also particulate materials
- tower and building shaft hoists**, 98–99
 defined
 building shaft, 1
 hoist, 1
 tower hoist, 1
 certification by engineer, boom, 99
 design, 99
 protective enclosure, 98
 safeguards, 318(7)–(8)
See also hoists
- tower cranes**, 100–107
 defined, 1
 certification by engineer
 changing components, 103
 operator's cab, 103(2)
 structural testing and examination, 105
 wind and temperature limitations, 106
 changing components, 103
 documents
 load charts, 63(2)
 log books, 65
 limit devices, 101–102
 height limit device, 101(1)(c)
 overload device, 101(1)(a)
 travel limit device, 101(1)(b)
 trolley travel limit device, 101(1)(d)

- verification, 102
- load charts, 63(2)
- log books, 65
- manufacturer's specifications, 101, 103, 106
- multiple cranes, 107
- operation, 102
- operator's cab, 103(2)
- standards, 100
- structural testing and examination
 - certification by engineer, 105
 - how often to test, 105(2)
 - non-destructive testing, 105(1)
- test weights, 104
- wind and temperature limitations, 106
 - See also* cranes
- tower hoist**
 - defined, 1
 - See also* tower and building shaft hoists
- tracked crawler, 270–271**
 - rollover protective structures, 270
 - seatbelts and restraint systems, 271
 - See also* powered mobile equipment
- tractors, 270–271**
 - rollover protective structures, 270
 - seatbelts and restraint systems, 271
 - See also* powered mobile equipment
- trade name**
 - in definition of product identifier, 394.1
 - See also* Workplace Hazardous Materials Information System (WHMIS)
- traffic control** *See* vehicle traffic control
- Traffic Safety Act*, 574(4)**
- trail bike, motorized**
 - headwear, 236
- trailer hitches in powered mobile equipment, 266(d)**
- trailer pipe racks, oil and gas wells, 765**
- training agency, approved**
 - defined
 - approved training agency, 1
 - in definition of basic first aider, 1
 - in definition of intermediate first aider, 1
 - designated first aider with training from, 177, 181
- transfer of hazardous products, 402**
 - See also* Workplace Hazardous Materials Information System (WHMIS)
- Transportation Association of Canada**
 - Manual of Uniform Traffic Control Devices for Canada*, 194(7)(i)
- transportation of explosives** *See* explosives, transportation in vehicles
- transportation to health care facility, 180**
- travel restraint system**
 - defined
 - anchor, 1
 - fall protection system, 1
 - guardrails, 1
 - horizontal lifeline system, 1
 - travel restraint system, 1
 - anchors
 - permanent, 152
 - temporary, 152.1(1)
 - control zones, 161
 - horizontal lifeline systems, 153–153.1
 - scissor lift, requirement, 156
 - water dangers, 157
 - when required, 139, 141
 - See also* fall protection systems
- travelling blocks, oil and gas wells, 769–770**
- tree care operations, 792–796**
 - application of Code, 792
 - fall protection, 794
 - harness standards, 795
 - knot exemption, 796
 - safe work practices and procedures, 793
 - emergency rescue, 793(1)(e)
 - hazard assessment, 793(1)(a)
 - tools and personal protective equipment, 793(1)(c)
 - training, 793(1)(b)
 - work positioning and fall protection, 793(1)(d)
- trenchers, 270–271**
 - rollover protective structures, 270
 - seatbelts and restraint systems, 271
 - See also* powered mobile equipment
- trenches**
 - defined, 1
 - See also* excavating and tunneling
- tricycling headwear, 235**
- trolley locomotives in underground mines, 706**
- trucks** *See* booms and boom trucks; concrete pump trucks; forklift trucks; logging trucks; tank cars and trucks
- tubular storage, oil and gas wells, 765**
- tuggers, oil and gas wells, 770**
- tunnel, mine**
 - defined, 1
- tunnels** *See* confined and restricted spaces; excavating and tunneling
- turnouts for logging industry vehicles, 525(3)**
- two-way radios** *See* radiofrequency transmitters
- U-bolt clips for wire rope, 300(1)**
 - See also* cable clips

- underground mines, 680–749.8**
 defined
 combustible dust, 1
 in definition of mine site, 1
 gob, 1
 incombustible dust, 1
 mine level, 1
 mine site, 1
 mining certificate, 1
 outlet, 1
 portal, 1
 split, 1
 underground mine, 1
 underground mine manager, 1
 underground shaft, 1
 adjoining oil and gas operations, 748
 adjoining underground mines, 747
 battery-charging stations, 697.1
 blasting machine, blasting cable, 517.991
 chutes, 717
 combined with surface mines, 686
 communication systems
 alarm systems, 697(1)
 back-up power supply, 697(1)
 locations, 697(1)
 permanently attended stations, 697(1), 722
 ventilation monitoring, 722
 diesel fuel and diesel-powered equipment
 diesel vehicle roads, 732
 diesel-powered equipment, 697.4, 731
 flammable gas levels, 731–732
 housekeeping, 705
 return airway, 713
 standards, 697.4
 underground fuel stations, 704–705, 713
 Director
 annual mine plan, 681
 issuance of certificates, 749.4
 suspension and cancellation of certificates, 749.8
 electrical equipment and systems
 dangerous occurrences reports, 544
 electrician or supervised worker, 560(3), 697.2
 flammable gas levels, 731–732
 portable or temporary equipment, 560(5)
 standards and specifications, 560(1)–(2)
 testing, 560(3)–(4)
 emergencies and evacuation, 701–703.4
 certifications, 701(2)
 contact with moving equipment, prevention, 703
 emergency response plan, 115–116
 emergency response station, 703.3
 emergency supplies, 702.1(2), 703.3
 emergency warning system, 703.1
 escape ways, 702
 evacuation, 703.1–703.2
 flammable gas levels, 731–732
 markings and guide lines, 702
 outlets, 701
 personal protective equipment, 702, 703.3(2), 703.4
 portals, 700
 refuge stations, 702, 702.1, 711(5)
 rescue equipment, 703.3(2)
 respiratory protective equipment, 703.4
 training, 703.2, 703.4
 explosion prevention plan, 745
 fuel
 bulk storage, 704, 713
 bulk storage, prohibitions, 696
 containers, 705
 diesel fuel, 704–705
 fuel stations, 704–705, 713
 spill removal and disposal, 705
 surface storage locations, 696
 hazards, shift report, 690
 housekeeping, 743
 inspections and tests
 carbon monoxide and oxygen, 693.9, 730
 before each shift, 690
 explosion control, 745
 flammable gas on diesel vehicle roads, 732
 reports, 730
 shift report on, 690
 ventilation, 725
 mine plans, 533, 681
 moving equipment, prevention of contact with, 703
 personal protective equipment, 702, 703.3, 703.4
 propane heaters and installations, 693.3(1), 695
 refuge stations
 certifications, 702.1
 markings for escape ways, 702
 size and availability, 702.1(2)
 supplies, 702.1(2)
 ventilation using compressed air, 711(5)
 report, shift, 690
 roof and side support
 certifications and specifications, 707–708
 pillar extractions, 708
 report on excavation for entry or roadway, 707–
 roof bolting equipment, gas monitor, 741
 support system, 707–708
 rubber-tired, self-propelled equipment
 brake and steering standards, 574

- clearances, 697.3
- sealed off areas, 716, 733
- shaft access and hoisting equipment, 749.1
- signs, warnings and markings
 - conveyor transfer points, 693.3(4)
 - emergency warning systems, 697(1)
 - escape ways, 702
 - ignition hazards at surface, 694
 - moving equipment, prevention of contact with, 703
 - unsafe areas, 689
- standards, certifications, procedures and specifications
 - adjoining mines, 747
 - annual mine plan, 533, 681
 - degassing procedures, 733
 - diesel-powered equipment, 697.4
 - electrical equipment and systems, 560(1)–(2)
 - employer to implement, 533.1
 - escape ways, 702
 - explosion prevention plan, 745
 - fuel stations, 704(2)
 - generally, 12–15.1
 - outlets, 701(2)
 - pillar extractions, 708
 - portals, 700
 - refuge stations, 702.1
 - roof and side support system, 707–708
 - sealed off areas, 716, 733
 - shaft access and hoisting equipment, 749.1
- supervisors, review of shift report, 690
- unsafe areas, closed off and signs, 689, 716, 733
- vehicles, 704–706
 - control levers, 706
 - diesel fuel, 704–705
 - diesel-powered equipment, 697.4
 - dust control on roadways, 742(3), 743
 - flammable gas levels, 731–732
 - flammable gas on diesel vehicle roads, 732
 - fuel stations, 704–705, 713
 - locomotives, 706
 - proximity detection systems, 706
 - standards and certifications, 697.4
- workers
 - shift report, 690
 - supervision by foreman or manager, 683, 685
- See also* coal mines, underground; mines and mine sites; mines and mine sites, conveyors; underground mine foreman; underground mine manager
- underground mines, explosives, 517.92–517.9991**
 - application of Code, 517.92
 - blasters, 517.92, 517.95–517.96, 517.99–517.9991
 - blasting cable, 517.991
 - containers, 517.4, 517.95
 - day boxes, 517.4, 517.96
 - detonation from surface, 517.998
 - detonators in blast holes, 517.992
 - drilling distances, 517.93
 - electric conveyance, 517.95
 - explosive atmosphere, 517.99
 - air velocity, 712
 - combustible dust treatment, 517.99(2)
 - gas levels, 517.99, 517.9991
 - as hazards, 161.1
 - tests, 517.99(1), 730
 - worker positions, 517.99(4)
 - explosives detonated from the surface, 517.998
 - firing in the same round, 517.994
 - firing station, permanent, 517.999
 - magazines, 517.94
 - mine shaft conveyance, 517.97
 - mine shaft excavation work, 517.993
 - misfires, 517.995–517.996
 - deactivation, 517.996(2)–(3)
 - detonator lead wires, 517.995(2)
 - faulty electric detonators, 517.996(4)
 - no other blasting activities, 517.996(1)
 - removal by water jet, 517.995(1)
 - stemming removal, 517.996(3)
 - priming explosives, 517.98
 - removal from magazine, 517.4
 - reports on gas inspections, 730
 - secondary blasting, 517.9991
 - series connection, 517.993
 - shock blasting, 517.997
 - specifications and certifications
 - magazines, 517.94
 - shock blasting, 517.997
 - stemming and bore holes, 517.99(3)
 - storage, 517.94, 517.96
 - surface detonation, 517.998
 - transportation in closed containers, 517.95
 - See also* explosives; mines and mine sites, explosives
- underground mines, fire and explosion prevention, 693–694**
 - battery-charging stations, 697.1
 - bulk fuel storage, prohibition, 696
 - construction materials, non-combustible, 693.3(1)(d), 693.3(2), 700
 - conveyors
 - automatic fire suppression system, 598
 - carbon monoxide monitors, 693.9

- clearance for spill removal, 693.5
- fire-resistant construction, 693.4, 693.5
- fire-warning devices, 693.3(4)
- gas and dust control, 742(1)–(2)
- diesel engines and roads, 731–732
- dust suppression devices, 693.3(3)
- explosion control
 - adjoining mines, 747
 - explosion barriers, 745
 - explosion doors or weak walls, 721(2)
 - explosion prevention plan, 745
 - inspections, 745
 - oil and gas drill holes, 748
 - shaft access and hoisting equipment, 749.1
 - water or gas accumulations, 749
- explosive atmospheres
 - combustible dust treatment, 517.99(2)
 - gas levels, 517.99, 731–732, 738
 - as hazards, 161.1
 - tests, 517.99(1), 730
 - worker positions, 517.99(4)
- explosives, operations
 - air velocity, 712
 - combustible dust treatment, 517.99(2)
 - gas levels, 517.99, 517.9991
 - as hazards, 161.1
 - tests, 517.99(1), 730
 - worker positions, 517.99(4)
- fire detection and suppression systems, 693.6
- firefighting equipment
 - air flow, 693.7(2)
 - inspections and tests, 693.7(3)
 - sufficient and appropriate, 693.7(1)
- fireproof containers, 693.3(1)
- flammability hazards
 - monitoring of, 693.2, 738
 - storage of liquids, 693.3(1)
- gas and dust control, 730–743
 - airborne dust, 742
 - bleeder systems, 731
 - coal-cutting equipment with gas detection, 738
 - conveyors, 742(1)–(2)
 - degassing procedures, 733
 - diesel vehicles and roads, 731–732
 - electrical power shutoff, 731
 - flammable gas levels, 731–732, 738, 741
 - gas monitors and tests, 693.2, 730, 732, 738, 741
 - incombustible dust treatments, 743
 - monitoring worker exposure to respirable dust, 742(4)
 - reports on tests, 730
 - roadway for rubber-tired vehicles, 742(3)
 - roof bolting equipment, 741
 - sealed off areas, 716, 733
 - specifications and certifications, 733, 743
 - water supply to suppress dust, 742(1)–(2)
- housekeeping, 693.3, 743
- hydraulic fluids, 693.3(5)–(7)
- ignition sources
 - light metal alloys, restrictions, 693.1
 - worker restrictions, 693
- methane, 517.99(2)–(3), 517.9991, 712, 730
- mine material, 693.3(1)
- portals, 700
- propane heaters and installations, 693.3(1), 695
- signs, warnings and markings
 - conveyor transfer points, 693.3(4)
 - flammability hazards, 693.2
 - gas monitors, 693.2, 738, 741
 - ignition hazards, 694
 - roof bolting equipment, 741
- standards, certifications, procedures and specifications
 - adjoining mines, 747
 - battery-charging stations, 697.1
 - employer to implement, 533.1
 - explosion prevention plan, 745
 - hydraulic fluids, 693.3(5)
 - shaft access and hoisting equipment, 749.1
 - water supply, 693.8(1)
- water supply system
 - dust suppression, 742
 - independent power supply, 693.8(3)
 - return air roadways, 693.8(4)
 - specifications, 693.8(1)
 - water availability, 693.8(2)
- workers
 - ignition source restrictions, 693
 - See also* underground mines, explosives
- underground mines, ventilation systems, 711–729**
 - defined
 - split, 1
 - ventilation stopping, 1
 - air velocity, 712
 - airlock doors, 714
 - bleeder systems, flammable gas levels, 731
 - brattice, 724
 - carbon monoxide tests, 693.9, 730
 - chutes, 717
 - compressed air, 711(4)–(5)
 - control of harmful substances, 711
 - dangerous occurrences reports, 544

- electrical static discharge, 724
- explosion doors and weak walls, 721
- fans
 - auxiliary fans, 723
 - booster fans, 722
 - main fans, 719
 - main surface fans, 721
 - standby main fans, 719
 - unplanned stoppages, 725
- fire precautions
 - firefighting equipment and air flow, 693.7(2)
 - non-combustible construction, 693.3(2)
- mine plan, includes ventilation, 533, 681
- operating procedures, 711
- oxygen tests, 730
- power supply to main fans, 719
- return airway, 713, 715
- reverse air flows, 720
- sealed off areas, 716, 733
- splits, 718, 729
- standards, certifications, procedures and specifications
 - auxiliary fans, 723
 - employer to implement, 533.1
 - operating procedures, 711
 - reverse air flows, 720
 - sealed off areas, 716, 733
 - ventilation system, 711
- testing, 711, 725
- vent tubes, 724
- ventilation stoppings, 715
- underground mine foreman**
 - defined
 - mining certificate, 1
 - underground mine foreman, 1
 - appointment as temporary manager, 685
 - certification or deemed, 749.4
 - supervision of workers, 683
 - suspension or cancellation of certificate, 749.8
- underground mine manager**
 - defined
 - mining certificate, 1
 - underground mine manager, 1
 - appointment, 685
 - certification or deemed, 1, 749.4
 - foreman as temporary manager, 685
 - removal of supports, specifications, 707
 - supervision of workers, 683, 685
 - suspension or cancellation of certificate, 749.8
- underground shafts**, 461–462
 - defined
 - spoil pile, 1
 - underground shaft, 1
 - certification by engineer
 - temporary protective structures, 461(2), 462(2)
 - demolitions, 422
 - drilled or bored underground shafts, 462–463
 - entrances and exits, 446
 - falling materials in drilled or bored shafts, 462(3)–(4)
 - fences and gates for fall prevention, 461(3)–(4)
 - flammable substances, precautions, 163(2)
 - safeguards around surface openings, specifications, 318(6)
 - shoring component dimensions, 457, Schedule 9
 - soil stabilization, 443
 - temporary protective structures, 461(1)–(2), 462(1)–(2), 463
 - water accumulations, prevention of, 461(5)
 - worker access, 446
- underground shaft hoist**, 108–111
 - defined, 1
 - certification by engineer
 - unguided suspended cage, 111
 - code for communication systems, 108(4)
 - communication systems, 108(2)–(4), 111(1)
 - hoist cage, 110
 - mines, shaft access and hoisting equipment, 749.1
 - operator responsibilities, 109
 - safeguards on underground shaft cages, 318(7)–(8)
 - safety requirements, 108
 - speed limit, 109(2)
 - unguided suspended cage, 111
 - See also* hoists
- underground utility vaults** *See* confined and restricted spaces
- union**
 - defined, 196.1(1)
 - See also* joint health and safety committee; joint health and safety committee, representatives
- uprights**
 - shoring component dimensions, Schedule 9
- urinals** *See* toilets and washing facilities
- Use of Electricity in Mines (CSA)**, 517.5(1), 560(1), 723(4)
 - in definition of portable power cables, 1
- use of hazardous products** *See* Workplace Hazardous Materials Information System (WHMIS)
- utilities, electrical** *See* electric utilities
- utility disconnection for demolition**, 419
 - requirement, 419(a)
 - written confirmation, 419(b)

- utility employee**
defined, 1
See also electric utilities
- utility vehicles, small** *See* small utility vehicles
- valves** *See* buried or concrete-embedded facilities
- vapours of flammable liquids**
in definition of flammable substance, 1
See also fire and explosion hazards
- vegetable production**
application of Code, 1.1
- vehicles**
defined
GVW, 1
machinery, includes vehicles, 1
vehicle, 1
fall protection, 155
headwear, 236
for moving workers, 364
personal vehicles for work purposes, 290.1
refuelling, 279
See also powered mobile equipment; underground mines; welding or allied process
- vehicle traffic control**
automatic or remote controlled systems, 194(7)(g)
designated traffic controller, 194(4)–(6), 194(7)(h)
handheld signal lights, 194(6)
high visibility safety apparel, 191(2)–(3), 194(2)–(5)
logging industry vehicles, 525
pilot vehicles, 194(7)(f)
public highway traffic control methods, 194(7)
standards for highways, 194(7)(i)
when needed, 194(1)
- vehicle hoists**, 112–113
safe use, 113
standards, 112
See also hoists
- Vehicle Mounted Aerial Devices (CSA)**, 347(5), 799(1)
- Vehicle Mounted Bridge Inspection and Maintenance Devices (ANSI)**, 347(7)
- vehicle mounted bridge inspection and maintenance elevating work platform**
standards, 347(7)
- vehicle transporting equipment, bulkheads**, 268
See also powered mobile equipment
- vehicle-mounted winch lines**, 114
- ventilation ducts** *See* confined and restricted spaces; ventilation systems
- ventilation shafts** *See* building shafts
- ventilation stopping**
defined, 1
See also ventilation systems
- ventilation systems**, 386–388
defined
ventilation stopping, 1
in confined spaces, 53
design and specifications, 387
flammable substances, precautions, 163(2)
maintenance and operation, 387(1)
in spray operations, 170.1(1), 170.1(4)
training, 388(2)
warning of system failure, 388(1)
when needed, 386
airborne contaminants, 386(a)
atmosphere levels of oxygen, too high or too low, 386(e)
biological contaminants, 386(b)
flammables, 386(d)
particulates, 386(c)
See also underground mines, ventilation systems
- vertical ladders on scaffolds**, 327
- vertical towers**
on motor vehicle, standards, 347(5)
See also elevating platforms and aerial devices
- vessels** *See* confined and restricted spaces; hot taps
- vests**
duty to use, 228
use of, 242–243
See also personal protective equipment (PPE)
- veterinary services**
x-ray equipment standards, 291.2(a)
- vinyl chloride (chloroethylene)**
code of practice required, 26, Schedule 1, Table 1
OEL, Schedule 1, Table 2
- violence and harassment**, 389–392
application of Act (ss, 33 and 36), 391.1
confidentiality, 390.1(c)–(d), 390.5(c)
domestic violence exposure, 390.3
employer review of plans, 390.7
harassment prevention plan
competent person to prepare plans, 2.2
contents, 390.4
employer review, 390.7
harassment prevention policy
confidentiality, 390.5(c)
corrective action, 390.5(b)
elimination and control of hazard, 390.5(a)
investigation, 390.5(b)
harassment prevention procedures

- employer's documenting, investigating, and prevention strategies, 390.6(b)
 - reports by workers, 390.6(a)
 - reports to parties on investigation and corrective action, 390.6(c)
 - as hazards, 389
 - investigation and reports, 390.1, 391.1
 - joint health and safety committee
 - harassment prevention plan development, 390.4
 - medical treatment after incident, 391.2, 392
 - retail fuel and convenience store worker safety, 392.1–392.6
 - review of plans, 390.7
 - training of workers
 - appropriate responses, 391(c)
 - policies and procedures, 391(b)
 - recognition of violence and harassment, 391(a)
 - reports and investigations of incidents, 391(d)
 - violence prevention plan
 - competent person to prepare plans, 2.2
 - employer review, 390.7
 - employer's consultation with workers, 390(2)
 - policies and procedures, 390(1)
 - violence prevention policy, 390.1
 - confidentiality, 390.1(c)–(d)
 - corrective actions, 390.1(b)
 - elimination or control of hazard, 390.1(a)
 - investigation of incidents, 390.1(b)
 - violence prevention procedures, 390.2
 - disclosure of information, 390.2(c)
 - elimination or control of hazard, 390.2(a), 390.2(f)
 - immediate help, 390.2(d)
 - information about hazard, 390.2(b)
 - information to parties involved, 390.2(g)
 - investigation and reports, 390.2(f)
 - reports by workers, 390.2(e)
 - worker's pay during medical treatment, 392
 - worker's rights under other laws, 390.1(e)
 - See also* retail fuel and convenience store worker safety
- walkways** *See* entrances, walkways, and stairways
- walls**
- masonry walls stabilization, 192
- walls, mine**
- specifications, procedures, and certifications, 541
- warning devices and alarms**
- in emergency response plans, 116(g)
 - excavation markings, 444
 - falling objects, 318(3)
 - flags
 - excavation markings, 444
 - for warning of trees to be felled, 522(b)
 - flares
 - hazardous locations, safe distances, 167
 - public highway traffic control, 194(7)(e)
 - flashing lights and beacons
 - falling objects warnings, 318(3)
 - public highway traffic control, 194(7)(d)
 - mobile cranes warning devices, 91, 267
 - powered mobile equipment, 266(b), 267
 - public highway traffic control, 194(7)(a)
 - starting machinery, alarm systems, 365
 - ventilation system failure, 388
- warning signs**
- automatic machinery starts, 310(6)
 - falling objects, 318(3)
 - hazardous locations, 165(4)
 - materials chute at demolition site, 420(2)
 - noise exposure limits exceeded, 221(h)
 - open building shaft, 313(3)
 - signs, 310(6)
 - temporary covers for openings or holes, 314(3)
 - tree felling near roads, 522
 - vehicle traffic control
 - logging industry, 525
 - public highways, 194(7)*See also* safeguards and warnings
- wash basins** *See* toilets and washing facilities
- washing and cleaning operations**
- fire and explosion hazards, 162(5)
- washrooms** *See* toilets and washing facilities
- waste**
- defined
 - asbestos waste, 1
 - discard, 1
 - hazardous waste, 394.1
 - spoil pile, 1
 - asbestos
 - unnecessary accumulations, 28(b)
 - waste containers, 38
 - clean work site, 185
 - feminine hygiene products disposal, 360(c)
 - hazardous waste, 395(3)(c), 396
 - mine material and discards, 536, 541
 - sharps receptacles, 526
 - spoil pile, 452–453
 - waste receptacles for toilets and hand washing, 360
 - WHMIS not to apply to hazardous waste, 395(3)(c)
- water dangers**
- defined
 - life jackets, 1

- personal flotation devices, 1
- confined and restricted spaces, 49
- duty to use PPE, 228
- excavating and tunneling, 445, 464(2)
- fall protection systems, 157
- life jackets, 157, 240–241
- mines, accumulation of water, 749
- mines, dangerous occurrences reports, 544
- personal flotation devices, 240–241
- in underground shafts, 461(5)
- working on ice, 195
- water for drinking** *See* drinking fluids
- water for washing** *See* toilets and washing facilities
- water systems, buried** *See* buried or concrete-embedded facilities
- watercraft refuelling**, 279
- weather**
 - explosives
 - adverse conditions, 484
 - electromagnetic radiation, 501
 - weatherproof compartments in vehicles, 473.1(1)
 - lifting devices, weatherproof labels, 62
 - oil and gas wells
 - freezing of fluids and piping systems, 776(1), 776.1(5)
 - monitoring during well swabbing, 780(6)
 - persons using emergency transportation, 180
 - soil stabilization, prohibition on freezing as, 443
 - tower cranes, wind and temperature limitations, 104, 106
 - worker transportation, 180, 275
- welding or allied process**, 171.1–174
 - defined
 - welding or allied process, 1
 - allied process, 171.2
 - certification by engineer
 - repairs to riggings and fittings, 304(b)
 - storage compartments in vehicles, 173(3)
 - compressed or liquefied gas valve shut off when not in use, 171(8)(b)
 - electric arc welding
 - damage to rigging, 308
 - electric welding machines, 171.1(5)
 - eye and face protection in electric arc welding, 231
 - gas welding, 171.2
 - makeshift rigging and welding, 304
 - manufacturer's specifications
 - welding and allied equipment, 171.1(2)
 - precautions
 - electric supply cable, 171.1(6)
 - falling hazards, 171.1(4)
 - preparation of safe area, 171.1(3)
 - unattended electric welding machine, removal of electrode, 171.1(5)
 - services from vehicles, 172–174
 - handling cylinders, 174
 - horizontal cylinder storage, 173
 - storage compartments, 172
 - vehicle not in service, 174(3)–(4)
 - standards
 - safety, generally, 171.1(1)
 - storage compartments in vehicles, 172(1)
 - See also* compressed and liquefied gas; fire and explosion hazards; hot work
- well servicing**, 781
 - defined, 1
 - application of Code, 750
 - brakes, 767
 - distances from rig tank, 781(2)
 - drawworks controls and brakes, 766–767
 - emergency escape, 762
 - exits from enclosures, 119, 761
 - guy lines and anchors, 763
 - hoist weight indicators, 768
 - inspections and safety check, 758
 - oil savers, 781(4)
 - pressure test of lines, 781(3)
 - rented or leased equipment, 755.1
 - reports on inspections and repairs, 755–755.1
 - snubbing units
 - drawworks controls and brakes, 766–767
 - emergency escape, 762
 - exits from enclosures, 119, 761
 - guy lines and anchors, 763
 - hoist weight indicators, 768
 - inspections and safety check, 755–755.1, 758
 - reports on inspections and tests, 755–755.1
 - travelling blocks, 769–770
 - travelling blocks, 769–770
 - See also* oil and gas wells
- well stimulation**, 782
- well swabbing**
 - defined, 1
 - See also* oil and gas wells
- wells** *See* confined and restricted spaces; oil and gas wells
- wheel and tire assemblies**, 193
 - competent worker, 193(1)
 - manufacturer's service manuals, availability, 193(2)
 - tire inflation methods, precautions, 193(3)–(6)
 - See also* powered mobile equipment

- wheeled bulldozers, 270–271**
 rollover protective structures, 270
 seatbelts and restraint systems, 271
See also powered mobile equipment
- wheeled scrapers, self-propelled, 270–271**
 rollover protective structures, 270
 seatbelts and restraint systems, 271
See also powered mobile equipment
- wheeled trenchers, 270–271**
 rollover protective structures, 270
 seatbelts and restraint systems, 271
See also powered mobile equipment
- WHMIS** *See* Workplace Hazardous Materials Information System (WHMIS)
- winching operations, 114**
- windows and windshields**
 in powered mobile equipment, 265
- windshield wipers**
 in powered mobile equipment, 265(4)
- wire mesh**
 in safeguards, specifications, 322
- wire rope sling**
 as anchor, 152.4
See also anchors
- wire ropes**
 in boatswain's chairs, 351(4)
 in horizontal lifeline systems, 153–153.1
 on sawmill log carriages, 383(2)
 in scaffolding, 324(2)
See also cable clips; rigging
- wire wheel** *See* grinders
- wood or wood products**
 defined
 lumber, 1
 handrails on stairways, 123
 ladders, 126, 134–135
 plywood, 457
 roofer's hoist, 97(6)
 scaffolds, 324(3), 329, 333, 335, 337, 338
 shoring components, 457(1)–(2), Schedule 9
 WHMIS not to apply, 395(3)(a)
 wood dust, OEL, Schedule 1, Table 2
See also saws and sawmills
- wood pole climbing**
 in definition of fall restrict equipment, 1
 fall restrict equipment, 149
- work area**
 defined, 1
See also workers
- work platforms** *See* elevating platforms and aerial devices; platforms
- work platforms, temporary** *See* scaffolds and temporary work platforms
- work positioning system**
 defined, 1
 adjustable lanyard, 148
 fall restrict system with, 160.1
 rope adjustment device, 148.1
 tree care operations
 harness standards, 795
 safe work practices, 793(1)(d), 794
- work processes, hazards** *See* fire and explosion hazards; hazard assessment, elimination and control
- work shoes** *See* footwear
- work site and workers** *See* workers
- work site first aid** *See* first aid and first aiders
- work site hazards** *See* fire and explosion hazards; hazard assessment, elimination and control
- work site health and safety committee** *See* joint health and safety committee
- work site labels (WHMIS), 398–403**
 defined
 label, 394.1
 significant new data, 394.1
 work site label, 394.1
 arrival of product without label, requirement for label, 398(6)–(7)
 confidential business information, 408–414
 decanted products, 400–401
 employer not to remove, modify or alter supplier labels, 398(2)
 laboratory samples, 403
 manufacturer's requirement for label, 399
 placards
 conditions for use, 398(5), 401(1)
 content and location, 401
 transfer of hazardous products, 402
 replacement of illegible or missing supplier label, 398(4)
 requirement for labels, 399–403
 significant new data, updates, 398(3)
 storage without label, conditions, 401, 402
 training in content and significance, 397(1)(a), 398(5)(c)
 transfer of hazardous products, 402
See also confidential business information (WHMIS); Workplace Hazardous Materials Information System (WHMIS)
- work sites, first aid**
 defined
 close work site, 1

- distant work site, 1
- isolated work site, 1
- first aid requirements, 178, 181(1), Schedule 2, Tables 4–7
- See also* first aid and first aiders
- work sites, temporary** *See* temporary work sites
- workers**
 - defined
 - direct supervision, 1
 - exposed worker, 1
 - work area, 1
 - contact with machinery by clothing, PPE and any other thing, 362
 - duty of employer to ensure worker performs duties, 3.3
 - duty to report illness or injury, 182
 - duty to use PPE, 228, 229(2), 234, 244(4)
 - information access and privacy
 - asbestos, silica or coal dust exposure records, 40(5)
 - audiometric testing records, 223(4)–(5)
 - health information in emergencies, 413–414
 - violence and harassment incidents, 390.1(c)–(d), 390.5(c)
 - machinery or equipment for moving, 364
 - participation in emergency response plans, 115(2)
 - participation in hazard assessment, 8
 - personal vehicles for work purposes, 290.1
 - transportation in powered mobile equipment, 275
 - vehicles, personal, used for work, 290.1
 - work break, in definition of work area, 1
 - working alone, 393–394
 - See also* decontamination of workers; joint health and safety committee; joint health and safety committee, representatives; occupational exposure limit (OEL); personal protective equipment (PPE); violence and harassment; working alone
- worker's clothing**
 - compressed or liquefied gas, use to blow substances, 171(8)(d)
 - contact with tools, equipment and machinery, 362
 - contamination with flammable or combustible liquids, 164
 - designated signaller, 191(2)–(3)
 - with flame resistant clothing, 232(2)
 - high visibility safety apparel, 191(2)–(3), 194(2)–(5)
 - in restricted areas, protection of worker's street clothing, 29(4)
 - vehicle traffic control clothing, 194(2)–(5)
 - See also* decontamination of workers; street clothing
- working alone**, 393–394
 - application of Code, 393(1)
 - communication systems, 392.2(g), 392.5, 394
 - hazard assessment, 393(2)
 - retail gas and convenience store workers, 392.2(g), 392.5
 - underground coal mines, 687
- working face**
 - defined, 1
 - See also* mines and mine sites
- workings**
 - defined, 1
 - See also* mines and mine sites
- Workplace Hazardous Materials Information System (WHMIS)**, 395–414
 - defined
 - bulk shipment, 394.1
 - CAS Registry Number, 394.1
 - claim for disclosure exemption, 394.1
 - container, 394.1
 - fugitive emission, 394.1
 - hazard class, 394.1
 - hazard information, 394.1
 - hazardous product, 394.1
 - hazardous waste, 394.1
 - label, 394.1
 - laboratory sample, 394.1
 - manufactured article, 394.1
 - mixture, 394.1
 - product identifier, 394.1
 - safety data sheet, 394.1
 - significant new data, 394.1
 - substance, 394.1
 - supplier, 394.1
 - supplier label, 394.1
 - work site label, 394.1
 - application of Code, 395
 - confidential business information on data sheet, 408–414
 - claim for disclosure exemption, 408–410
 - confidentiality of information, 411–414
 - interim procedures before notice, 409
 - procedures after notice of exemption, 410
 - decanted products, 400–401
 - hazardous waste, 396
 - health and safety representative, training role, 397(2)
 - joint health and safety committee, training role, 397(2)
 - label required, 398–403
 - laboratory samples, 403
 - emergencies, 403(2)

- exemptions, 403(1), 403(4)–(6)
- label information, 403(2)
- manufacturers of hazardous products
 - label requirement, 399(1)
 - laboratory samples, 403
 - training in safe procedures, 397(1)(d)
- placards
 - conditions for use, 398(5), 401(1)
 - content and location, 401
 - transfer of hazardous products, 402
- safety data sheets, 404–407
 - availability, 407
 - confidential business information, 408–414
 - employer's data sheet, 405, 406
 - exemptions, 404(1)–(2), 405(2)
 - significant new data, updates, 406
 - supplier's data sheet, 404, 406
 - training in, 397(1)(b)
- supplier labels, 398–402
 - arrival of product without label, requirement for label, 398(6)–(7)
 - not to remove, modify or alter, 398(2)
 - replacement of illegible or missing label, 398(4)
 - requirement for, 399–403
 - significant new data, label updates, 398(3)
 - storage without label, conditions, 398(5), 402
 - training in content and significance, 397(1)(a), 398(5)(c)
- training, 397
 - emergencies, 397(1)(f), 397(1)(g), 398(5)(c)
 - fugitive emissions, 397(1)(f), 398(5)(c)
 - hazardous waste, 396
 - health and safety representatives and committee, 397(2)
 - identification methods for transfer of hazardous products, 397(1)(e)
 - safe manufacturing, 397(1)(d)
 - safe storage, use and handling, 397(1)(c)
 - safety data sheets, 397(1)(b)
 - supplier labels, 397(1)(a), 398(5)(c)
 - work site labels, 397(1)(a), 398(5)(c)
- transfer of hazardous products, 402
- work site labels, 398–402
 - arrival of product without label, requirement for label, 398(6)–(7)
 - decanted products, 400–401
 - employer not to remove, modify or alter supplier labels, 398(2)
 - replacement of illegible or missing supplier label, 398(4)
 - requirement for, 399–403
 - significant new data, updates, 398(3)
 - storage without label, conditions, 398(5), 401, 402
 - training in content and significance, 397(1)(a), 398(5)(c)
- workplace violence** *See* violence and harassment
- x-ray equipment**
 - defined
 - in definition of designated radiation equipment, 1
 - in definition of ionizing radiation equipment, 1
 - x-ray equipment, 1
 - analytical equipment, 291.2(d)
 - baggage inspection, 291.2(b)
 - certificate for designated radiation equipment
 - compliance, 291.7(4)
 - exemptions, 291.7(3)
 - issuance, 291.7(1)–(2)
 - modifications to equipment and facilities, 291.7(5)
 - posting of certificate, 291.7(6)
 - requirement, 291.7(2)
 - dentistry, 291.2(c)
 - diagnostic or therapeutic equipment, 291.2, 291.5(2)
 - industrial equipment, 291.2(e), 291.5(2)
 - maximum dose limits, 291.4, Schedule 12, Tables 1–2
 - medical diagnostic or therapeutic use, 291.2(f), 291.5(2)
 - monitoring worker exposure, 291.5–291.6
 - certificate requirement, 291.5(2)
 - informed workers, 291.5(1)(c)
 - ionizing radiation equipment, 291.5(2)
 - licensed providers, 291.5(1)(a)
 - National Dose Registry reports, 291.5(1)(d)
 - records access, 291.5(1)(a)
 - records retention, 291.5(1)(b)
 - standards, 291.2
 - veterinary practices, 291.2(a)
 - See also* radiation exposure
- yellow tags, scaffolds**, 326(1)(b)
- zinc chromate**
 - code of practice required, 26, Schedule 1, Table 1
 - OEL, Schedule 1, Table 2