

Confined Space Entry - Training Program Standard



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comply with the *Manitoba Workplace Safety and Health Act and Regulation*, as may be amended from time to time.

1. Training Standard Topic

Confined Space Entry

2. Purpose

The purpose of the Confined Space Entry (CSE) training program is to provide employers, supervisors and workers with:

- knowledge of recognizing the hazards and risks associated with entering a confined space or a hazardous confined space
- understanding the requirements for entering confined spaces and hazardous confined spaces
- knowledge of safety and personal protective equipment to be used when entering a confined space or a hazardous confined space
- knowledge of non-entry rescue, self rescue and entry rescue procedures

The training is intended for employers, supervisors and workers who work in or work with connection to confined spaces or hazardous confined spaces.

The CSE training program outlines the minimum requirements for the development and delivery of CSE training programs in Manitoba. It was developed in consideration of the *Manitoba Workplace Safety & Health Act and Regulation* and *Canada Labour Code Part II*, and is consistent with the CSA Z1006 *Management of Work in Confined Spaces* standard.

3. Design

The design of the training program must meet the following criteria:

- Compliance with adult learning principles:
 - a. ensure learners know why they need to learn specific content and its relevance to their workplaces
 - b. relate training to learners' own experiences when simulating workplace scenarios
 - c. challenge and engage learners using a variety of activities that allow opportunities for participation, feedback and interaction
 - d. recognize the limits of attention spans and apply techniques to address the various ways that adults learn
 - e. use realistic activities and tools to support the transfer of learning to the workplace
- Use language that is appropriate for all learners;
- Provide content that is accurate and current;
- Include references to legal and technical information;
- Use a variety of technical teaching aids;
- Provide learner materials that follow the principles of instructional writing and good graphic design;
- Be consistent with provincial and federal legal requirements.

4. Delivery

Regardless of the delivery method, all Endorsed Training programs must meet the requirements of this standard along with ***The Accessibility for Manitobans Act (AMA)***, and the delivery method must be reasonable and practicable to support the learner's ability to attain the applicable learning outcomes.

4.1 Face-to-Face Learning

The following is the maximum ratio of learners to instructor:

- Basic Theory Module: 12:1
- Practical Module: 12:1

The following are the minimum hours for training delivery:

- Basic Theory Module: 6
- Practical Module: 6

The timing for delivery of this training program may be extended for various reasons such as the amount of equipment available for demonstration of learning outcomes, instructor

experience, and/or the learning needs of the training participants.

4.2 Distance Learning

Distance learning includes training via a live video link; a plan for interactivity with a qualified instructor should be developed and available.

This type of learning is acceptable for:

- Basic Theory Module

5. Learning Outcomes

Employers will need to supplement any training program that meets the requirements of this training program standard with additional information, instruction and training in workplace-specific policies and procedures and workplace-specific hazards and equipment related to Confined Space Entry.

5.1 Confined Spaces Entry Basic Theory Module

5.1.1 Legal Requirement

Content must include:

- an overview of the legal framework, including rights and responsibilities and requirements before a worker enters or begins work in a confined space or hazardous confined space

At the end of this module, learners will be able to:

- identify parts in the *Manitoba Workplace Safety and Health Act and Regulation* and/or *Canada Labour Code Part II*, as applicable, pertaining to working in confined spaces and hazardous confined spaces
- identify a confined space
- distinguish between confined spaces and hazardous confined spaces
- explain the requirements for entering a confined space and hazardous confined space
- reference the duties and responsibilities of the employer, supervisors and workers as they relate to confined space entry in the workplace
- describe the workers' rights and how they relate to workers entering a confined space
- define a competent person in connection to confined space entry

5.1.2 Identification and Assessment of Confined Space Hazards

Content must include:

- a description of the common hazards regarding entry or work in confined spaces and hazardous confined spaces, including, but not limited to, physical, atmospheric, chemical, entrapment, engulfment, electrical, thermal, biological, musculoskeletal and psychosocial hazards
- a description of the hazards associated with high-risk activities that may be undertaken in confined spaces including, but not limited to, welding, chemical handling, use of compressed gases and electrical work
- an overview of the job hazard analysis and risk assessment process for identifying and assessing hazards

At the end of this module, learners will be able to:

- identify the common hazards associated with entering and working in confined spaces and hazardous confined spaces
- describe the steps for conducting a job hazard analysis and risk assessment
- perform a risk assessment for confined spaces and hazardous confined spaces
- identify and assess the hazards associated with high-risk activities that may occur in confined spaces

5.1.3 Control of Confined Space Hazards

Content must include:

- an overview of the hierarchy of controls and the different types of control measures to eliminate or reduce the risk associated with confined spaces and hazardous confined spaces including, but not limited to, atmospheric testing, purging, ventilation, isolation controls, signage, entry permits, use of stand by worker, communication procedures, safety and personal protective equipment, coordination of adjacent work activities, emergency response plan and rescue procedures
- an overview of control measures for high-risk activities that may be undertaken in confined spaces and hazardous confined spaces
- a description of the requirements for safe work procedures for working in confined spaces and hazardous confined spaces, including rescue procedures

At the end of this module, learners will be able to:

- describe control measures required to eliminate or reduce the risk associated with confined spaces and hazardous confined spaces

- identify the control measures required to perform high risk activities in confined spaces and hazardous confined spaces
- identify ergonomic measures to control the identified musculoskeletal hazards
- explain the importance of and need for safe work procedures for entering and/or working in a confined space and hazardous confined space
- explain the requirements of site-specific safe work procedures required for working in confined spaces and hazardous confined spaces
- identify all training requirements for personnel involved with confined space and hazardous confined space entry work

5.1.4 Hazardous Atmospheres Testing and Controls

Content must include:

- an overview of the elements of hazardous atmospheres and associated terminology including: Toxic Atmospheres, Immediately Dangerous to Life or Health (IDLH); Occupational Exposure Limits (OEL) for substances common to the industry; Flammable (Explosive) Atmospheres, Lower Explosive Limit (LEL), Upper Explosive Limit (UEL) and absolute limits for entry/evacuation; Oxygen Enrichment related to Flammable (Explosive) Atmospheres; Oxygen Deficient/Inert Atmospheres and causes/symptoms of Oxygen Deficiency
- a description of the need and requirements for atmospheric testing, including type and frequency of testing, testing equipment (setup, use, calibration and limitations) and continuous monitoring
- a description of the need and requirements for ventilating and purging hazardous atmospheres

At the end of this module, learners will be able to:

- explain various hazardous atmospheres that may be present in confined spaces
- reference the terminology associated with hazardous atmospheres in confined spaces
- describe the need for atmospheric testing and monitoring
- explain the requirements for atmospheric testing and monitoring, including types and frequency of testing
- describe the setup, use and limitations of the testing equipment
- identify the testing equipment calibration requirements
- interpret testing equipment results to determine air quality within a hazardous confined space
- identify the need for ventilating and purging hazardous atmospheres
- calculate ventilation/purging duration

- describe various ventilation systems and purging measures to control hazardous atmospheric levels

5.1.5 Isolation of Hazardous Energies

Content must include:

- an overview of the common energy sources, including but not limited to, mechanical, hydraulic, pneumatic, electrical, radiation, chemical, gravity, residual or stored energy
- a description of common isolation measures for energy sources, including blanking, disconnecting, interrupting and lockout
- an overview of the common lockout equipment and devices

At the end of this module, learners will be able to:

- identify the different energy sources that must be locked out prior to working in confined spaces
- explain common isolation measures for the identified energy sources
- identify the lockout devices required to isolate all hazardous energies involved in a confined space
- identify the need to verify the effectiveness of isolation measures before confined space entry
- describe the steps to verify the effectiveness of isolation measures or to determine the zero-energy state

5.1.6 Entry Permit

Content must include:

- an overview of requirements pertaining to hazardous confined space entry authorization and permits including review and revision of entry permits
- an overview of situations when hazardous confined space entry is prohibited

At the end of this module, learners will be able to:

- explain the pre-requirements of hazardous confined space entry
- recall the process and the required elements of the hazardous confined space entry permit system
- illustrate the need to comply with site-specific entry permit requirements and specific procedures
- recognize individual responsibilities for documentation, review and revision of hazardous confined space entry permits

- identify the situations when hazardous confined space entry is prohibited

5.1.7 Standby worker

Content must include:

- an overview of the requirements of a standby worker for each hazardous confined space, including their duties and responsibilities and training requirements
- an overview of the duties and responsibilities of the employer as they relate to the standby worker

At the end of this module learners will be able to:

- recognize the need for a hazardous confined space standby worker
- explain the duties and responsibilities of the standby worker
- recall the training requirements and qualification criteria of a standby worker
- state the duties and responsibilities of the employer pertaining to a standby worker
- confirm the need to have a job site communication system for a standby worker to communicate with the hazardous confined space entrants and to summon assistance in the event of emergency

5.1.8 Rescue Planning

Content must include:

- an overview of the requirements for emergency response planning including communication procedures
- an overview of available technology for constant communication with hazardous confined space entrants and monitoring of confined space entry points
- an overview of procedures for self rescue, non-entry rescue and entry rescue including effective rescue techniques

At the end of this module, learners will be able to:

- explain the requirements of emergency response planning
- determine a viable and appropriate communication system to ensure direct communication with the hazardous confined space entrants, standby worker and rescue team
- differentiate between self rescue, non-entry rescue and entry rescue
- identify the procedures for self rescue, non-entry rescue and entry rescue
- respond to possible changes in a rescue if an entrant is unable to perform self-rescue

5.1.9 Safety and Personal Protective Equipment

Content must include:

- an overview of safety and personal protective equipment (PPE) required for hazardous confined space work and rescue
- an overview of the use, care, storage, maintenance, inspection, limitations of personal protective equipment and safety equipment, including the required retrieval systems and rescue equipment

At the end of this module, learners will be able to:

- identify common safety and personal protective equipment requirements for hazardous confined space work
- identify common retrieval systems and rescue equipment and their limitations
- state the importance of using, maintaining and inspecting PPE and safety/rescue equipment
- select the correct PPE and safety/rescue equipment applicable for a specific hazardous confined space
- identify the required documentation for safety/rescue equipment and PPE

5.2.1 Practical Module

In this additional training module, participants will simulate a permitted hazardous confined space entry and rescue in an actual predetermined scenario(s).

The practical module must include:

- selection of appropriate PPE and safety equipment required during practical exercise
- inspection and identification of damaged PPE and safety equipment
- proper use, storage and maintenance of PPE and safety equipment
- use of the hazardous confined space entry permit system
- safe performance of work in hazardous confined spaces
- use of atmospheric testing equipment and ventilation systems
- use of isolation measures and lockout devices
- effective communication among entrant, standby worker and supervisor

The practical skills outlined above are taught in a classroom session and must be demonstrated during practical training exercises.

At the end of this module, learners will be able to:

- identify correct and appropriate PPE and safety equipment for hazardous confined space work and rescue
- inspect PPE and safety/rescue equipment for any damage
- demonstrate proper use, storage and maintenance of PPE and safety equipment for hazardous confined space work and rescue
- employ the hazardous confined space entry permit system
- follow safe working procedures within a confined space or a hazardous confined space
- conduct atmospheric testing using testing equipment
- interpret testing equipment results to determine air quality within a hazardous confined space
- apply proper ventilation systems and purging measures to ensure safe atmosphere within the confined space
- carry out applicable isolation measures and apply lockout devices required to isolate all hazardous energies involved in the confined space
- verify that isolation measures or control of all hazardous energies are effective
- communicate effectively in a hazardous confined space entry and throughout the scope of work

6. Resource Material

The Confined Space Entry Training Program standard has material requirements for both learners and instructors.

The date and version number should be indicated on all resource materials, which include:

- terms and definitions
- job aids, evaluation tools and templates
- copies of the applicable provincial or federal safety legislation
- manufacturers' instructions for equipment
- participant and instructor manuals with copies of activities
- instructor manual and lesson plan

Learner materials will include:

- learning objectives, agenda, training content and evaluation/testing

Instructor materials will include:

- instructional methods, learning activities, and lesson plan timing
- detailed instructor manual and lesson plans including all learning activities and audio-visual resources

7. Equipment

For the practical module (if applicable), learners must have hands-on, practical experience and must be trained on the proper use, care and limitations of the personal protective equipment (PPE) according to manufacturer specifications and what is listed below. The PPE provided must comply with the requirements of the Manitoba Workplace Safety and Health Act and Regulation, such as meeting or exceeding the equipment specified in the National Standards of Canada and/or the Canadian Standards Association technical standards, as applicable.

7.1 Equipment for Demonstrating Learning Outcomes

The equipment listed below may be used for delivery of the practical module.

Equipment required:

- Class A harness (minimum)
 - Class D harness
 - Class E harness
 - Class P harness (if positioning device required)
 - Two-way radio communication
 - Davit or Tripod lowering system
 - Lowering winch w/wo fall arrest SRL capability
 - Lifelines with snap hooks adequate for learning purposes (return rope)
 - Air monitoring devices (monitor/sniffer with extension tube probe)
 - Ventilation system with entry hose
 - Hard hat with light
 - Gloves
 - Safety footwear
 - Eye and hearing protection
 - Breathing apparatus
- Ratio of equipment available to learner shall be 1:3

7.2 Other Equipment

The equipment listed below may be used in the delivery of the Practical Module so that learners become familiar with the look and function of this equipment.

Equipment required:

- Various types of harnesses other than what is supplied for practical
- Remote Rescue pulley & pole system (non-entry rescue)

- Other lifelines and anchoring systems (carabiner/cross-arm straps, etc.)
 - Ratio of equipment available to learner shall be 1:3

7.3 Damaged Equipment

The equipment listed below may be used in the delivery of the Practical Module so that learners are able to inspect the equipment and identify damage.

Equipment required:

- Equipment listed above that is no longer in service
 - Ratio of equipment available to learner shall be 1:3

8. Learner Evaluation

The training program must include a plan for learner evaluation that meets the requirements below. There must be a variety of evaluation methods available to the instructor and/or evaluator that are appropriate to the learning outcomes.

8.1 Evaluation Methods

The training program will include methods to evaluate whether key concepts have been understood by the learner, using a variety of evaluation methods that are appropriate to the learning outcomes, including:

- open discussion
- group discussion
- questions and answers
- written and/or oral test, where applicable

Evaluation methods must be clearly outlined in the evaluation plan, and the corresponding results must be documented by the evaluator.

8.2 Evaluation of Demonstration Learning Outcomes

- a. Learning outcomes requiring demonstration must be performed satisfactorily in order to successfully complete the practical module;
- b. For learners with language, literacy or accommodation needs, alternative evaluation methods may be employed to verify satisfactory demonstration of learning outcomes by the learner. These evaluation methods must be clearly outlined in the evaluation plan, and the corresponding results must be documented by the evaluator.

9. Validation/Refresher Requirements

Learners who have successfully completed an approved training program should periodically refresh their training in order to maintain its validity. This supports learners in maintaining their foundational knowledge and skills.

9.1 Validation/Refresher Requirements

Completion of both the Basic Theory Module and Practical Module in accordance with the criteria set out in this standard and the training provider standard is required to confirm a successful training program has been completed.

Training remains valid for a period of three years from the date of successful completion of the Confined Space Entry Basic Theory Module and the Confined Space Entry Practical Module.

9.2 Refresher Training:

A worker's training is revalidated for another three-year period after successfully completing the refresher training of the Confined Space Entry Theory Basic Module and Confined Space Entry Practical Module.

Glossary

General Terms

Asynchronous Instruction (ASTD)

A general term used to describe forms of education, instruction and learning that do not occur in the same place or at the same time. It uses resources that facilitate information sharing outside the constraints of time and place among a network of people.

Blended Learning

Describes the practice of using several training delivery mediums in a single training program and typically refers to the combination of classroom instruction and eLearning.

Distance Learning

An educational situation in which the instructor and students are separated by time, location or both. Education or training courses are delivered to remote locations via synchronous or ASTD.

ELearning (Electronic Learning)

A term covering a wide set of applications and processes that includes web-based learning, computer-based learning, virtual classrooms and digital collaboration.

Face-to-Face Training

Usually refers to traditional classroom training in which an instructor teaches a course to a room of training participants. The term is used synonymously with on-site training, classroom training and instructor-led training (slightly modified from ASTD definition).

Minimum Hours for Training Delivery

The timing for instruction of a training program that excludes breaks and lunch:

- 3.5 hours of instruction is equal to a half-day of delivery;
- 7 hours of instruction is equal to a full-day of delivery.

Module

A unit of instruction that can be measured, evaluated for change, assembled to form complete courses or bypassed as a whole, and that is usually intended to teach one or a group of skills or areas of knowledge (slightly modified from ASTD definition).

Evaluator

A person who evaluates learners.

Instructor

A person who delivers training programs.

Qualification

A skill, quality or attribute that makes somebody suitable for a job, activity or task.

*Confined Space Entry terms***Confined Space**

An enclosed or partially enclosed space that, except for the purpose of performing work, is not primarily designed or intended for human occupancy; and has restricted means of access or egress.

Full Body Harness

A device consisting of connected straps designed to contain the torso and pelvic area of a worker with provision for attaching a lanyard, lifeline or other component.

Hazardous confined space

A confined space that is or may become hazardous to a worker who enters or is in the space, due to the design, construction or atmosphere of the space; materials or substances in the

space; the work activities or processes in the space; or any other conditions within or related to the space.

Job Hazard Analysis

A method used to perform an assessment of a job task by breaking the job task into steps to help identify hazards and measures to control workers' exposure to harm.

Lifeline

A flexible synthetic line or rope made of fibre, wire or webbing, rigged from one or more anchors to which a worker's lanyard or other part of a fall protection system is attached.

Lockout

The disconnection, blocking or bleeding of all sources of energy that may create a motion or action by any part of a machine and its auxiliary equipment.

Non-Entry Rescue

A process where rescuers do not enter the Confined Space, but a retrieval system is used to extract the entrant.

Safe Work Procedure

A document that outlines a precise sequence of steps that describe how to do a specific task safely.

Self-Rescue

A process where the entrant is physically and mentally capable of exiting the confined space or hazardous confined space without assistance.

Zero Energy State

A zero energy state is when all energy sources have been removed or controlled, and all stored or residual energy has been discharged.

Acknowledgements Statement

The Confined Space Entry working group has developed a Confined Space Entry Training Program Standard that outlines the minimum requirements for program objectives, training requirements and learning outcomes that are designed to educate Manitoba workers on working in compliance.

Please note that while reasonable efforts have been made to ensure that the criteria of the Training Program Standard is met, the responsibility resides with employers to ensure compliance with the training requirements under the *Manitoba Workplace Safety and Health*

Act and Regulation. In determining what rights or obligations a party may have under the province's legislation, reference should always be made to the official version of the WSH Act and Regulation.

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