

BC GUIDANCE DOCUMENT

April 2024

Health, Safety and Reclamation Code for Mines in British Columbia

Worker Safety when Working near Water



Ministry of
Energy, Mines and
Low Carbon Innovation

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Purpose of Guidance Document

For work performed on or around water, where drowning may be a risk, an assessment to identify any relevant hazard must be conducted prior to any work commencing. This process will evaluate the level of risk to workers and ensure proper mitigations or controls are put into place.

In addition, there must be considerations for emergency exit alternatives from the mobile equipment being used near or on the water to ensure safe egress for operators if it becomes submerged. An effective safe work plan and rescue procedures must be in place to safely rescue any trapped workers.

This guidance document is designed to help the mining industry understand the compliance requirements of the Health, Safety, and Reclamation Code (Code) pertaining to revisions for worker safety when working near water within Part 1, Part 3, and Part 4 of the Code. These Code provisions were amended as of April 2024.

The document provides examples of 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**.

Risk of Drowning

The following section has been added to the Code:

Risk of Drowning

1.12.8 The manager must ensure that every worker working where drowning may be a risk is under the supervision of a qualified person carrying out the safe work plan as set out in section 3.3.3.

Guidance:

A “*Qualified person*” means a person who, in the opinion of the manager, is

- a. Qualified because of the person’s knowledge, training and experience to design, organize, supervise and perform the duties for which the person is appointed;
- b. Familiar with the provisions of this Act, the code and the regulations that apply to the duties for which the person is appointed, and
- c. Capable of identifying any potential or actual danger to health or safety in the workplace.

It is worth noting that the qualified person, as indicated in Section 1.12.8, is directly responsible for the safety, health, and wellbeing of those supervised.

Hazard Recognition: To reduce exposure and minimize incidents involving workers performing tasks near water in mines in BC, it is critical for all parties involved to recognize the inherent drowning hazards related to this type of activity.

How to understand where drowning may be a risk:

- Intentionally – includes working near water, slurries, mine tailings storage facilities or ice, working on surface of or under water.
- Risk of drowning could include workers on the ground working near water, as well as operating mobile equipment, barges and dredges.

Drowning Hazard

Section 3.3.3 is repealed and the following substituted:

Drowning Hazard

- 3.3.3 (1) The manager must ensure that a safe work plan is developed by a qualified person, in consultation with the Occupational Health and Safety Committee and appropriate workers, and implemented before any work begins where drowning may be a risk.
- (2) The safe work plan must include the following:
- (a) identification of all relevant hazards;
 - (b) an evaluation of the risk level created by each hazard identified paragraph (a);
 - (c) identification of all controls that, when implemented, are intended to mitigate the hazards referred to in paragraph (a);
 - (d) a requirement to have a spotter if identified as a control under paragraph (c);
 - (e) identification of safety equipment and safety devices relevant to each task to be performed;
 - (f) subject to subsections (3) and (4), requirements for the use, storage, maintenance and inspection of the safety equipment and safety devices referred to in paragraph (e);
 - (g) emergency procedures;
 - (h) a rescue plan, including a means for orientation, such as a light or beacon, to identify safe egress when work is done at night.
- (3) The manager must provide the following personal protective equipment and safety devices to workers working where drowning may be a risk:
- (a) personal floatation devices, accepted by Transport Canada, that do not create an increased risk when worn, as identified in the safe work plan;
 - (b) lifebuoys, accepted by Transport Canada, that are
 - (i) equipped with heaving lines of adequate length, and
 - (ii) placed at conspicuous locations;
 - (c) with respect to workers in or on mobile equipment, or non-self-propelled barges or dredges, which have a cab, the following items that must be accessible and secured in the cab for the purpose of emergency egress:
 - (i) a glass-breaking tool;
 - (ii) a seatbelt cutter;
 - (iii) an alternate source of air;
 - (iv) a whistle.

- (4) The manager must ensure that safety equipment and safety devices, identified in the safe work plan or subsection (3), are
 - (a) readily available in safe operating condition, and
 - (b) regularly inspected and maintained.
- (5) The manager must ensure that all workers working where there is a risk of drowning are trained for the work they are performing.

Guidance:

The intent of Section 3.3.3 is to ensure a safe work plan is developed for the work which is to be conducted near water. The plan is comprised of the following:

- An assessment process to identify hazards and reduce or eliminate worker exposure to identified hazards;
- Systems or specialized equipment to protect workers from drowning hazards after they fall into water, and
- A rescue plan to safely extricate workers from unsafe situations when drowning is possible.

This section is not strictly for situations where workers are enclosed in the cab of mobile equipment working near water but is intended for anybody working in the proximity of water. Drowning precautions must be determined by the manager by conducting a risk assessment, specific to working where drowning may be a hazard.

Conducting a Risk Assessment

- ✓ *Hazard Assessment & Mitigation:* Conduct a thorough hazard assessment and develop mitigation strategies specific to the mine and the type of work being performed before starting the job.
- ✓ *Equipment:* Assess the nature of the task and select mobile equipment that is appropriate for the task. For example, ensuring equipment selected allows for adequate egress including a submerged exit, rescue equipment appropriate for the task, alternative breathing sources, etc.
- ✓ *Supervision:* Ensure supervision is completed by a qualified person and tasked with regularly assessing and monitoring the task in accordance with part 3.3.1 of the HSRC.
- ✓ *Mine Rescue:* Ensure that proper resources and specific training are provided to attending emergency response agencies, or on site mine rescue teams, and ensure they are prepared for emergencies involving workers near water. Rescue activities may include but are not limited to workers on foot, in boats, or trapped in mobile equipment under water. If possible, notify mine rescue ahead of time for tasks where drowning may be a risk.

Conducting Safety Training

- ✓ *Trained and Capable:* Ensure that all workers involved with the operation of mobile equipment where drowning may be a risk are trained and regarded as capable to perform their tasks. This includes the operator of the equipment itself, other workers performing activities in the same area and their respective supervisors who must be clearly tasked to regularly assess and monitor the appropriateness of the operation.
- ✓ *Proper Resources:* Ensure that proper resources and specific training is provided to mine rescue teams to respond to emergencies involving people working where drowning may be a risk, in boats, or trapped in mobile equipment under water.

Selecting Personal Protective Equipment and Safety Devices

- ✓ *PFD's:* Personal Floatation Devices must be selected to not impede egress. PFD's have been shown to be a hinderance in some instances.
- ✓ *Air supply:* Where a self-contained breathing apparatus, such as Spare Air is used, they must meet standards for breathing-air and designed for emergency escape. Recognized certification agencies should be considered. For example, CSA Standards CSA Z180.1:19 "Compressed breathing air and systems", CSA Z275.2:20 "Occupational safety code for diving operations" or other recognized certification agency.

Providing a Spotter

- ✓ *Role:* The spotter observes ongoing work near water and advises the equipment operator immediately of any imminent danger and initiates an emergency response, if required.
- ✓ *Communication:* The spotter requires a method of communication with the operator in which they can be immediately notified. The spotter must also have a method of communication to activate an emergency response e.g., cell phone, two-way radio, etc.

Vehicle Requirements

Secondary Egress

Section 4.9.4 is amended by adding the following subsection:

- (3) The manager must ensure that mobile equipment, and non-self-propelled barges or dredges, performing work where drowning may be a risk are equipped with a secondary egress that is designed for the purpose and does not impede the safe exit of the operator.

Guidance:

Lack of proper equipment exits is one of the most important contributing factors to incidents involving workers in mobile equipment near water. It is also important to ensure secondary egress is not blocked or impeded by equipment modifications, or repair.

What is mobile equipment?

When compared with their regular applications at mine sites, most mobile equipment is not specifically designed to be used near bodies of water. As such, some features of mobile equipment do not include specific protections to operators exposed to abnormal situations when the equipment is submerged under water. Regular emergency or alternate exits and escape routes from cabs currently available in mining mobile equipment may not be appropriate or properly maintained to ensure that workers can effectively, in a timely manner, egress from the machine when needed.

Prior to any work commencing in mobile equipment where drowning may be a risk, part of the hazard assessment and the required safe work plan for determining risk of drowning should include a safe and functional alternative means of egress from whatever equipment is used.

Mobile equipment may include floating equipment which is not propelled by anything.

Type of equipment potentially involved working where drowning may be a risk:

- | | | | |
|---------------------|--------------------|----------------------|------------------------|
| Excavator | Haul truck | Bulldozer | Boat |
| Fuel barge | Dredge | Grader | Scraper |
| Loader | Crane | Compactor | Vacuum truck |
| Pickup truck | Drilling equipment | Helicopter | Backhoe |
| Skid steer (Bobcat) | Argo | All-terrain vehicle | Maintenance work truck |
| Crew bus | Telehandler | Aerial work platform | Amphibious equipment |
| Pump barge | | | |

Activity being performed:

- | | |
|--|------------------------------|
| Construction of operating TSF dams (raising the crest level) | Dredging TSF |
| Environment sampling | Maintenance |
| Adding a lift to the TSF | Adding or moving pipe to TSF |

Maintenance of fixed assets

Excavating near TSF/water

Building ramps around impoundments

Cleaning ditches

Spigoting and maintenance of beaches

Use of sand cap

Snow removal

Underground sumps

Building diversion ditches and related infrastructure

Excavator placing riprap along stream

Pit pumping (sometimes called dewatering)

Reclamation activities

Installing monitoring equipment

Wick drilling

Construction and maintenance of crossings/resource roads

Upstream dam construction or maintenance

Maintenance of freshwater dams

Removing ice and snow

Flood mitigations

Bridge construction

Impoundment maintenance and upkeep

Driving near or on water (ice/snow)

Inspections of water impoundments etc.

Depositing tailings (management)

Surveying

Emergency response

Craning activities

Dumping into an impoundment

Reclaim barge relocation

Modifications

The following section has been added:

Modifications respecting mobile equipment where drowning may be a risk.

4.9.5.1 The manager must ensure that, if one or more parts of mobile equipment, or non-self-propelled barges or dredges, performing work where drowning may be a risk have been modified, and the modification may affect the safe operation of the mobile equipment or non-self-propelled barge or dredge, a qualified professional approves the modification before the mobile equipment or non-self-propelled barge or dredge is used by workers.

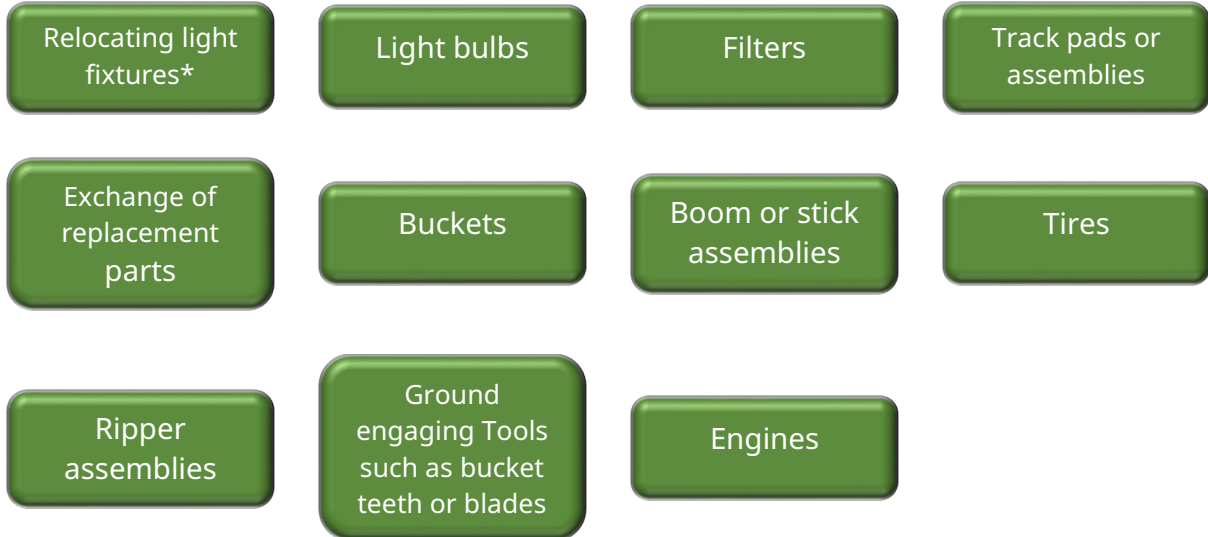
Guidance:

Modifications made to equipment working where drowning may be a risk, including safety enhancements or modifications, are not expected to render any safety devices ineffective and those changes need to be properly assessed, evaluated, and regarded safe by a qualified professional prior to the equipment being used, as defined in the Code. The manager should ensure modifications do not render any safety devices ineffective.

“Qualified professional” as defined by the HSRC, means an individual who

- (a) is registered, and in good standing, with a professional organization in British Columbia governed under an enactment, and
- (b) is acting within the individual's area of professional expertise.

If equipment has been modified by methods other than those recommended by the original equipment manufacturer, not only the part or modification requires to be certified, but also the unit in its entirety. This does not include routine maintenance or the replacement of “like for like” components for the machine including:



*Caution should be taken to ensure relocation of light fixtures does not block egress.