Confined Space

Confined Space - Program

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What is a Confined Space Hazard Assessment and Control Program?

To manage the risks associated with working in confined spaces, employers must develop and implement a confined space hazard assessment and control program. A confined space hazard assessment and control program, specific to the work being conducted, should be written for work in each and every confined space.

A confined space hazard assessment and control program should include the following:

- Description of roles and responsibilities of each person or party (e.g., employer, supervisor, workers, attendants, and emergency response team).
- Advice on how to identify confined spaces.
- The identification and assessment of all potential hazards that may exist at the beginning of the work as well as those that may develop because of the work activities.
- A procedure to conduct atmospheric testing and monitoring, as required.
- A plan to eliminate or control all identified hazards.
- Written work procedures.
- Training program for all the workers that will enter into the confined spaces.
- The establishment of an entry permit system for each entry into a confined space.

- Development of an emergency plan complete with training and equipment in case an unforeseen situation occurs.
- An emergency response system.
- Reporting and investigating incidents related to work in confined spaces.
- Record and documentation control.
- Program review whenever there is a change in circumstances or at least annually, to identify program weaknesses and make any necessary changes to the program.

More information about confined spaces is located in the OSH Answers documents Confined Spaces - Introduction and Confined Space - Atmospheric Testing.

What is an Entry Permit System?

An entry permit is an administrative tool used to document the completion of a hazard and risk assessment for each confined space entry. Someone fully trained and experienced in confined space work should complete the entry permit. Some jurisdictions require a permit for all confined space entries. An entry permit is required for confined spaces where the hazard and risk assessment determined that the measures to control the risk involve the following:

- atmospheric monitoring,
- isolation,
- lockout,
- ventilation,
- safeguarding devices,
- respiratory protection, or
- any other control that needs to be verified and documented in the permit as required by the assessment.

Before entering a confined space, an entry permit should be completed. It should contain at least the following information:

- The length of time the permit is valid for.
- The name(s) of the worker(s) that are authorized to enter the confined space.
- The name(s) of the attendant(s) (safety watch).
- The name of the supervisor responsible for the work.
- The location and description of the confined space.

- The scope of the work that is to be done in the confined space.
- Possible hazards that may be encountered inside and outside the space.
- Possible hazards that may develop during the work activity.
- The date and time of entry into the confined space and the anticipated time of exit.
- The details of any atmospheric testing done of the confined space - when, where, results, and date monitoring equipment was last calibrated. Ideally, calibration (including bump test) would be done just before each use. If this is not possible, follow the equipment manufacturer's guidelines for the frequency of calibration.
- Hazard control measures, including the use of mechanical ventilation, work procedures, personal protective equipment needed and any other precautions that must be followed by every worker who is going to enter the confined space.
- Means of communication between the persons working in the confined space and the attendant.
- Emergency plan, and the protective equipment and emergency equipment to be used by any person who takes part in a rescue or responds to other emergency situations in the confined space
- A signature of a worker who did the confined space air testing. The signature on the permit would indicate that adequate precautions are being taken to control the anticipated hazards.
- Authorization signature by the supervisor certifying that the space has been properly evaluated, prepared, and it is safe for entry and work.

The entry permit should be posted at the confined space and remain so until the work is completed. The employer should keep a copy of the completed permit on file.

What should happen when work is being done in a confined space?

Use warning signs to prevent unauthorized entry to the confined space.

Anyone working in a confined space must be constantly alert for any changing conditions within the confined space. In the event of an alarm from monitoring equipment or any other indication of danger, workers should immediately leave the confined space.

At least one other worker, the attendant (also known as the safety watch or standby), is posted outside the confined space and continuously monitors the workers inside the confined space. The attendant has the following duties:

- Understands the nature of the hazards that may be found inside that particular confined space and can recognize signs, symptoms and behavioural effects that workers in the confined space could experience.
- Monitors the confined space and surrounding area and is on the look out for dangerous conditions.
- Remains outside the confined space and does no other work which may interfere with their primary duty of monitoring the workers inside the confined space.
- Maintains constant two-way communication with the workers in the confined space.
- Orders the immediate evacuation if a potential hazard, not already controlled for, is detected.
- Calls for emergency assistance immediately if an emergency develops.
- Is immediately available to provide non-entry emergency assistance when needed.
- Can provide entry rescue only after the most stringent precautions are taken and another attendant is immediately available to assume the attendant duties

Should a worker leave a confined space for a short time (for example, coffee break, getting additional material for their work), the confined space should be re-tested before the worker re-enters. If the confined space has been continuously monitored by equipment that can show the details of the atmosphere during the time absent from the confined space and this information can be seen from outside the confined space, it can be re-entered without retesting. If there is no continuous air monitoring then the hazard assessment needs to be repeated.

No confined space should be closed off until it has been verified that no person is inside it.

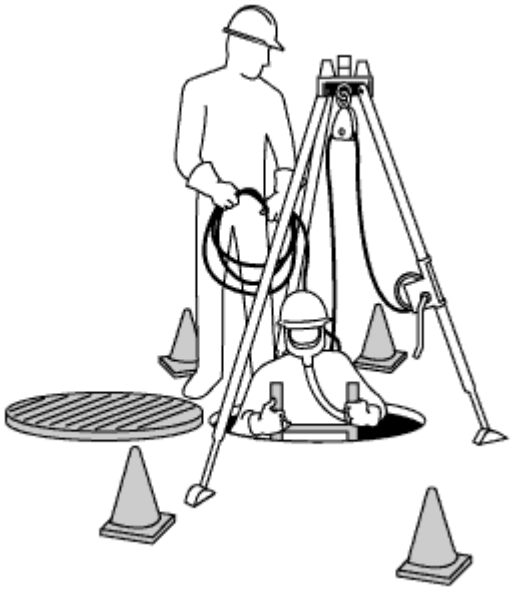
After exiting the confined space, the time of exit should be noted on the entry permit.

What are some emergency response precautions?

The detailed plan for emergency response to an injury or other emergency within the confined space should be described in detail in the confined space hazard assessment and control program.

If a situation arises where there is a hazardous condition and the worker does not leave or is unable to leave the confined space, rescue procedures should begin immediately.

Rescue personnel who are qualified in confined spaces rescue procedures should be available immediately nearby the confined space to provide emergency assistance if needed. The rescue personnel should be familiar with the structural design of the confined space.



Rescue the victims from outside of the confined space, if possible. No worker should enter a confined space to attempt a rescue unless that worker is fully trained in the rescue procedures and is wearing the appropriate personal protective equipment. More than 60% of deaths in confined spaces are would-be rescuers, who are not fully trained and adequately equipped.

An attendant should remain outside the confined space to monitor the space while there are rescue procedures taking place.

Rescue personnel should not use the same air as the confined space workers they are rescuing. Wear SCBA (self-contained breathing apparatus) or supplied air respirator with an escape bottle where possible.

Personnel who can provide first aid and cardio-pulmonary resuscitation (CPR) are also required. These persons can be the attendant or other rescue personnel, as long as providing first aid or CPR does not interfere with their other duties (requirements may vary depending on the jurisdiction).

How many people must be present while work is being done in a confined space?

Some jurisdictions require a certain number of workers be present. For example, New Brunswick requires three - the entrant, a person standing at the entrance (attendant), and a back-up employee within sight and shouting distance with no obstructions or barriers to overcome to reach the space (for example, not in another room or a parking lot). Each person has to be trained to carry out their responsibilities.

Other jurisdictions describe the qualifications that must be fulfilled, which may vary in the number of people present. For example, Ontario describes this requirement as having an adequate number of persons trained in the following to be immediately available to begin on-site rescue procedures as required:

- On-site rescue procedures
- First aid and CPR
- Use of the rescue equipment required by the confined space plan.

Is worker training important?

Yes, appropriate training is extremely important to working safely in confined spaces, as well as for attendant and rescue personnel. Hands-on training should be an essential part of the confined space training.

Every worker that enters a confined space must be fully trained on the following:

- Recognition and identification of potential hazards associated with the confined spaces that will be entered.
- Evaluation and control procedures for the identified or potential hazards.
- Set-up, use, and limitations of all equipment such as emergency equipment, ventilation equipment (blowers), hazardous energy control, isolation and lockout equipment, air quality monitors (e.g., oxygen/combustible meters) and other control equipment that will be used while in the confined space.
- Set-up, use, and limitations of all personal protective equipment (e.g., full-body harness, respirators) that the worker will be using while in the confined space.
- Communication systems and retrieval systems (set-up and operation).
- All safe work procedures for entering the confined space as outlined in the employer's confined space hazard assessment program.
- Procedures to follow in the event of a situation developing that could present additional risk to the worker or an emergency.
- First aid and CPR.
- The specific work to be done while in the confined space.
- To work in a manner that will not endanger lives.

Workers with emergency rescue responsibilities will need additional specialized training. All confined space training should include some hands-on training with the safety equipment including the personal protective equipment and safety harnesses. Rescue procedures should be practiced frequently so there is a high level of proficiency. Employers should keep records of all confined spaces training including refresher courses.

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