

PART 9: CONFINED SPACES

- Isolation** **9.18** ~~(1) Except as provided in subsection (2), before a worker enters a confined space, adjacent piping which contains or has contained a harmful substance must be controlled by~~
- ~~(a) disconnecting, blanking or blinding, or equivalent engineered system, or~~
 - ~~(b) if the adjacent piping contains a harmful substance that is not a gas or a vapour, nor a liquid of sufficient volatility to produce a hazardous concentration of an air contaminant in the discharge of the piping, a double block and bleed system.~~
- ~~(2) If adjacent piping contains or has contained a substance that is hazardous only because of its pressure, temperature or quantity, before a worker enters the space, the pressure must be controlled~~
- ~~(a) to meet the requirements of subsection (1),~~
 - ~~(b) provided there is no other pressure source or head pressure, by de-energizing and locking out the pressure source and depressurizing the line, or~~
 - ~~(c) by other effective means.~~
- ~~(3) Repealed.~~
- ~~(4) Except when used in an acceptable double block and bleed system, the closing of one or more valves in a line is not an acceptable means of isolation.~~
- ~~(5) Isolation of a confined space from gases found in a gravity flow municipal or domestic sanitary or storm sewer system may be accomplished by a p-trap, provided that~~
- ~~(a) the integrity of the trap is ensured immediately upon entry, and~~
 - ~~(b) the atmosphere is continuously monitored and shown to contain clean respirable air.~~
- Exemptions** **9.18.1** ~~(1) In this section:~~
- ~~— includes valve and meter chambers and pressure reducing stations;~~
 - ~~— includes conduits, pipes, penstocks, power generating chambers, valves and related structures located within storage, diversion or other dams.~~
- ~~(2) Section 9.18 (4) does not apply to water piping that is part of a public water supply system if the piping and associated equipment is designed, constructed, maintained and certified by a professional engineer to American Water Works Association standards.~~
- ~~(3) Section 9.18 (4) does not apply to a dam water passageway if the structures of the passageway, including a gate valve or other flow control device, are certified by a professional engineer as being safe for workers to enter to perform the intended work.~~
- Control or Isolation of adjacent piping** **9.18** **(1) Before a worker enters a confined space where adjacent piping contains a harmful substance that is**
- (a) a liquid with sufficient volatility to produce a hazardous concentration of an air contaminant, or**
 - (b) a gas or vapour,**

the harmful substance in the adjacent piping must be controlled by disconnecting the adjacent piping, or isolating the adjacent piping by blanks or blinds that meet the requirements of section 9.20.

- (2) Subject to subsection (3), before a worker enters a confined space where adjacent piping contains a harmful substance that is neither
- (a) a liquid with sufficient volatility to produce a hazardous concentration of an air contaminant, nor
 - (b) a gas or vapour,

the harmful substance in the adjacent piping must be controlled by disconnecting the adjacent piping or isolating the adjacent piping by blanks or blinds that meet the requirements of section 9.20 or by a double block and bleed system that meets the requirements of section 9.21.

- (3) Before a worker enters a confined space where adjacent piping contains a substance that is harmful only because of the temperature, pressure or quantity of the substance, the harmful substance must
- (a) be controlled by disconnecting the adjacent piping or isolating the adjacent piping by blanks or blinds that meet the requirements of section 9.20 or by a double block and bleed system that meets the requirements of section 9.21,
 - (b) if there is no head pressure in the adjacent piping, be controlled by de-energizing and locking out each pressure source for the adjacent piping and depressurizing the adjacent piping, or
 - (c) be controlled by isolating the adjacent piping in a manner that a professional engineer has certified will make the confined space safe for a worker to carry out the intended work.

- (4) Where a confined space is

- (a) subject to the ingress of gases from a gravity-flow municipal or domestic sanitary sewer system or storm sewer system, and
- (b) protected from the ingress of gases by a p-trap,

a worker may enter the confined space only if the atmosphere of the confined space has been tested immediately before entry and the test results confirm that the confined space contains clean respirable air.

- (5) If a worker enters a confined space of the type referred to in subsection (4), the following must be undertaken:

- (a) the operational integrity of the p-trap must be confirmed immediately on the entry of the worker;
- (b) while the worker is inside the confined space, the atmosphere of the confined space must be continuously monitored and confirmed to contain clean respirable air.

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**Alternate procedures
Alternative measures of control or isolation of adjacent piping**

- 9.22** (1) ~~If isolation using the measures specified in section 9.18 is not practicable, the employer may implement alternate measures acceptable to the Board.~~
- Section 9.18 does not apply if**
- (a) a measure specified in section 9.18 to control or isolate substances contained in adjacent piping from a confined space is not practicable, and**
 - (b) the employer implements alternative measures of control or isolation that are acceptable to the Board.**
- (2) All workers affected by measures implemented under subsection (1) must be informed of the measures taken and instructed in any applicable work procedures.

Explanatory Note:

Currently, section 9.22 (1) states that if isolation using the measures specified in section 9.18 is not practicable, the employer may implement alternate measures acceptable to WorkSafeBC. Employers must obtain approval from WorkSafeBC before implementing alternate measures.

The exemptions described in section 9.18.1 are intended to be included in section 9.22 (1). Therefore, the alternative methods set out in section 9.18.1 do not require approval from WorkSafeBC. However, this is not clear in the current wording of section 9.22 (1).

The purpose of these proposed amendments is to clarify the requirements of acceptable isolation methods that do not require approval from WorkSafeBC. This includes some confined spaces found in the public water supply systems and dam water passageways where it may be necessary to control the hazards by a single flow control device, such as a valve or a gate.

Piping associated with dams and their isolation present a unique situation for the utilities that operate them when considering the appropriateness of isolation measures before permitting entry of workers to the confined space such as the water passageways associated with a dam. In most cases, engineering and occupational health & safety staff employed by the utility have a high level of expertise to develop safe measures of isolation for confined spaces within these workplaces. Hence, it is not necessary for these utilities to seek approval from WorkSafeBC for isolating adjacent piping for section 9.18.1 exempted confined spaces. The section mandates that the employer obtain engineering certification for the isolation of adjacent piping to ensure the isolation method is effective for workers to safely enter the part of the dam water passageway that is a confined space. A similar situation exists for entry into a part of the public water supply systems that is a confined space such as valve and meter stations.

In preparing for an amendment to section 9.22, it was thought prudent to review section 9.18 as well with the intent of incorporating section 9.18.1 into section 9.18. Furthermore, due to the complexity and highly technical nature of section 9.18 and associated sections (section 9.20, Blanks and blinds, and section 9.21, Double block and bleed), revisions are proposed to help bring clarity and facilitate a better understanding of the stated requirements relating to the isolation or control of adjacent piping.

Proposed amendments to section 9.18 have resulted in a re-organization of the five subsections into five new and revised subsections. The proposed amendments are as follows:

- Current section 9.18.1 is proposed to be rescinded with its requirements incorporated into a new subsection 9.18 (3) (c), as described in more detail below.
- The contents of current subsections (1) to (2) have been re-arranged into 3 subsections based on the level of hazard posed by the hazardous nature of the contents of the piping

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running through or in close proximity to the confined space, as described in more detail below.

- Proposed amendments – new subsection 9.18 (1):
 - Harmful substances of greatest concern are those that are in a gas or vapour form or those harmful substances in solid or liquid form which are capable of releasing a harmful gas or vapour into the confined space;
 - This level of hazard and isolation of piping requires a high level of control, with isolation being limited to disconnecting, blanking or blinding of adjacent piping;
 - Blanks and blinds must meet the requirements of section 9.20;
 - The current reference to “equivalent engineering system” has been removed; section 9.22 will apply for other alternative measures of isolation involving these hazardous substances.

- Proposed amendments – new subsection 9.18 (2):
 - Harmful substances that are not in gas or vapour form and not capable of releasing a harmful gas or vapour from the liquid or solid state it is in, and which thereby pose a lower risk to workers than substances of subsection (1), can be controlled by using one of the three methods as stated: through disconnection, isolating the adjacent piping by blanks or blinds or by a double block and bleed system meeting the requirements of 9.21.

- Proposed amendments – new subsection 9.18 (3):
 - This subsection covers substances that are harmful only because of the temperature, pressure, or quantity of the substance and that are not classified as harmful by its toxic, irritant or other harmful properties.
 - Some substances that fulfill the conditions in the proposed subsection (2) may also fulfill the conditions of this section.
 - These substances – which include water – when present in adjacent piping can be controlled or isolated following the measures prescribed in the proposed subsections (1) or (2) or by de-energizing and locking out each pressure source (such as an electric pump and associated valve) and further de-pressurizing of the piping such that there is no residual head or other pressure within the piping or by the option in subsection (c).
 - Subsection (c) is added as a new proposal as result of the consultation to streamline the requirements. It was identified that the exemption currently provided in 9.18.1 to public water supply system and dam water passageway may apply to other workplaces with similar confined space configurations. The new proposed subsection (3)(c) is added to broaden the exemption to other situations to provide employers the flexibility to implement other effective isolation methods in controlling the hazards of the substances. Should another method be utilized other than those mentioned in subsections (3)(a) and (b), a professional engineer must certify that the isolation method makes the confined space safe for workers to enter to perform the work. This subsection replaces the current subsection (2)(c) phrase “by other effective means”.
 - Since the confined space conditions under the current exemption 9.18.1 is a subset of the confined spaces under the proposed subsection (3), it is logical to merge the two sections to avoid confusion by duplication. The current prohibition of using one or more valves except when used in a double block and bleed has been deleted to allow isolation measures using a single valve as long as the professional engineer has certified that the isolation of the adjacent piping is safe for workers to enter the confined space to carry out the work.
 - This proposed subsection will continue to permit public water supply systems and dam water passageways to be isolated and/or controlled by a single valve, where necessary, as long as the professional engineer has certified that the isolation methods have adequately controlled the hazards associated with the substances in the adjacent piping. If this requirement is complied with, employers do not have to obtain an approval from WorkSafeBC.

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- The current requirements of section 9.18.1 already involve a professional engineer. Also the involvement of a professional engineer is likely to be required during the application to WorkSafeBC for alternate procedures through section 9.22. Therefore, the requirement for a professional engineer should not add any additional burden to employers in these situations.
- The subsections (4) to (7) from the public consultation version of the proposed amendments were removed because the requirements would be duplication of the new proposed subsection (3)(c). Also, there were issues with the use of the term “established engineering principles”.
- Proposed amendments – new subsections 9.18 (4) and 9.18 (5):
 - The contents of current subsection 9.18 (5), which covers a confined space that is subject to the ingress of gases from a gravity-flow municipal or domestic sanitary sewer or storm sewer system, and where a p-trap is used as a measure of isolation, has been revised for clarity.
 - It has been clarified that before a worker is permitted to enter the confined space covered by this subsection, the air quality must be tested prior to allowing entry.
 - Once it is assured that the space contains clean respirable air (a defined term per section 9.1) the next step is to ensure that the p-trap is operating properly (i.e., filled with water) so that no hazardous gases or vapours can enter the confined space from the sewer system.
 - It is clarified that it is the air of the confined space that needs to be continuously monitored to ensure clean respirable air is present.
- Proposed amendments – section 9.22:
 - Section 9.22 is revised to clarify that if measures specified in section 9.18 – which includes all the proposed provisions covered by subsections (1) to (5) – to isolate substances contained in adjacent piping from a confined space – are not practicable, the employer can consider alternative measures of isolation. These alternative measures of isolation require approval from WorkSafeBC before they can be implemented.
 - The term “alternate” is replaced by the term “alternative”, which is the appropriate term. “Alternate”, by definition, means to switch between two choices; while “alternative” means there are two or more possible choices.