

## **Overview of proposed amendments to**

### **Part 9: Confined Spaces**

#### **Section 9.11, Qualifications**

#### **Section 9.18, Isolation and Section 9.22, Alternate procedures**

Poor hazard assessments and inadequate control procedures can have tragic consequences in a confined space. Hence, section 9.11 (2) is being proposed to be amended to ensure all persons completing a hazard assessment or drafting safe work procedures have experience in the recognition, evaluation and control of confined space hazards.

Section 9.18 sets out the approved methods to isolate adjacent piping from a confined space prior to worker entry. Section 9.18 (2) and (3) provides an artificial distinction between piping with substances above 15 psig and piping with substances below 15 psig. It is proposed that this distinction be removed.

Section 9.22 allows isolation measures other than those listed in section 9.18 to be used in specified circumstances. The proposed changes will confirm that alternative measures can be used when strict compliance with section 9.18 is not practicable and when alternative measures are acceptable to WorkSafeBC. This will provide flexibility without compromising worker protection, as all alternatives must be approved by WorkSafeBC prior to implementation.

## PART 9: CONFINED SPACES

### HAZARD ASSESSMENT AND WORK PROCEDURES

- Qualifications** 9.11 (1) The hazard assessment and written confined space entry procedures must be prepared
- (a) by a qualified person who has adequate training and experience in the recognition, evaluation and control of confined space hazards, and
  - (b) in consultation with the person assigned overall responsibility for administration of the confined space entry program and with the joint committee or the worker health and safety representative, as applicable.
- (2) For the purposes of subsection (1) (a) qualifications which are acceptable as evidence of adequate training and experience include
- (a) certified industrial hygienist (CIH), ~~or registered occupational hygienist (ROH),~~ **certified safety professional (CSP), Canadian registered safety professional (CRSP) or professional engineer (P. Eng.), provided that the holders of these qualifications have experience in the recognition, evaluation and control of confined space hazards, or**
  - ~~(b) certified safety professional (CSP), Canadian registered safety professional (CRSP) or professional engineer (P. Eng.), provided that the holders of these qualifications have experience in the practice of occupational hygiene as it relates to confined space entry, or~~
  - (c) other combination of education, training and experience acceptable to the Board.

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#### Explanatory Note

For the purposes of Part 9, section 9.11 (1) specifies that a hazard assessment and written confined space entry procedures must be prepared by a qualified person who has adequate training and experience in the recognition, evaluation and control of confined space hazards. Section 9.11 (2) (a) and (b) list qualifications which are acceptable as evidence of adequate training and experience.

There are two concerns with the current wording of section 9.11(2). The first is the acknowledgement that holders of CIH and ROH designations have had specific training in occupational hygiene principles as they apply to the recognition, evaluation and control of confined space hazards. However, there is no assurance that CIH or ROH holders have had direct experience in confined space entry work (e.g., in preparation of written entry procedures, in lockout, isolation or rescue procedures). Secondly, holders of CSP, CRSP or P. Eng. designations, who may lack knowledge of occupational hygiene principles as they apply to confined space entry, may also lack similar direct experience.

The proposed amendment combined subsection (2) (a) and (b). This proposed change will ensure that persons holding any of the listed qualifications will have an appropriate combination of education, training and experience. Subsection (2) (c) remains unchanged to allow the Board to recognize combinations of education, experience and training other than professional credentials. This recognizes that few individuals outside large urban centres have the professional qualifications listed in 9.11 (2).

Without guidance, it is difficult to determine what combination of education, training and experience is sufficient under section 9.11 (2) (c). The corresponding Guideline G9.11(2) has been revised accordingly to assist employers to exercise due diligence in choosing a qualified person and to provide direction to officers on how to address deficiencies in assessments and procedures.

## PART 9: CONFINED SPACES

### LOCKOUT AND ISOLATION

- Isolation**      **9.18**      (1) Except as provided in subsections (2) and ~~(3)~~, 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 ~~at a pressure exceeding 100 kPa gauge (15 psig)~~ 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), ~~or~~
  - (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) If adjacent piping contains or has contained a substance at a pressure not exceeding 100 kPa gauge (15 psig) that is hazardous only because of its temperature or quantity, before a worker enters the space, the hazard must be controlled~~
- ~~(a) to meet the requirements of subsection (1), or~~
  - ~~(b) by other effective means.~~
- (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.
- Isolation points**      **9.19**      (1) The employer must keep a record which identifies the location of every isolation point.
- (2) Every isolation point must be visually checked or otherwise verified to ensure that the confined space is effectively isolated before a worker enters the space.
- Blanks and blinds**      **9.20**      (1) Unless certified by a professional engineer to provide adequate safety for the particular conditions of anticipated pressure, temperature and service, a blank or blind must be manufactured in accordance with the specifications of one of the following standards:
- (a) *ANSI Standard API 590-1985, Steel Line Blanks;*
  - (b) *ANSI Standard ASME/ANSI B16.5-1988, Pipe Flanges and Flanged Fittings;*

PROPOSED AMENDMENTS FOR PART 9: CONFINED SPACES  
IN THE OCCUPATIONAL HEALTH AND SAFETY REGULATION

- (c) *ANSI Standard ASME B31.1-1992, Power Piping;*
- (d) *ANSI Standard ASME B31.3-1993, Chemical Plant and Petroleum Refinery Piping.*

- (2) If a blank or blind is certified by a professional engineer, the employer must keep a record of its certification, location and conditions of service.
- (3) If required, an allowance for corrosion must be made in the design of a blank or a blind.
- (4) A blank or blind must be stamped with or otherwise indicate its pressure rating.
- (5) If a line is to be opened for disconnection or to insert a blank or a blind, written safe work procedures must be prepared and followed to prevent hazardous exposure of workers to its contents.
- (6) Visual indication that a blank or blind has been installed must be provided at the point of installation.
- (7) If required to prevent leakage, gaskets must be installed on the pressure side of blanks or blinds and flanges must be tightened to make the blanks or blinds effective.
- (8) If threaded lines are used, threaded plugs or caps must be used to blind the lines.

**Double block  
and bleed**

**9.21**

If a double block and bleed isolation system is used

- (a) the diameter of the bleed line must be no less than the diameter of the line being isolated, unless certified by a professional engineer,
- (b) the bleed for a liquid system must be at a lower elevation than the block valves,
- (c) all valves must be locked out in their proper open or closed position,
- (d) the downstream block valve must be checked to ensure that it is capable of safely withstanding the line pressure,
- (e) the bleed must be checked to ensure that it remains clear of obstructions while the confined space is occupied, either by continuous automatic monitoring or by manually checking within 20 minutes before worker entry, or before re-entry after the confined space has been vacated for more than 20 minutes, and
- (f) in the event of discharge from the bleed line resulting from failure of the upstream block valve, all workers must immediately exit the confined space and the space must be effectively re-isolated before a worker enters the space.

**Alternate  
procedures**

**9.22**

- (1) If isolation using the measures specified in section 9.18 is not possible **practicable**, the employer may implement alternate measures, if acceptable to the Board, ~~which ensure equivalent protection to all workers exposed to the hazard.~~
- (2) All workers affected by measures implemented under subsection (1) must be informed of the measures taken and instructed in any applicable work procedures.

**Discharge  
area**

**9.23**

The area of potential discharge from a disconnected line or from the bleed of a double block and bleed isolation system must be controlled to ensure that any accidental discharge will not present a hazard to workers.

## Explanatory Note

Section 9.18 sets out methods which can be used to isolate adjacent piping from a confined space prior to worker entry. Because this section is intended to cover a wide range of circumstances – from the most to the least hazardous, the level of protection specified by section 9.18 assumes the highest hazard level in order to protect workers in all situations. Section 9.22 allows an employer to implement isolation measures other than those listed in section 9.18 in certain circumstances.

Sections 9.18 (2) and (3) provide different control measures for adjacent piping when the substance in the pipe is over or under 15 psig and is hazardous because of its pressure, temperature or quantity. Since the distinction of pressure over or under 15 psig is artificial, the proposal is to delete the reference to the level of pressure in subsection (2) and to delete subsection (3) in its entirety.

The first proposed change to existing section 9.22 (1) is to replace the word “possible” with “practicable”. “Practicable” is a defined term in Part 1 of the *Occupational Health and Safety Regulation (“OHSR”)* and means “that which is reasonably capable of being done”. In ordinary usage, “practicable” suggests that under present circumstances or by available means something can easily or effectively be done, while “possible” means that with suitable conditions and methods, something may be done. Using a defined term rather than ordinary usage is more precise and should be less confusing to readers.

The second proposed amendment to section 9.22 (1) is to delete the phrase “which ensure equivalent protection to all workers exposed to the hazard”. Under the current regulation, alternate procedures or measures must meet a standard of providing “equivalent protection” to those specified in existing section 9.18. This wording does not allow for consideration of a range of protective measures suitable to control the identified hazards, as high hazards were assumed in section 9.18, and only protection which is the same to that specified will meet this test.

The proposed wording in section 9.22 (1) will allow the alternate measures and the corresponding level of protection to vary according to the circumstances, while ensuring that workers are protected in ways that are “acceptable to the Board”.

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**PART 9: CONFINED SPACES**

**HAZARD ASSESSMENT AND WORK PROCEDURES**

- Qualifications 9.11**
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    - (a) by a qualified person who has adequate training and experience in the recognition, evaluation and control of confined space hazards, and
    - (b) in consultation with the person assigned overall responsibility for administration of the confined space entry program and with the joint committee or the worker health and safety representative, as applicable.
  - (2) For the purposes of subsection (1) (a) qualifications which are acceptable as evidence of adequate training and experience include
    - (a) certified industrial hygienist (CIH), registered occupational hygienist (ROH), certified safety professional (CSP), Canadian registered safety professional (CRSP) or professional engineer (P. Eng.), provided that the holders of these qualifications have experience in the recognition, evaluation and control of confined space hazards, or
    - (b) Repealed.
    - (c) other combination of education, training and experience acceptable to the Board.
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## PART 9: CONFINED SPACES

### LOCKOUT AND ISOLATION

- 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.
- Isolation points**      **9.19**      (1) The employer must keep a record which identifies the location of every isolation point.
- (2) Every isolation point must be visually checked or otherwise verified to ensure that the confined space is effectively isolated before a worker enters the space.
- Blanks and blinds**      **9.20**      (1) Unless certified by a professional engineer to provide adequate safety for the particular conditions of anticipated pressure, temperature and service, a blank or blind must be manufactured in accordance with the specifications of one of the following standards:
- (a) *ANSI Standard API 590-1985, Steel Line Blanks;*
  - (b) *ANSI Standard ASME/ANSI B16.5-1988, Pipe Flanges and Flanged Fittings;*
  - (c) *ANSI Standard ASME B31.1-1992, Power Piping;*
  - (d) *ANSI Standard ASME B31.3-1993, Chemical Plant and Petroleum Refinery Piping.*
- (2) If a blank or blind is certified by a professional engineer, the employer must keep a record of its certification, location and conditions of service.
- (3) If required, an allowance for corrosion must be made in the design of a blank or a blind.

**PROPOSED AMENDMENTS FOR PART 9: CONFINED SPACES  
IN THE OCCUPATIONAL HEALTH AND SAFETY REGULATION**

- (4) A blank or blind must be stamped with or otherwise indicate its pressure rating.
- (5) If a line is to be opened for disconnection or to insert a blank or a blind, written safe work procedures must be prepared and followed to prevent hazardous exposure of workers to its contents.
- (6) Visual indication that a blank or blind has been installed must be provided at the point of installation.
- (7) If required to prevent leakage, gaskets must be installed on the pressure side of blanks or blinds and flanges must be tightened to make the blanks or blinds effective.
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**Double block  
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- (b) the bleed for a liquid system must be at a lower elevation than the block valves,
- (c) all valves must be locked out in their proper open or closed position,
- (d) the downstream block valve must be checked to ensure that it is capable of safely withstanding the line pressure,
- (e) the bleed must be checked to ensure that it remains clear of obstructions while the confined space is occupied, either by continuous automatic monitoring or by manually checking within 20 minutes before worker entry, or before re-entry after the confined space has been vacated for more than 20 minutes, and
- (f) in the event of discharge from the bleed line resulting from failure of the upstream block valve, all workers must immediately exit the confined space and the space must be effectively re-isolated before a worker enters the space.

**Alternate  
procedures**

**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.
- (2) All workers affected by measures implemented under subsection (1) must be informed of the measures taken and instructed in any applicable work procedures.

**Discharge  
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The area of potential discharge from a disconnected line or from the bleed of a double block and bleed isolation system must be controlled to ensure that any accidental discharge will not present a hazard to workers.

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**Note:**

Amendments have been proposed only for the following sections relating to confined spaces in Part 9:

9.11  
9.18  
9.22

The other sections relating to confined spaces in Part 9 are provided here for reading convenience only.

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**G9.11(2) Confined spaces – qualified persons**

Revised April 27, 2000; Draft March 24, 2006

**Regulatory excerpt**

Section 9.11(1)(a) of the *OHS Regulation* requires that a hazard assessment and written confined space entry procedures be prepared by a “qualified person”. Section 9.11(2) addresses criteria for determining whether a person is qualified.

The proposed amendment of section 9.11(2) is:

- Qualifications (2) For the purposes of subsection (1) (a) qualifications which are acceptable as evidence of adequate training and experience include
- (a) certified industrial hygienist (CIH), ~~or registered occupational hygienist (ROH),~~ **certified safety professional (CSP), Canadian registered safety professional (CRSP) or professional engineer (P. Eng.), provided that the holders of these qualifications have experience in the recognition, evaluation and control of confined space hazards, or**
  - ~~(b) certified safety professional (CSP), Canadian registered safety professional (CRSP) or professional engineer (P. Eng.), provided that the holders of these qualifications have experience in the practice of occupational hygiene as it relates to confined space entry, or~~
  - (c) other combination of education, training and experience acceptable to the Board.

**Purpose of guideline**

Under section 9.11, employers are responsible for selecting qualified persons to prepare confined space hazard assessments and written entry procedures. That selection process of such persons requires due diligence by the employer.

This guideline is intended to provide information to employers on how to meet their obligations for the selection of qualified persons under section 9.11(2)(a) as proposed in the regulatory revision above. It also provides information on how to contact agencies that issue professional accreditations referenced in the requirement.

Further information, not connected with the proposed regulation amendment, has also been added to this guideline regarding how to evaluate whether a person’s qualifications under (c) are acceptable to the Board.

**Qualified persons under section 9.11(2)(a)**

Under this provision, in addition to confirming a person’s credentials, the employer is expected to assess whether the person has “experience in the recognition, evaluation and control of confined space hazards.”

## Proposed OHS Guidelines Part 9 Confined Spaces

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With such experience the person will have an understanding of how to

- recognize the hazards that can be encountered in confined spaces, ranging from entrapment or engulfment to oxygen deficiency, flammable atmospheres and exposure to hazardous substances,
- evaluate those hazards, including the use of air monitoring, and
- apply the control measures necessary to protect workers in confined spaces, ranging from isolation of the confined space before entry to provisions for emergency rescue in case of an accident in the space.

All things being equal, a person with a CIH or ROH may be able to satisfy the requirement for experience in s 9.11(2)(a) more easily than a person with other professional qualifications. This is because these two credentials are specifically established for occupational hygiene and cover topics such as the toxicity of air contaminants, air monitoring and ventilation, which all have relevance to confined spaces. However, the credentials are not guarantees of workplace experience with confined spaces, and the employer will need to check on that aspect as well.

For persons with a CSP, CRSP or P.Eng, courses or programs taken on occupational hygiene, particularly where related to confined spaces, can assist with positioning the person to apply such information and gain practical experience.

In either case, appropriate evidence of experience would include any hazard assessments and confined space procedures prepared in whole or part by the person.

### **Qualified persons under section 9.11(2)(c)**

This provision establishes that any person with a “combination of education, training and experience acceptable to the Board” is considered to be qualified.

Qualified persons may come from a range of backgrounds, from persons with formal education such as an academic degree in occupational hygiene coupled with adequate practical experience in confined spaces, to persons who have little formal education on occupational hygiene or confined spaces, but who have substantial knowledge of confined space hazards and their means of control based on workplace training and practical experience.

When determining whether a person is qualified, factors to consider include

- specific education and training related to confined spaces, and relevance to the industry or type of space the person will encounter
- extent of direct experience with confined spaces, and relevance to the industry or type of space the person will encounter
- experience with specific tasks and controls related to confined space work, including
  - lockout and isolation
  - air monitoring
  - ventilation
  - use of personal protective equipment such as respiratory protection
  - use of rescue equipment and participation in rescue drills
- proficiency with applying exposure limits
- experience with preparing hazard assessments and confined space procedures.

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Proposed occupational health and safety guidelines are provided to support WorkSafeBC's regulation review process under section 228 of the *Workers Compensation Act* and are for information purposes only.

## Proposed OHS Guidelines Part 9 Confined Spaces

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Under section 9.11(2)(c), the employer needs to ensure a person's qualifications having regard to each set of circumstances. A person who is sufficiently knowledgeable, experienced and capable to conduct the required hazard assessments and develop appropriate safe work procedures for one type of confined space may not be qualified to deal with other confined spaces.

### **Considerations with hazard assessments and work procedures**

The quality of confined space hazard assessments and work procedures previously prepared by a person is an important factor in all evaluations under section 9.11(2). A deficient confined space hazard assessment or work procedure may be an indication the person selected was not qualified.

Employers need to ensure that the confined space hazard assessment covers the types of hazards involved and that the confined space entry procedures are based on the hazard assessment, and address the necessary controls. Section 9.9(2) and 9.5(c) of the *OHS Regulation* provide, respectively, a list of some of the types of hazards that may be present in confined spaces, and a list of elements in a confined space program.

When considering whether a person who has prepared a hazard assessment and confined space procedures is a qualified person, a paramount consideration for officers will be the quality of the assessment and procedures, not simply the credentials of the person. Such documents provide direct information on the person's capability to recognize, evaluate and control confined space hazards.

### **Contact with accrediting agencies**

Employers and others who are looking for qualified persons with the credentials listed in section 9.11(2)(a), or who are reviewing qualifications may find it helpful to access the web sites of professional organizations that issue the credentials. The sites typically include lists of persons with accreditation, and may include contact information. Applicable sites include

- [www.crboh.ca](http://www.crboh.ca) - which provides information on persons with ROHs, as maintained by the Canadian Registration Board of Occupational Hygienists
- [www.abih.org](http://www.abih.org) - which includes a list of persons with CIHs issued by the American Board of Industrial Hygiene
- [www.acrsp.ca](http://www.acrsp.ca) - which provides lists of persons with CRSPs as issued by the Board of Canadian Registered Safety Professionals
- [www.apeg.bc.ca](http://www.apeg.bc.ca) - which provides a voluntary membership list of persons with a P.Eng., as maintained by the Association of Professional Engineers and Geoscientists of BC.