

Confined **SPACE** forum

November 25, 2003

Richmond Inn, Richmond B.C.



WORKERS' COMPENSATION BOARD OF BC

[www.worksafebc.com](http://www.worksafebc.com)

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## Executive Summary

### Overview

On November 25, 2003, the WCB held a forum on confined space entry. The purpose of the forum was to meet with employers, workers, and other stakeholders who deal with confined space hazards in their workplace, discuss their issues with confine space regulations, and develop potential solutions.

### Participation:

In the weeks leading up to the forum, the WCB contacted a wide cross-section of employers from different industries and locations throughout BC and invited them to send workers who had experience implementing confined space entry regulations in the workplace (Part 9 of the Occupational Health and Safety Regulation). Various labour representatives were also invited to participate. In total, 88 respondents agreed to attend the forum (for a breakdown of representatives by industry sector, refer to page 15).

### Issues discussed:

Before attending the forum, participants were asked to identify key issues relating to confined space entry regulations. Based on their response, the following five topics formed the agenda for discussion:

TOPIC #	ISSUE	ISSUE INCLUDED THE FOLLOWING:	Number of Participants who saw this as a Key issue
1	Definition	Definition of Confined Space, Qualified Person	17
2	Administration	Hazard Assessments, Work Procedures, Permits	18
3	Safety	Testing, Ventilation, Lockout	35
4	Training	Training of Contractors	12
5	Rescue	Standby person issues	15

### Procedure:

Participants were broken down into eight discussion groups, each consisting of approximately 11 people. The groups spent about an hour discussing each of the five topics, identifying issues of concern and offering potential solutions.

The participants responded positively to having this opportunity to discuss confined spaces. The discussions were thought provoking and open. A wide diversity of opinions were expressed around the issues and potential solutions.

## **OVERVIEW**

The Confined Space Entry Forum was held in response to stakeholders' requests and was designed to provide a venue for stakeholders to provide a list of issues they face in implementing Part 9 of the Occupational Health and Safety Regulation and to discuss solutions to those issues.

There was a wide range of representation from industry as well as from geographical regions of the province. Those responding to the invitations were a combination of industries and labour that face the most challenges to implement the requirements of the regulation as well as high risk industries.

## FORUM RESULTS

### Topic #1 --- Definitions

**OBSERVATION:** The comments made at the forum are presented here by topic and have been summarized from comments made by each of the working groups. As might be expected, when gathering together consultants, employers and workers, there were differences in opinion about the issues and the solutions. Differences appeared very seldom, however, and the basic tenet to investigate ways to provide a safe working environment with respect to confined spaces was always the underlining reason for issues raised and the discussion of solutions. Thank you from the board for the day of hard work.

#### CONFINED SPACE:

- Definitions could be made clearer
  - pictures and examples would be useful in a best practices manual or on the website so those who are not “qualified persons” can understand requirements;
  - use access/egress and ventilation in description of a confined space,
  - *each of a), b), c) and d)* of the definition in Part 9.1 of the Occupational Health and Safety Regulation apply to a space to be considered a confined space
- It was suggested that to improve awareness the following be done:
  - Confined space education forum for senior management
  - Advertisements on television
  - Other media opportunities
  - Continue to hold forums like this
  - Use awareness bulletins
- Reinforce education requirements for emerging industries
- Cost of compliance is high because definition includes too many spaces – crawl spaces and attics could be omitted; description of trenches and underground workings could be included
- Important to mention spaces that are still hazardous despite not fitting the definition of confined space
- The prescriptive approach for high risk spaces works well
- Important to explain the following process, 1) Identify (find where the confined spaces are and place a sign on them and / or prevent entry, create a list 2) Evaluate (complete a Hazard Assessment), and 3) Control (write out and implement Work Procedures)

#### HAZARD ASSESSMENT & QUALIFIED PERSON:

- there is no hierarchy expressed in the regulation regarding who is qualified
- Including the ability to combine education and experience as a requirement to be a “qualified person” makes it difficult to decide what constitutes adequate “training and experience”
- The board does not provide training to “qualify” a person (note: - the Board specifies the certification required within the regulation)
- Providing the following instructions would be helpful:
  - the need to have hazard assessments done for each space or for each group of like spaces
  - the need and frequency to update hazard assessments
  - the requirement to be site specific
  - clear delineation between owner/employer’s responsibility for hazard assessments and contractors’ responsibility for hazard assessments

- “qualified person” to consult with employees
- possibly including a third party audit/assessment of the quality of the hazard assessment as part of the process of finalizing a hazard assessment
- Base hazard assessments on the worst case scenario, including the presence of asbestos or mould
- An assessment of the risk posed by hazards should not be based on time spent in the confined space
- Confined space hazard assessments cost more in remote parts of the Province due to lack of availability of “qualified persons”
- Who is qualified to do a hazard assessment? How does an employer know? A list of those who are “qualified” would be helpful. A list of the qualifications that must be met would be helpful
- Concern expressed about liability
  - “qualified person” may not want to put themselves in this position
  - employers will not know the hazard assessments are inadequate until after something serious has occurred

### **ENTRAPMENT:**

- May need to be better defined

### **AIR CONTAMINANT:**

- Impossible for some facilities who have contaminants in the plant above 1/10th of the exposure limit to feed “clean respirable air” into tanks within the facility using the air from the plant
- Concern was expressed about the possibility of a dual standard for ventilation air provided to confined spaces. It appears the current regulation requires ventilation air to be “cleaner” than the air inside the facility which workers are being exposed to for 8-12 hours, daily.

## Topic #2 -- Administration

- Encourage participation between stakeholders to develop confined space programs
- Promote the value of workplaces implementing a total Safety Management System
- Industry associations to self-fund program development and provide best available confined space practices
- An explanation of the requirement to provide a permit for low hazard spaces (whenever lock-out is required) was requested
- The requirements for high hazard spaces be examined.... a permit should be required for these spaces
- If a clear description of types of spaces that can be “grouped” were provided it would make it easier to follow the existing guidelines.
- Even though it is made clear in the regulation who must write the work procedures, the wording may have to be changed because some people were unaware that the regulation clearly stipulates that the qualified person must also write the written work procedures for entry into a confined space. (See part 9.11 (1) (a) of the regulation). A qualified person is required to do both. Some places do not yet realize there is a two step process requiring the input of a qualified person in both of these steps.
- With respect to rescue it is not well understood:
  - Who ensures emergency rescue crews are capable and aware of all the requirements for rescue and the frequency this must be confirmed
  - Does the fire department have to respond to an emergency confined space entry rescue without knowing all of the associated risks?
  - Whether permission has been obtained from fire departments to include reference to them in the regulation
  - What would a contract with a rescue service look like?
- A breakdown of contractor-owner responsibilities would be useful:
  - The point at which transfer of responsibility from contractor to owner occurs when a contractor is building a confined space
  - Who initiates contact and discussion about existing confined spaces?
  - Who initiates contact regarding newly constructed confined spaces?
  - Who provides the equipment? Ventilation, testing, locks?
  - Who provides the training?
- Promote, publish and educate employers of the need to take proper precautions and implement all necessary control measures to prevent the need to provide rescue
- Small businesses employ the majority of people in the province but are often least aware of identification, conducting hazards assessments, and ensuring written work procedures are in place as required for confined spaces
- How valuable would it be to institute an NOP system for confined spaces
- Include the agriculture industry in review of requirements for confined spaces. Need to investigate the use of “permits” and how this will work in the agriculture industry
- The following educational materials would be helpful:
  - A decision tree to identify a confined space
  - Example of good work procedures (usually these are inconsistent and incomplete)
  - Example of a good hazard assessment
  - Example of a work permit uncompleted and then properly completed
  - Example of a lock-out identification and procedure
  - Example of a hazard list to be checked for each confined space prior to entry
  - Checklist for “testers” competency
  - Example of an agreement to provide rescue services
  - A checklist for
    - Air tests
    - Qualified person
    - Stand-by person
    - Rescue person

NOTE: Large employers such as a regional district or a municipality are considering pre-check of contractors to be sure they have equipment and training. They will not be hired if they can not prove competency and prove they have suitable confined space entry equipment

## Topic #3 -- Safety (Lockout, Testing, Ventilation)

### LOCKOUT

- Currently the difference between lock-out and isolation are not well understood in some areas of industry, especially how these pertain to confined space entry. It would be useful for publications to indicate more clearly how these two differ.
- Employers could:
  - consultation with knowledgeable workers within facilities when writing procedures in complex lockout situations to ensure best available information about hazards
  - reference to potentially hazardous situations within the lock-out and isolation section, in addition to pressure, temperature and engulfment
- There needs to be:
  - a management system in place to pass information from owner/employer to contractor
- In some industries it may not be practicable for isolation/lockout. Where it is “not practicable” stakeholders to work together to develop a safe alternative.
- Some attendees wanted clarification of the following terms:
  - “adjacent”
  - “harmful”
  - 15 psi
  - “hazardous substances”
- Attendees inquired about the use of screw valves as an isolation alternative
- Where isolation is not practicable, it was suggested that the use of a valve may be safe in cases where
  - the valve is well-engineered,
  - where the concentration / pressure of the material in the pipe is not hazardous,
  - and/or where no one is working inside in close proximity to the in-flow if the valve failed
- The following two conflicting opinions were recorded
  - The regulation should remain prescriptive
  - The regulation should be performance based

### TESTING

- Most attendees agreed the technology regarding monitoring capabilities has vastly improved in the last few years. The following was stated in order to encourage use of continuous monitors
  - Improving educational materials will help increase awareness of the usefulness and ease of use of continuous monitors
  - Employers need to be informed that continuous monitoring equipment is now quite inexpensive
  - Continuous read-out of levels of oxygen, flammables & toxics provide up-to-date information on a continuous basis
  - Continuous monitors can be easily calibrated (do not confuse “bump testing” with calibration)
- There were some precautionary statements recorded :
  - Anyone using these continuous monitors MUST be trained. Companies should be encouraged to educate their employees or hire “trained” testers who will know
    - Where to test
    - Set-points for alarm levels (when to evacuate)
    - How to ensure monitors are in good working order
    - How low oxygen can affect flammability readings
    - What causes cross contamination of the sensors
    - The meaning of false positive readings

- How to determine when a sensor is giving false negative readings and the consequences of false negative readings
  - The difference between 20.9% oxygen and 19.5% oxygen is 1.4% -- of unknowns possibly displacing oxygen (extremely high concentrations of unknowns)
  - The fact that any flammables over 0% must be investigated
  - An inquiry was made regarding the difference between low and moderate hazard atmospheres. If the testing is the same in low and moderate atmospheres and the procedures are the same, what distinguishes a low hazard atmosphere from a moderate hazard atmosphere? It would be helpful to get additional clarification to that provided in the definitions in the Regulation.
  - A request was made to clarify responsibilities of employers, suppliers and workers. The following were recorded as suggestions:
    - Employers to identify the required resources after completing the identification of the spaces and the associated hazards.
    - Employers to supply resources for lock-out, testing, and ventilation
- NOTE: Employers expressed a concern that they cannot enforce compliance on other employers (contractors), but can still be held accountable
- Employers to train workers to understand the importance of testing the atmosphere and ventilating the space
  - Suppliers to educate and train on the pieces of equipment (testing, ventilation, intrinsically safe, etc.) they have sold to employers
  - Employers to maintain records of test results (to comply with regulation and to show rescue provider)

## VENTILATION

- It was suggested that “practicable” and “in accordance with acceptable engineering standards” found in the regulation, be explained.
- A statement was made that the requirement for 50cfm may not provide enough ventilation. (NOTE: the regulation states a confined space must be ventilated to reduce contaminants to an acceptable level).
- There is not a clear understanding of why 20 minute time intervals are being used for retesting
- Employers would benefit from access to:
  - examples and diagrams of best set-up of ventilation for certain scenarios
  - receiving instructions on how to determine the cfm being delivered to the space;
    - manufacturers/ suppliers could
      - provide marking on the ventilator of cfm with clear directions that this will be reduced after hoses are attached.
      - provide instructions regarding proper use of air flow indicators
  - information on how to do calculations on number of air changes for various spaces
  - instructions on how to prevent exposure of outside workers (especially if space is under positive pressure from ventilators)
  - instructions on how to prevent exposure to outside workers (when exhaust ventilation is used)
  - instructions on use of “intrinsically safe” ventilators, what they are, how to ground them if necessary, why this is important
  - pre-inspection checklists to provide sufficient equipment
- An explanation was requested as to why ventilation of a low risk confined space is required

## Topic #4 -- Training (including Training of Contractors)

### TRAINING

- Hands-on and competency based training is superior
- In order to ensure training is taken seriously and is performed in a manner so as to prevent confined space injury or death it is important to include the requirement for training in the list of what is included in a confined space entry program including who is responsible for ensuring training is provided to:
  - owner
  - employees (supervisors, managers, workers)
  - contractors on an owner's worksite
- Reference materials and reference personnel for training
- A competency-based model training course including
  - Air testing of confined spaces
  - Duties of standby person
  - Setting up proper ventilation
  - Setting up for the job by following a requirements stated on the hazard assessment and completing and posting a permit
  - Supervisor responsibilities
  - Worker responsibilities
  - Hazards including a video similar to "Lost Youth" pertaining to confined spaces, emphasizing what can go wrong
  - Generic and space-specific scenarios for employers and contractors to present to employees
- Re-training timelines
- Industry, unions, associations and the WCB to work together
- An "incentive" program promoting completion of confined space training would assist in getting participation

## Topic #5 -- Rescue and Standby Person

### RESCUE

There were a number of very important issues raised on this topic. Attendees felt that if emphasis was placed on the first four topics rescue would never be required. However, this topic is important. As a last line of defense and to protect workers from possible death, the attendees addresses this topic.

In order to provide better rescue service to employers and for employers to ensure rescuers are capable of performing rescue the following statements were made:

- It is important to define who a rescuer is
- It is important to define what the evaluation process is for competency
- Even though the regulation clearly states that a rescue agreement must be in writing it was stated again at the forum to emphasize the need for employers who require outside resources to provide rescue services to be sure they enter into a written agreement
- People who are trained and equipped for rescue must be able to perform the tasks required
- Standby personnel are NOT to be considered “rescue” personnel
- If the fire department is to be relied on, the fire department must be notified so they know they are the “rescuers”. It is important to discuss who supplies the necessary equipment and when “practice” rescues will occur as required by the regulation
- If the fire department cannot be relied upon because of lack of expertise, equipment or manpower, the employer must make alternative arrangements for rescue.
- Often employers assume the fire department will respond to emergencies without prior knowledge of the hazards. When this assumption is being made it puts fire department personnel at risk
- When a written hazard assessment is being provided by a qualified person it should include:
  - A list of the hazards of a confined space
  - A list the required control measures that eliminate or reduce the risk of those hazards
  - A ranking of the consequent likelihood of a requirement for rescue services
  - A rescue plan designed to address the risk posed by the space, the equipment available to control the risk, the rescue equipment available, and the rescuer’s abilities and expertise
  - The weight/size restriction for entry into confined spaces (depending on the size of the entryway and the lifting device limitations)
- Rescue services remind employers who phone emergency rescue services that dispatch may send either the fire department OR an ambulance instead of both so it is important to stipulate the incident involves a confined space.
- When an employer cannot find external resources for rescue they must provide “rescue personnel” utilizing their own employees by ensuring training, updating training, and providing practice time
- Manufacturers should be encouraged/ legislated into manufacturing vessels that:
  - do not have to be entered to do maintenance, inspection or clean-outor alternatively
  - have larger openings, more than one opening, ventilation holes, and are easier for access and egressmaking these newly designed vessels less hazardous for entry.
- Incentives to enhance training, rescue equipment, gas monitors, etc. would improve rescue services.

## STAND-BY PERSONS

- Young workers and new employees cannot be relied upon as stand-by person unless these people are assertive enough to tell people to get out of the space during communication blackouts, when the alarm sounds, if the monitor is not working, if the ventilation fails, and/or if there are outside hazards, for example.
- It would be useful to have a guideline regarding the duties and requirements for training of a stand-by person which would include the following:
  - The stand-by person can never be considered to be the rescue person unless that stand-by person is trained as a rescue person and another person attends at the space to take over the duties of the stand-by person in the event of a rescue
  - Stand-by person can provide air-testing and record the air-testing results provided the stand-by person is adequately trained to understand the limitations of the testing device
  - A caution to the stand-by person who is being trained regarding the possibility of being overcome by a toxic atmosphere from “inside” the space

## GENERAL COMMENTS:

Some general comments specified improvements at the Workers Compensation Board.

It was recorded that attendees wanted officers to be more prominent in a consultative role and to provide educational material in addition to enforcement of requirements for hazard assessments, work procedures, adequate supervision, sufficient training, provision of control equipment including ventilation and monitoring. It was interesting that there were two differing opinions about the need for prescriptive vs. performance-based regulations. Where there is a high hazard, or where employers were dealing with contractors it was clearly stated that prescriptive regulations are more helpful to assist employers in understanding responsibilities.

<b>Industry Sector</b>	<b>Total</b>
Consultant	14
Municipal Services	14
Shipbuilding and Repair	10
Labour Organizations	8
Wood Products	
Manufacturing	7
Construction	5
Petro-chemical	5
Firefighting	4
General Manufacturing	4
Education	4
Pulp & Paper	3
Utilities	3
Food & Beverage	3
Healthcare	2
Farming	1
Small Business	1
<b>Grand Total</b>	<b>88</b>