BC GUIDANCE DOCUMENT

September 2024

Health, Safety and Reclamation Code for Mines in British Columbia

Reportable Incidents

BRITISH COLUMBIA

Ministry of Energy, Mines and Low Carbon Innovation

Contents

Purpose of Guidance Document

The purpose of this guidance document is to assist all parties involved in the mining industry in BC to understand the Health, Safety and Reclamation Code (Code) compliance requirements related to the revision of reportable incidents within Part 1. These Code provisions were last amended on November 30, 2022.

The document provides examples and instances of potential compliance events and are not to be considered all-inclusive. If there are questions about what constitutes a reportable incident, please contact the Office of the Chief Inspector at **833-978-9798** or via email at mine.inquiries@gov.bc.ca.

Definitions

The following terms are utilized in the Code:

Term	Definition	Guidance
EMLI	Ministry of Energy, Mines and Low Carbon Innovation	
EOR	Engineer of Record	
IDF	Inflow Design Flood	
MCC	Motor Control Centre	
OHSC	Occupational, Health and Safety Committee	
OMS	Operation, Maintenance and Surveillance	
Reportable incident	An incident referred to in section 1.7.1.	The Code defines the criteria for incidents that must be reported to the Ministry of Energy, Mines and Low Carbon Innovation (EMLI), and this definition is consistent with WorkSafeBC standards.
Serious Injury	An injury that can reasonably be expected at the time of an incident to endanger life or cause permanent injury.	A serious injury is defined in the Code and may include, but is not limited to: • Major fractures • Crush injuries • Amputation • Penetrating injuries, including high-pressure injection injuries • Loss of consciousness • Heart attack or sudden death from natural causes • Significant respiratory compromise, anaphylactic shock, or punctured lung • Circulatory shock (i.e., internal hemorrhage) or injury to any internal organ, or significant injury to soft tissue, such as nerves, muscles or tendons • Lacerations that cause severe hemorrhages • Second or third-degree burns • Heat stroke, hypothermia or frostbite • Injuries which are likely to result in loss of body function (e.g., severe

		strain or sprain, or loss of sight, hearing, or touch) • Exposure to infectious or toxic substances (i.e., asphyxiation or severe poisoning) • Near drowning • Injuries that require CPR, artificial respiration, control of hemorrhaging or treatment beyond First Aid, such as Emergency Health Services, surgery, or admittance to intensive care unit
STEL	Short-term exposure limits	
TARP	trigger action response plan	
QPO	Quantitative Performance Objective	

Reportable Incidents – Code Requirements

Section 1.7.1 - Reportable Incidents

1.7.1 (1) The following incidents are classified as dangerous occurrences and must be reported in accordance with section 1.7.2:
- (a) an incident that causes serious injury or loss of life;
- (b) an incident that had the potential to cause serious injury or loss of life.

Guidance

This section outlines the types of incidents that must be reported to EMLI, based on their actual or potential impact on individuals who were or could have been exposed to them. It also specifies the regulatory requirements regarding the maximum time frame within which mines must communicate these incidents to EMLI, as detailed in section 1.7.2.

1.7.1 (2) In addition to an incident referred to in subsection (1), the following incidents are classified as dangerous occurrences and must be reported in accordance with section 1.7.2:

Guidance

This section outlines incidents deemed significant due to their potential to escalate into dangerous situations if not effectively managed. These incidents are characterized not by their immediate impact but by their capacity to pose substantial risks if left unaddressed. It is crucial to note that the list provided in section 1.7.1(2) is applicable across all mining operations, including both surface and underground activities, and throughout every stage of the mine's lifecycle. Proper management of these incidents is essential to mitigate risks and ensure safety across all mine site infrastructure.

1.7.1 (2) (a) unexpected major ground fall, slope failure or subsidence;

Guidance

"Unexpected" signifies an unintended event that is not a function of the design or standard operations. It could also represent an event that did not occur at the planned time or in the correct sequence, or an exceedance of an anticipated event. "Unexpected" may also include events that are identified in advance through monitoring (in which personnel and equipment are mobilized out of the area in advance of the failure but the exact timing or magnitude of the event were unexpected). In this case, reporting is intended to address whether the risk mitigation measures in place were appropriate, and to consider subsequent mitigation measures to minimize similar events from occurring.

"Major" relates to the magnitude of the event or potential consequences of the event. The scale of the event should be considered in addition to any impacts to people, property, equipment, or the environment. Examples of failures to be reported include multi-bench pit slope failures and waste dump failures impacting the crest berm. Single bench pit slope failures fully captured by

catchment berms or "sliver" failures on waste dumps (which do not have the potential to cause serious injury or loss of life) are not required to be reported.

Underground examples include ground fall in areas that are frequently accessed, particularly where the ground support was inadequately designed or installed, and multiple ground failures between installed ground support within a generalized area. Isolated ground failures between installed ground support in less active areas are not expected to be reported unless serious injury or equipment damage has occurred.

"Slope failure" includes failures of constructed slopes (e.g., pits, waste dumps, excavations, underground development dams, road embankments) and natural slopes (e.g., natural hazards such as avalanches, debris flows, landslides). Evidence of potential major slope failure (such as measured or observed displacements, development of cracks, bulging, subsidence or frequent raveling) that pose a threat to people, property, or the environment are to be reported.

1.7.1 (2) (b) unexpected structural failure or collapse of any part of the mine;

Guidance:

"Unexpected" signifies an unintended failure or collapse of any structure at the mine that is not a function of the design or standard operations. This applies to structural or civil mine site components such as buildings and bridges and applies to both surface and underground mines.

If infrastructure moves in such a way that could harm people, or its integrity is compromised, or it fails or collapses, this must be reported to the Ministry. Some examples include:

- Walkway grates failing and a person falls through grate
- Conveyor collapsing
- Failure of power-operated vertical doors installed in equipment entranceways
- Failure of a crane, lifting device, manlift, or elevator.

1.7.1 (2) (c) for dams or dikes;

i. unexpected cracking, subsidence, seepage, springs;
ii. loss of freeboard;
iii. washout, erosion, or any other deficiency that may adversely affect the integrity of the structure;

Guidance

Mines are expected to proactively monitor dams and dikes, and if any changes are observed that may adversely affect the integrity of the dam or dike, it must be reported to the Ministry.

"Dam" is defined in the code as a barrier that is constructed for the retention of water, including water containing any other substance including tailings, or flowable tailings. "Dike" is not defined in the Code but can be interpreted as "a barrier used to regulate or hold back water from a river, lake, or even the ocean."

"Unexpected" is not defined in the Code and can be interpreted as an unintended event, observed or measured deformation that is not a function of the design, construction or standard

operations for the structure or an exceedance of an event that is already contemplated in the mine design.

"Freeboard" is generally determined by the Engineer of Record and included as a Quantitative Performance Objective (QPO) in the Operation, Maintenance and Surveillance (OMS) manual specific to the facility. The Engineer of Record (EOR) and Mine Manager must determine an appropriate threshold to be reported to EMLI specifically as a reportable incident. The threshold selected by the EOR and approved by the Mine Manager must consider that an appropriate response to the loss of freeboard is practical and achievable by the mine (and any pertinent parties) in a timely manner.

At a minimum, the reporting of a reportable incident must be completed when the **minimum freeboard** is exceeded. The minimum freeboard is the difference in elevation between the lowest elevation of the top of the dam (or in some cases, the top of impervious core) and the maximum pond level expected during the Inflow Design Flood (IDF).

The EOR can recommend (through the facilities trigger action response plans (TARP)) that a notification should be reported to EMLI prior to the reportable incident level (but not intended to be reported as a reportable incident). For further information about TARP required reporting see the OMS section of the Part 10: TSF and Dams Guidance Document.

1.7.1 (2) (d) equipment going out of control or an unexpected movement of equipment;

Guidance:

Any instances where equipment goes out of control or moves in an unexpected or uncontrolled manner must be reported to the Ministry. Examples include, but are not limited to:

- Collisions and contact, including vehicle to vehicle/equipment, vehicle to person, vehicle to wildlife, vehicle to mining infrastructure and road berms.
- Vehicle sliding out of the road or into an opposite lane. The risk of a vehicle sliding out of its lane or into the opposite lane can arise from various unpredictable factors, including mechanical failure, adverse road and weather conditions, and operator-related issues. Proper attention to vehicle maintenance, road conditions, weather forecasts, and operator training is crucial to mitigate these risks and ensure safe driving conditions.
- Failure of braking or steering
- Equipment tipping or rolling over
- Vehicle runaway, even if a runaway ramp is used
- Unintended acceleration

For mines with autonomous and semi-autonomous equipment:

In addition to the previously mentioned examples, incidents involving autonomous and semi-autonomous equipment are also reportable. It is important to note that the same criteria apply to these types of equipment as well. Ensuring that incidents involving autonomous and semi-autonomous systems are reported helps maintain consistency and safety standards across all equipment types. Below are some examples of those incidents:

- Unintended or uncontrolled movement (e.g., breach of designated area due to system malfunction)
- Equipment operating in a manner contrary to expected commands or system design, including:
    - Failure to stop when commanded
    - Failure to change motion when commanded (e.g., failure to change direction or speed)
    - Failure of autonomous system to prevent contact with an object (large wildlife, spill rock, etc.)
- Unexpected switching between autonomous and manual operating modes
- Equipment leaving permitted operating lanes or surveyed areas of spoil
- Unauthorized or unmonitored (without escort or control system awareness) entry or exit of the autonomous zone.
- Unexpected entry into an autonomous vehicles predicted path, by any other vehicle or equipment, that results in an avoidance action or command to autonomous or semi-autonomous equipment.
- A person found to be exposed to vehicles operating on autonomous mode without the protection of safety envelopes/bubbles.

1.7.1 (2) (e) unexpected inrush of water, mud, slurry or debris;

Guidance

"Unexpected" signifies an unintended event, not a function of the design or standard operations. This clause applies to both surface and underground facilities and could include natural occurrences on the mine site, such as flooding, or debris flows that have exceeded events already contemplated under the mine plan or designs.

Other examples may include:

- a flow of material that is not a standard operation of an active or inactive draw point, ore/waste pass, or any other mine opening
- a failure of a dike, pillar, bulkhead, or tunnel plug resulting in the loss of containment of flowable material

1.7.1 (2) (f) unexpected significant inflow or release of explosive, flammable, toxic or other dangerous gas, or ignition or explosion of gas or dust;

Guidance

An unexpected (i.e., uncontrolled or unplanned) significant inflow or release of any dangerous gas, or any unexpected ignition or explosion of gas or dust, must be reported. "Significant" means that the amount of gas is large enough to be noticed by workers or management, or to endanger people. It is important to note that "significant" does not relate only to the volume of gas released.

The key factor for consideration is the health and safety risk presented by the release, based on the environment and circumstances in which the release took place, as well as the nature of the gas or dust. For example:

- A small unexpected release of hydrogen cyanide gas may have significant health risks compared to a release of the same volume of ammonia gas
- How well the site was prepared for a release and/or to respond to the release
- Did exceedance(s) of exposure limits established by Section 2.1.1 of the Code occur, in particular exceedances of short-term exposure limits (STELs) and/or ceiling limits. Excursion limits should also be considered where applicable.

1.7.1 (2) (g) any of the following if it has the potential to cause, or causes, injury to persons or damage to equipment or property:
(i) an incident involving explosives;

Guidance

Any incident involving explosives must be reported to the Ministry if it causes or may cause serious injury to persons or damage to equipment or property. Examples include, but are not limited to:

- Misfires
- Premature or unexpected detonation of explosives
- Unauthorized entry into the blast zone by a person or vehicle
- Driving onto or about a loaded blast pattern
- Un-guided vehicles on a blast pattern
- Equipment or workers uncovering detonating line or booster
- Improper storage or transportation of explosives (e.g., boosters left overnight in vehicle, storing detonators and explosives together)
- Persons in line of blast including diamond drill holes
- Improper guarding of blast zone
- Blast damage impacting infrastructure

1.7.1 (2) (g) any of the following if it has the potential to cause, or causes, injury to persons or damage to equipment or property:
(ii) outbreak of fire;

Guidance

Any outbreak of fire must be reported if it could cause, or has caused, serious injury to individuals or damage to equipment or property. Examples of fires that must be reported include:

- Any fire that exceeds the mine's capacity to control or extinguish it, necessitating the involvement of emergency services.
- Fires in enclosed areas, such as workshops, preparation plants, or mills, are reportable if there is a possibility that people might have been exposed to harmful smoke, fumes, or gases, even if the fire was controlled by mine personnel. It is important to report these

fires to ensure that any potential health risks are assessed and managed appropriately, and that appropriate measures are taken to prevent similar occurrences in the future.
- Fires in machinery, equipment, or vehicles (whether running or parked), including grid box fires.
- Fires in electrical rooms or electrical equipment/devices such as high voltage capacitors, transformers, and MCC rooms/electrical switchgear.
- Any fires that have a reasonable suspicion of being caused by electrical equipment or infrastructure.

1.7.1 (2) (g) any of the following if it has the potential to cause, or causes, injury to persons or damage to equipment or property:
(iii) an incident involving electrical equipment;

Guidance

An incident involving electrical equipment that could cause serious injury or loss of life must be reported. Examples include:

- Electric shock
- Arc flash
- Opening a live cable coupler
- Power line on the ground
- Environmental effects (e.g., landslide, wildfire) on electrical infrastructure
- Buried cable contacted by persons or equipment
- Any overhead electrical cable or conductor, such as suspended trailing cables and overhead power lines, being contacted by machinery.

1.7.1 (2) (g) any of the following if it has the potential to cause, or causes, injury to persons or damage to equipment or property:
(iv) failure of a pressure vessel or boiler;

Guidance

Any failure of a pressure vessel or boiler, such as an explosion, that causes or has the potential to cause serious injury, equipment damage, or property damage must be reported. Explosions of pressure vessels or boilers near workers pose significant risks of serious injury or fatality. Pressure injections, where fluids penetrate the skin under high pressure, are also classified as serious injuries.

Failures of other pressurized systems or components, including haul truck tires and pipelines, are also reportable under this subsection. Recent incidents highlight the risks involved: multiple failures of multi-piece rims have resulted in fatalities and severe, life-altering injuries in the province. In BC, a modified propane tank used in a pressure washer exploded, leading to a fatality. Additionally, hydraulic hoses with pinholes can cause pressure injections that may result in limb amputations.

1.7.1 (2) (g) any of the following if it has the potential to cause, or causes, injury to persons or damage to equipment or property:
(v) unintentional contact with a falling object or drilling or other rotational equipment;

Guidance

Any contact between a falling object and a person or piece of equipment must be reported. This includes, but is not limited to:

- Objects falling from drills, cranes, scaffolding, or rotating driveshafts.
- Rocks falling and impacting persons or equipment underground, such as from draw points, shafts, or raises.
- Rocks falling and impacting persons or equipment on the surface, such as from highwalls or benches.

Additionally, any incident involving contact between a person and drilling or other rotational equipment that results in, or could potentially result in, serious injury must also be reported. This includes scenarios where a worker is caught in a pinch point. (Note: Section 3.3.4 of the Code prohibits wearing jewelry and loose-fitting clothing around moving machinery.)

1.7.1 (2) (g) any of the following if it has the potential to cause, or causes, injury to persons or damage to equipment or property:
(vi) exposure to hazardous environmental conditions;

Guidance

Exposure to hazardous environmental conditions indoors including in equipment or outdoors, such as thermal environments, wildfires or flooding, must be reported if a mine's procedures or Mine Emergency Response Plan do not effectively manage the risks to workers' health and safety. In such cases, the procedure or plan must also be updated as necessary.

Interactions with wildlife should be reported based on the proximity of workers and the nature of the encounter. Report incidents in which a person is chased, stalked, attacked, or makes physical contact with a large wild animal, such as a bear, cougar, or moose. Additionally, report any interactions where an animal displays aggressive or defensive behavior, or if existing site procedures fail to prevent such encounters adequately.

1.7.1 (2) (h) for underground mines,
(i) unexpected cracking, seepage, failure or pressure on a bulkhead;

Guidance

Mines are expected to proactively monitor the conditions of bulkheads. If any unexpected changes are observed that may adversely affect the integrity of a bulkhead, it must be reported to the Ministry. For example, an unexpected increase in pressure could be dangerous and potentially lead to a cave-in.

“Unexpected” signifies an unintended event, not a function of the design or standard operations. An example may include:

- seepage in or around the bulkhead that exceeds the maximum design seepage of the bulkhead and poses a threat to people or property
- pressure that exceeds the maximum design pressure of the bulkhead

1.7.1 (2) (h) for underground mines,
(ii) an incident involving a mine hoisting plant including, without limitation, sheaves, hoisting rope, shaft conveyance, shaft, shaft timber or headframe structure;

Guidance

Any incident involving a mine hoisting plant must be reported to the Ministry. Such incidents like the failure of a component of a shaft conveyance system, could result in serious injury or loss of life.

1.7.1 (2) (h) for underground mines,
(iii) unplanned stoppage of the main underground ventilation system;

Guidance

"Unplanned" refers to situations where a main ventilation fan stops unexpectedly. For example, if a power outage disrupts primary ventilation or if the emergency response plan is activated and workers are evacuated to the surface or a refuge station, this must be reported to the Ministry.

See also section 6.34.1 of the Code.

1.7.1 (2) (h) for underground mines,
(iv) an underground fire.

Guidance

All underground fires must be reported as they can have catastrophic impacts on workers.

Notification of Reportable Incidents

1.7.2 (1) In the event of a reportable incident, the manager must
(a) in the case of a reportable incident referred to in section 1.7.1 (1)(a), within 4 hours of the reportable incident, provide a verbal notification of the incident to an inspector, the management co-chair and the worker co-chair of the OHS committee or their designates and the local union,
(b) within 16 hours of a reportable incident, provide a written notice of the incident to an inspector, the management co-chair and the worker co-chair of the OHS committee or their designates and the local union, and
(c) within 60 days of a reportable incident, or within any longer time that may be specified by the chief inspector, submit the investigation report required under section 1.7.4 (2) to the chief inspector.

Guidance

1.7.2(1)(a): reportable incidents that cause serious injury or loss of life must be reported verbally to the Ministry within **4 hours** of the incident occurrence. Under the Ministry's Incident Management Process Policy, these types of reportable incidents must be phoned in to the **Mine Incident Reporting Line 1-888-348-0299**. This line is monitored 24/7 by an On-Call Inspector who will record the information related to the reportable incident and notifies other Ministry staff as needed.

1.7.2(1)(b): all reportable incidents must be reported in writing to the Ministry within **16 hours** of the incident occurrence. Under the Ministry's Incident Management Process Policy, these types of reportable incidents must be either:

1. Entered as a reportable incident in MineSpace, regarded as the primary portal for reporting, or
2. Emailed to the **Mine Incident Reporting Mailbox** at mineincidents@gov.bc.ca with the preliminary reporting form completed and attached to the email.

Note: a written report received within 4 hours satisfies both the requirement for the verbal report and the written report.

Scenario	Reporting Process
Blasting Incident	
After a blast, fly rock unexpectedly strikes a worker in the head. The worker loses consciousness but recovers and receives first aid treatment on site, and then transported to a hospital for observation.	1. Within 4 hours of the incident, call the **Mine Incident Reporting Line 1-888-348-0299** to report the incident and serious injury. Loss of consciousness can be considered a serious injury that must be reported verbally within 4 hours and in writing within 16 hours. 2. Within 16 hours of the incident, submit a written report through MineSpace or complete a preliminary reporting form and email the form to **Mine Incident Reporting Mailbox** at mineincidents@gov.bc.ca. 3. If a written report is received within 4 hours, both the requirement for the verbal report and the written report are satisfied.

Haul Truck Incident

Two haul trucks collide bumper to bumper at low speed. There is minimal damage to both trucks and the drivers do not sustain any serious injuries.	1. Within 16 hours of the incident, submit a written report through MineSpace or complete a preliminary reporting form and email the form to **Mine Incident Reporting Mailbox** at mineincidents@gov.bc.ca. There were no serious injuries, so the 16-hour written notification is sufficient.

1.7.2(1)(c): an investigation report must be submitted to the Chief Inspector within 60 days. As required by the Ministry's Incident Management Process Policy, the investigation reports must be submitted to the Inspector of Mines assigned to the reportable incident file by:

1) Entering the investigation report in MineSpace, or
2) Email to the Inspector of Mines assigned to the reportable incident file

If more time is needed to complete a satisfactory investigation, the mine can request an extension in writing from the Chief Inspector. This request should be made before the end of the 60-day period and must clearly outline the reasons for the delay, such as technical issues, the need for consultation with external experts, and failure analysis.

For further information, please contact the Office of the Chief Inspector at **833-978-9798** or via email at mineincidents@gov.bc.ca.

1.7.2 (2) The manager must engage with First Nations that may be affected by reportable incidents to determine which reportable incidents must be reported to the First Nations.

Guidance

This Code section requires mine managers to proactively engage with affected First Nations regarding reportable incidents. The goal is not to report every incident but to identify which types of reportable incidents are significant and relevant to the affected First Nation.

Suggested actions include having a preliminary discussion between the mine and the First Nation to determine which reportable incidents should be communicated and the frequency of reporting. This discussion may result in an agreement or process that outlines specific Code sections to report and an agreed-upon timeline for reporting. Some mines might have already established such arrangements during the permitting process or through prior negotiations with the First Nation. The Ministry of Indigenous Relations and Reconciliation has a webpage with guidance and further information on how to initiate the consultation process.

Release of a Scene of a Reportable Incident

1.7.3 Subject to any order under section 15 of the Act, the manager must ensure that, except for the purpose of saving life or relieving human suffering, the scene of a reportable incident is not disturbed without approval of

(a) the OHSC worker representative,

(b) an inspector, or

(c) in the case of an incident resulting in loss of life, the chief inspector.

Guidance

The scene of a reportable incident must not be disturbed (e.g., to resume regular operations) except as permitted under section 1.7.3. This is to preserve evidence for investigations by both the mine and the Ministry.

If an Inspector of Mines has issued an order to suspend regular work or close all or part of a mine and except for the purpose of saving life or relieving human suffering, this order takes precedence over section 1.7.3(a) of the Code. The scene must remain undisturbed until the Inspector has rescinded the order.

For reportable incidents resulting in loss of life, only the Chief Inspector can authorize the release of the scene. For other reportable incidents, the OHSC worker representative or an Inspector can authorize the release, provided there is no active suspension or closure in place under the Mines Act.

Investigation of a Reportable Incident

1.7.4 (1) The manager must ensure that an investigation into every reportable incident is carried out by persons knowledgeable in the type of work and in collaboration with the management co-chair and the worker co-chair of the OHS committee or their designates.

(2) On completion of the investigation, the manager must prepare a report, signed by all participants listed in subsection (1), that includes the following:

(a) a description of the incident;

(b) a description of the work conducted at the time and place of the incident;

(c) an identification of the causes of the incident and any unsafe conditions, acts, or procedures which may have contributed to the incident;

(d) an identification of any corrective actions that are necessary to prevent the recurrence of similar incidents, including a projected timeline for implementation of the corrective actions;

(e) any additional information required by the chief inspector.

According to section 1.7.4(1), a mine is required to investigate every reportable incident and prepare an investigation report as outlined in section 1.7.4(2). The purpose of the investigation is to prevent or minimize the occurrence of similar incidents. It is crucial that the OHSC is involved in the investigation.

If the investigation report fails to meet the Code requirements, additional follow-up or compliance measures may be necessary.

Depending on the severity or unique circumstances of the incident, a mine's investigation report may be reviewed to ensure that the corrective actions identified are adequate and appropriate.

Resources

Note: the following resource documents are also posted on the Ministry's website:

- Mine Incident and Dangerous Occurrence Preliminary Reporting Form
- Incident Reporting Poster for Mines