LIQUEFIED NATURAL GAS FACILITY REGULATION
146/2014 - Unofficial Copy

Updated To:

[Note: This is an Unofficial Copy. includes B.C. Reg. 202/2023, Sch. 7 amendments (effective September 1, 2023)]

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B.C. Reg. 146/2014

[includes B.C. Reg. 202/2023, Sch. 7 amendments (effective September 1, 2023)]

Contents

[Provisions of the *Energy Resource Activities Act*, SBC 2008, c. 36, relevant to the enactment of this regulation: sections 106, 111 and 112]

PART 1 – Definitions

Definitions

1. In this regulation:

"Act" means the *Energy Resource Activities Act*;

"construction" includes assembly;
"CSA Z276" means the standard published by the Canadian Standards Association as CSA Z276, Liquefied Natural Gas – Production, Storage and Handling;
"fugitive emissions" means emissions of gases or vapours from pressurized equipment due to leaks and other unintended or irregular releases of gases;
"hazard" means a chemical or physical condition that poses a material threat to life, health or property or to the environment;
"hazard identification study" means a qualitative study that identifies and evaluates potential hazards;
"LNG" means liquefied natural gas;
"LNG facility" means a facility that processes natural gas and produces LNG;
"LNG facility permit" means a permit that includes permission to construct and operate an LNG facility;
"membrane tank system" means a system for containing liquid and vapour that is comprised of

(a) a thin steel membrane as the primary containment system,
(b) an outer insulated concrete tank that supports the loads imposed on the membrane and functions as a secondary containment system, and
(c) a gas-tight roof;

"modular unit" means a combination of equipment assembled into one self-contained unit that is integral to the production, handling or storage of LNG;
"process hazard analysis" means an analysis of the potential hazards associated with the operation of an LNG facility to enable the control of those hazards;
"qualified professional" means a person who is licensed or registered as either a professional engineer or a professional geoscientist under the *Professional Governance Act*;

"quantitative risk assessment" means an assessment of risk, based on objective data, associated with a specific project or activity;
"safety integrity level study" means a study of the extent to which risk reduction is required by the use of safety functions, including automatic instrument controls.

[am. B.C. Regs. 80/2016; 202/2023, Sch. 7.]

CSA Z276 adopted

1.1 CSA Z276 is adopted for the purposes of

(a) sections 8 (1), 13 (a) and 24, as amended from time to time, and
(b) sections 4 (1) (a) and (2) (a) and 9 (1) (a) (i), as amended from time to time unless the LNG facility permit indicates otherwise.

[en. B.C. Reg. 55/2020.]

PART 2 – LNG Facility Permits

Applications for LNG facility permit

2. An application for an LNG facility permit must include all of the following information respecting a proposed LNG facility:

(a) a detailed project description;

(b) a preliminary construction schedule;

(c) if the applicant intends to construct a modular unit outside British Columbia, plans respecting the use of third party validation and verification services;

(d) preliminary plot plans;

(e) process flow diagrams;

(f) flaring, venting and relief system design basis;

(g) design and safety studies respecting the siting of the proposed LNG facility and all of its equipment;

(h) if the applicant intends to rely on a quantitative risk assessment in accordance with section 4 (4), the results of a preliminary quantitative risk assessment based on

(i) preliminary engineering design information, or

(ii) an operating LNG facility of liquefaction capacity similar to that of the proposed LNG facility;

(i) the results of hazard identification studies, including studies of both process hazards and natural hazards.

(j) *Repealed.* [B.C. Reg. 48/2021, App. 3]

[am. B.C. Reg. 48/2021, App. 3.]

PART 3 – Construction of LNG Facility

Submissions before construction

3. (1) An LNG facility permit holder must not begin any phase of the construction of an LNG facility unless the permit holder has submitted all of the following to the regulator, to its satisfaction:

(a) a description of what will be constructed during that phase of construction;

(b) an engineering design completed in accordance with section 4;

(c) detailed plot plans;

(d) reports that include findings and recommendations respecting each of the following:

(i) an updated hazard identification study;

(ii) a process hazard analysis;

(iii) a safety integrity level study;

(e) a report referred to in section 4 (4) (a) and (5), as applicable;

(f) a report from either

(i) a third party acceptable to the regulator, in the case of a modular unit that is to be constructed outside British Columbia, or

(ii) a qualified professional, in any other case,

indicating that all of the elements of a quality assurance program necessary for the construction of the LNG facility or modular unit are documented;

(g) subject to subsections (2) and (3), a notice, at least 14 days before beginning construction, of the permit holder's intention to begin construction.

(2) An LNG facility permit holder may not submit a notice referred to in subsection (1) (g) for the first phase of the construction of an LNG facility unless the permit holder has submitted to the regulator, to its satisfaction,

(a) an updated construction schedule for the entire LNG facility, and

(b) a description of the management of change system that will be followed during the construction phase and throughout the operational life of the LNG facility.

(3) On receiving the notice referred to in subsection (1) (g), the regulator may

(a) extend the period referred to in subsection (1) (g) if the regulator considers it necessary to further review submissions referred to in subsection (1) (a) to (f), or

(b) reduce the period referred to in subsection (1) (g).

(4) An LNG facility permit holder must maintain the documents referred to in subsection (1) (f).

[am. B.C. Regs. 80/2016; 48/2021, App. 3; 202/2023, Sch. 7.]

Engineering design and LNG facility siting

4. (1) An LNG facility permit holder must, subject to anything in the LNG facility permit, ensure that the engineering design and siting for an LNG facility

(a) subject to subsections (4) and (5), is completed in accordance with CSA Z276,

(b) takes into account the results referred to in section 3 (1) (d),

(c) is based on a consideration of the effects of noise associated with the normal operation of the LNG facility,

(d) includes designs for a storage tank system that

(i) includes tank design fatigue life, and
(ii) complies with subsection (2), and

(e) is based on a consideration of the effects of light associated with the normal operation of the LNG facility.

(2) A storage tank system at an LNG facility must
(a) conform with CSA Z276, or
(b) *Repealed.* [B.C. Reg. 80/2016]

(c) provide for the safe storage of LNG at a level of protection from failure that meets or exceeds the level of protection provided under paragraph (a).

(3) Subject to subsections (4) and (5), an LNG facility permit holder must ensure a flare or ignited vent stack is sited so that the thermal radiation flux at the locations identified in column 1 of Schedule 1 does not exceed the maximum radiation flux identified in column 2.

(4) Instead of complying with subsection (1) (a), an LNG facility permitholder may complete the engineering design and site the LNG facility in a manner consistent with the results of a quantitative risk assessment if the permit holder
(a) completes the quantitative risk assessment and submits to the regulator a report respecting that assessment, including an identification of key assumptions, input data, methodologies and consequence analyses made or used in carrying out the assessment, and
(b) demonstrates to the regulator that the risks associated with the completed engineering design and siting of the LNG facility

(i) are as low as reasonably practicable, and
(ii) do not fall within the range indicated as intolerable risks in the chart in Schedule 2.

(5) If, in complying with subsection (4), an LNG facility permit holder demonstrates that the risks associated with the completion of the engineering design for the LNG facility and the siting of the LNG facility fall within the range indicated as ALARP in the chart in Schedule 2, the permit holder must include in the report referred to in subsection (4) (a) an evaluation of its risk reduction strategies, mitigation measures and recommended actions to substantiate compliance with subsection (4) (b) (i).

(6) An LNG facility permit holder must prepare and maintain records that evidence the permit holder's compliance with subsections (1) to (5), as applicable.

[am. B.C. Regs. 80/2016; 55/2020; 48/2021, App. 3; 202/2023, Sch. 7.]

Reports respecting changes

5. (1) An LNG facility permit holder must provide to the regulator, to its satisfaction and in accordance with subsection (2), a report respecting any changes to

(a) the construction schedule and engineering design for the LNG facility, and
(b) the risk assessments undertaken respecting the LNG facility.

(2) The reports under subsection (1) must be provided once every 6 months during the period beginning on the date the LNG facility permit is issued and ending on the earlier of

(a) the date the LNG facility permit holder submits a notice of operation under section 11, or

(b) the date the LNG facility permit holder surrenders the LNG facility permit under section 33 of the Act.

[am. B.C. Regs. 80/2016; 202/2023, Sch. 7.]

Modular units

6. An LNG facility permit holder who

(a) intends to construct a modular unit, or
(b) has constructed a modular unit outside British Columbia

must, on request by the regulator, do both of the following:

(c) have the modular unit inspected by a third party acceptable to the regulator to verify that individual components have been constructed and tested in accordance with the quality assurance program referred to in section 3 (1) (f);
(d) submit to the regulator the results of the inspection referred to in paragraph (c) at least 10 days before the modular unit is integrated into the LNG facility.

[am. B.C. Regs. 80/2016; 202/2023, Sch. 7.]

Site restoration after construction

7. (1) An LNG facility permit holder must, in accordance with subsection (2), restore the surface of the land disturbed by the construction of an LNG facility not required for the safe and efficient operation of the LNG facility by

(a) removing all structures installed to facilitate construction and not required for the operation of the LNG facility, and
(b) stabilizing, contouring, conditioning or reconstructing the surface of the land to the extent reasonable in the circumstances.

(2) Restoration work under subsection (1) must be carried out

(a) to the extent practicable, considering weather, ground and other conditions, while construction of the LNG facility is underway, and
(b) with respect to any restoration work not completed when construction of the LNG facility is completed, as soon as practicable after beginning operation of the LNG facility.

PART 4 – Operating Requirements

Part 4: Division 1 – Commissioning

Safety and loss management program

8. (1) Before beginning operation of an LNG facility, an LNG facility permit holder must prepare a safety and loss management program for the LNG facility that, to the satisfaction of the regulator, complies with CSA Z276 and includes all of the following:

(a) an integrity management program;

(b) an emergency response plan;

(c) a fugitive emissions management plan;

(d) a management of change program;

(e) *Repealed.* [B.C. Reg. 181/2022, App. 3]

(2) An LNG facility permit holder must, on the request of an official, make available to the regulator a copy of the safety and loss management program referred to in subsection (1).

(3) An LNG facility permit holder must submit to the regulator the emergency response plan referred to in subsection (1) (b) as soon as practicable after it is prepared.

[am. B.C. Regs. 80/2016; 181/2022, App. 3; 202/2023, Sch. 7.]

Pre-operation testing

9. (1) Before beginning operation of any portion of an LNG facility, an LNG facility permit holder must do all of the following inspections and tests:

(a) test the components and systems of the facility

(i) in accordance with CSA Z276, or

(ii) in a manner consistent with the design standard used in a quantitative risk assessment undertaken under section 4 (4), if applicable;

(b) inspect and test all control and safety devices and systems to ensure that the devices and systems are operating properly;

(c) conduct any applicable tests of LNG containment system integrity;

(d) test any applicable fire-water system;

(e) any other inspections or tests reasonably necessary to ensure that the LNG facility is safe to operate.

(2) An LNG facility permit holder must notify the regulator at least 7 days before beginning a test referred to in subsection (1) (b) to (e).

(3) An LNG facility permit holder must provide to the regulator the results of the tests referred to in subsection (1) (c) and (d) as soon as practicable after carrying out the tests.

(4) An LNG facility permit holder must not begin operation of any portion of an LNG facility unless the results submitted under subsection (3) are satisfactory to the regulator.

[am. B.C. Regs. 80/2016; 202/2023, Sch. 7.]

Signs

10. (1) An LNG facility permit holder must ensure that a sign clearly setting out the following information is conspicuously displayed at each LNG facility:

(a) the name of the permit holder;

(b) emergency notification information, including a telephone number;

(c) the legal description of the site;

(d) if the LNG facility handles flammable gas, the flammable gas symbol in Schedule 3;

(e) if the LNG facility handles gas containing 10 parts per million or greater of hydrogen sulphide, the poisonous gas symbol in Schedule 3.

(2) An LNG facility permit holder must not post warning symbols where no hazard exists.

Notice of operation

11. (1) Subject to subsection (2), an LNG facility permit holder must not begin operation of an LNG facility unless

(a) the regulator is satisfied that the permit holder has complied with sections 8 to 10,

(b) the permit holder has submitted to the regulator a notice of the permit holder's intention to begin operations, and

(c) at least 14 days have elapsed since the date the notice referred to in paragraph (b) was submitted.

(2) On receiving the notice referred to in subsection (1) (b), the regulator may

(a) extend the period referred to in subsection (1) (c) if the regulator considers it necessary to review the results of the tests referred to in section 9 (1), or

(b) reduce the period referred to in subsection (1) (c).

[am. B.C. Reg. 202/2023, Sch. 7.]

Record drawings

12. An LNG facility permit holder must submit to the regulator the record drawings, including process flow diagrams, metering schematics and plot diagrams, signed and sealed by a qualified professional, within 9 months after

(a) the date the notice was submitted to the regulator under section 11 (1) (b), or

(b) if the period referred to in section 11 (1) (c) was extended under section 11 (2) (a), the date the extended period expires.

[am. B.C. Reg. 202/2023, Sch. 7.]

Part 4: Division 2 – Operations

General requirements

13. An LNG facility permit holder must operate the LNG facility in accordance with

(a) CSA Z276, and

(b) the safety and loss management program referred to in section 8 (1).

[am. B.C. Reg. 55/2020.]

Emergency response

14. In the case of an emergency, an LNG facility permit holder must respond to the emergency in accordance with the emergency response plan referred to in section 8 (1) (b).

Noise and light control

15. An LNG facility permit holder must ensure that the construction of and normal operations at the LNG facility do not cause excessive noise or excessive emanation of light.

[am. B.C. Reg. 80/2016.]

Measurement

16. (1) In this section, **"products"** means natural gas, natural gas liquids, natural gas byproducts or petroleum.

(2) An LNG facility permit holder must ensure all of the following:

(a) that the measurement equipment and associated methodology for the LNG facility is sufficient to determine the actual flow of each waste discharge and marketable product stream at the LNG facility;

(b) if products are produced or waste is discharged from the LNG facility,

(i) that the meter is maintained in good operating condition, and

(ii) that the meter is suitably safeguarded from weather and from interference by unauthorized persons.

Venting

17. (1) An LNG facility permit holder must not vent gas from an LNG facility unless the gas heating value, volume or flow rate is insufficient to support stable combustion and all of the following apply:

(a) the venting is conducted in a manner that does not constitute a safety hazard;

(b) the venting does not cause off-site odours;

(c) the quantity of vented gas is minimized;

(d) the duration of venting is minimized.

(2) An LNG facility permit holder may use gas containing hydrogen sulphide for pneumatic instrumentation or to provide motive force to pumps only if the gas contains no more than 20 parts per million of hydrogen sulphide.

Flaring limits

18. (1) Subject to subsection (2), an LNG facility permit holder must not flare gas from the LNG facility unless flaring is required for emergency purposes.

(2) An LNG facility permit holder may flare gas from the LNG facility if

(a) flaring is required for maintenance purposes, or

(b) permission to flare is included in the LNG facility permit.

(3) An LNG facility permit holder must ensure that the duration of flaring and the quantity of gas that is flared from an LNG facility is minimized.

Flaring notification and reporting

19. (1) An LNG facility permit holder must notify the regulator at least 24 hours before a planned flaring event from the LNG facility if the quantity of gas to be flared exceeds 10 000 m^3.

(2) If an unplanned flaring event occurs at the LNG facility and the quantity of flared gas exceeds 10 000 m^3, the LNG facility permit holder must notify the regulator within 24 hours after the flaring event begins.

(3) An LNG facility permit holder must maintain a log of all flaring that occurs at the LNG facility and submit flaring information to the regulator on its request.

[am. B.C. Reg. 202/2023, Sch. 7.]

Notice of cessation of operations

20. (1) An LNG facility permit holder who intends to cease operations on one or more liquefaction trains of production capacity must notify the regulator

(a) subject to paragraph (b), at least 60 days before beginning the cessation process, and

(b) in cases of an emergency, as soon as practicable.

(2) An LNG facility permit holder who has ceased operations on one or more liquefaction trains of production capacity must notify the regulator before resuming liquefaction.

[am. B.C. Reg. 202/2023, Sch. 7.]

Site restoration after operations cease at LNG facility

21. An LNG facility permit holder who no longer intends to operate the LNG facility must

(a) if the LNG facility is on private land, as soon as practicable, considering weather, ground and other conditions, comply with section 19 of the Environmental Protection and Management Regulation,

(b) as soon as practicable, considering weather, ground and other conditions,

(i) remove all structures installed for the operation of the LNG facility, and

(ii) conduct tests to determine the nature and extent of any contamination around the LNG facility,

(c) submit to the regulator a report specifying the results of the tests referred to in paragraph (b) (ii),

(d) prepare an action plan, acceptable to the regulator, specifying the actions, if any, to be undertaken to mitigate the contamination and the period within which the actions will be undertaken, and

(e) implement the action plan referred to in paragraph (d) to the satisfaction of the regulator.

[am. B.C. Reg. 202/2023, Sch. 7.]

PART 5 – General

Implementation of safety and loss management program

22. An LNG facility permit holder must

(a) implement the safety and loss management program referred to in section 8 (1), and

(b) review and update the program at least once every 3 years.

Records

23. An LNG facility permit holder must maintain records of any spillage and any damage or malfunction likely to cause spillage that could be a risk to public safety or the environment.

Invasive plant compliance record

23.1 (1) A person who carries out energy resource activities within an operating area must prepare and maintain an invasive plant compliance record that describes the activities carried out for the purpose of complying with the obligations described in section 15 of the Environmental Protection and Management Regulation, including all of the following:

(a) the assessment and monitoring activities carried out for the purpose of determining whether invasive plants
  (i) are present or established, or may become established, or
  (ii) have spread to adjacent areas;

(b) the location, type and distribution of each species of invasive plants found through assessment and monitoring activities;

(c) the activities carried out for the purpose of preventing the following:
  (i) the transportation of seed, plant parts or propagules of invasive plants;
  (ii) the establishment of invasive plants, including the removal of invasive plants;

(d) the revegetation activities carried out, including the plant species used for revegetation;

(e) the activities carried out for the purpose of ensuring that revegetated plants are successfully established;

(f) with respect to the activities described in this subsection,
  (i) the dates on which the activities were carried out, and
  (ii) the processes and equipment used in carrying out the activities;

(g) the qualifications of the persons
  (i) carrying out assessment and monitoring activities, and
  (ii) supervising the activities described in this subsection.

[en. B.C. Reg. 145/2023, App. 4; am. B.C. Reg. 202/2023, Sch. 7.]

Record retention

24. An LNG facility permit holder must comply with the record retention requirements set out in CSA Z276.

Records

24.1 The records, reports and plans required under this regulation are prescribed for the purposes of section 38 of the Act.

[en. B.C. Reg. 145/2023, App. 4.]

Exemptions

25. An official may exempt an LNG facility permit holder from complying with one or more provisions of this regulation and may impose one or more conditions with respect to the exemption.

Schedule 1

[en. B.C. Reg. 48/2021, App. 3; am. B.C. Reg. 181/2022, App. 3.]

(Section 4 (3))

Definitions

1 In this Schedule:

"boundary" means the boundary at which access to the processing facility is controlled, as identified in a security management program prepared and maintained by the LNG facility permit holder under the Security Management Regulation;

"critical area" means an unshielded area of critical importance from which it is difficult or dangerous to evacuate people on short notice;

"remote area" means an area where people are, generally, present infrequently and in small numbers;

"sterile area" means an area in which there is no vegetation growth or combustible materials.

Determining thermal radiation flux

2 For the purposes of determining the allowable thermal radiation flux,

(a) solar radiation must be excluded,

(b) the normal flow rate is the flow rate that results from all operating modes within the LNG facility design intent, and

(c) the accidental flow rate is the highest flow rate that

(i) results from an uncontrolled or unplanned event, and

(ii) is the sum of the combined flow rates from all possible uncontrolled or unplanned scenarios that may occur simultaneously.

Allowable Thermal Radiation Flux
Inside the Boundary

Column 1	Column 2	
Location Inside Boundary	Maximum Thermal Radiation Flux (kW/m^2)	
	Normal Flow Rate	Accidental Flow Rate
Within the sterile area	5	9

Outer edges of the sterile area	N/A	5
Roads and open areas	3	5
Storage tanks and process equipment	1.5	5
Control rooms, maintenance workshops, laboratories, warehouses and other occupied structures within the LNG facility	1.5	5

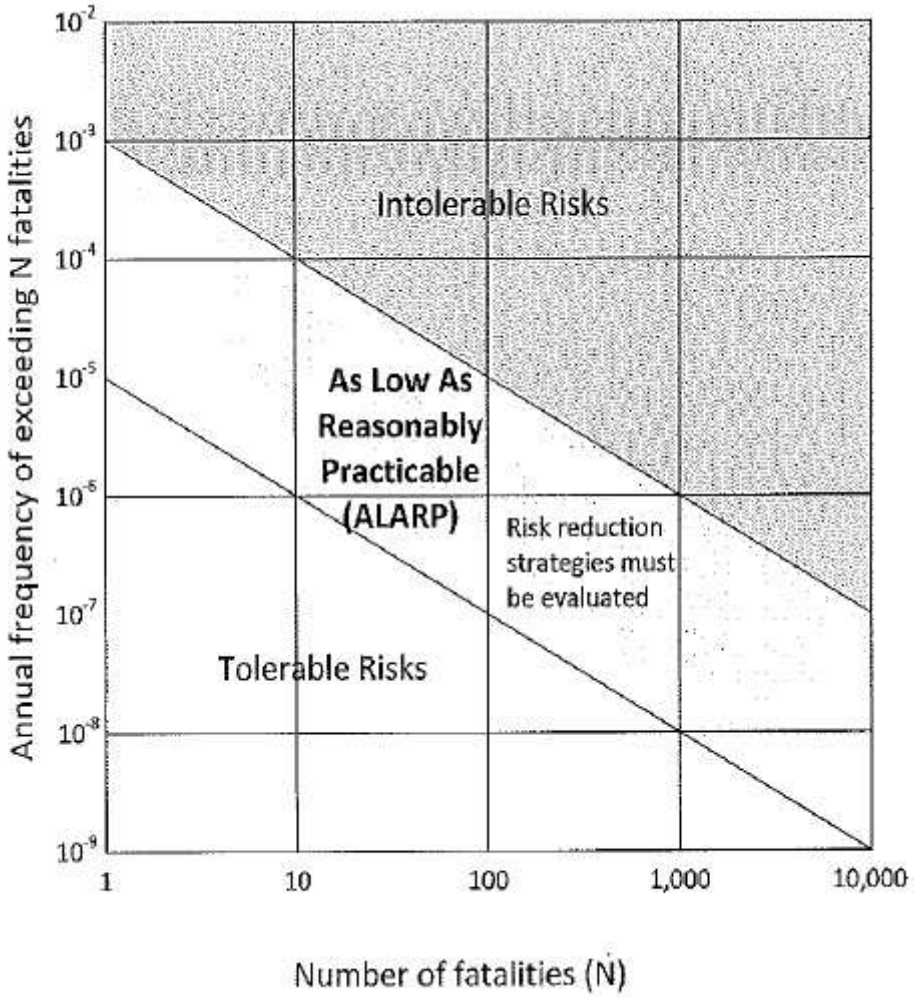
Allowable Thermal Radiation Flux
Outside the Boundary

Column 1	Column 2	
Location Outside Boundary	Maximum Thermal Radiation Flux (kW/m^2)	
	Normal Flow Rate	Accidental Flow Rate
Remote area	3	5
Critical area	1.5	1.5
Other areas	1.5	3

Schedule 2

[Section 4 (4)]

Fatality Risks Outside a Facility

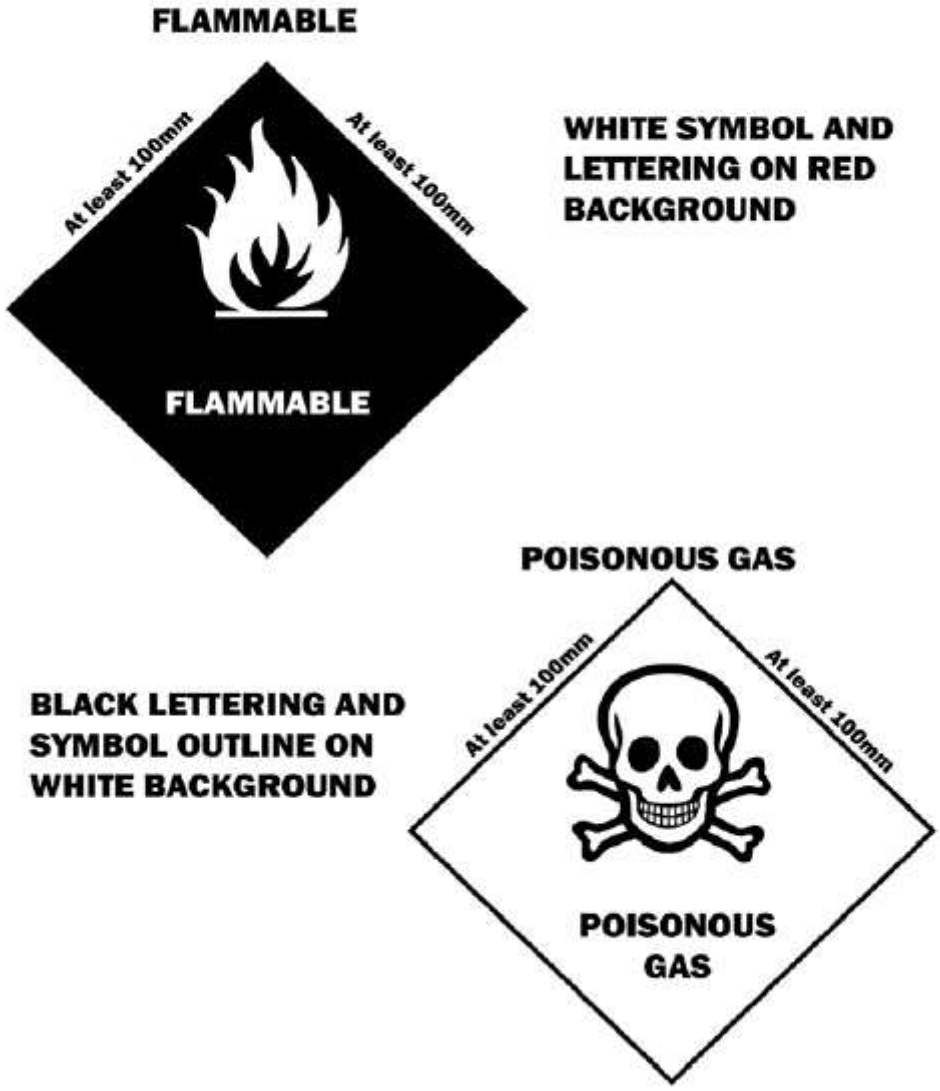


Schedule 3

[en. B.C. Reg. 48/2021, App. 3.]

(Section 10)

WARNING SIGNS



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