

Model Confined Space Entry Policy and Procedures for Public Works Departments and State Agencies in Massachusetts

This model plan, based on OSHA Confined Space Entry Standards, was developed by the Massachusetts Division of Occupational Safety's (DOS) Occupational Hygiene/Indoor Air Quality Program. The DOS would like to thank the Massachusetts Water Resources Authority (MWRA) for their contribution to the model policy.

The program was designed to incorporate OSHA standards as a minimum but goes beyond the requirements of the standard to include safe work practices and policies designed to further protect workers. The plan was primarily designed for municipal public works departments, and State Agencies but may apply to other confined space entry operations as well. In accordance with MGL Chapter 149 Section 6 and DOS policy, all municipalities are expected to comply with OSHA Standards. All State agencies are likewise encouraged to follow OSHA standards in accordance with ongoing health and safety initiatives of the State Human Resources Department.

(Italicized items underlined and in parentheses should be modified to personalize this program for your Town or Agency. Please tailor the program to meet your needs and add to or delete items as needed).

(Reference information is also provided in parentheses throughout this document)

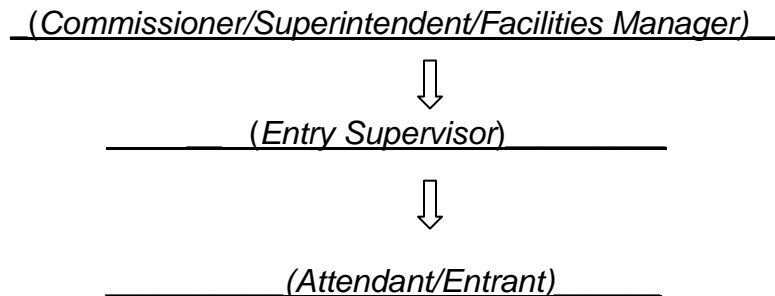
Confined Space Entry Procedures and Policies

(Employer/Town Department) has established this confined space entry written policy in order to standardize procedures that will prevent injuries and/or death to entrants from atmospheric and/or physical hazards that can occur when entering confined spaces.

All employees, supervisors and managers are required to follow this policy. Because of the extreme hazard of confined spaces, failure to comply with this policy will result in disciplinary action and possible termination. If there are any questions about this policy or interpretations of the policy contact (Commissioner/Superintendent/Facilities Manager).

Program Responsibilities

(Commissioner/Superintendent/Facilities Manager) is the Confined Space Program Manager and is ultimately responsible for Confined Space Entry Safety in this Department. The Program Manager will evaluate the workplace to identify the confined spaces and will ensure that proper procedures are followed. Daily confined space operations will be the responsibility of the Entry Supervisor. The Entry Supervisor will establish procedures to be followed by the attendants and entrants entering a particular space, in accordance with this policy.



Program Manager

(Commissioner/Superintendent/Facilities Manager) has been designated as the confined space Program Manager. He/she is ultimately responsible for ensuring that the procedures set forth in this policy are followed by all members of this Department (managers, supervisors and employees). The Program Manager will also meet with all employees to review the confined space entry policy and procedures annually and will make any modifications as needed. In addition, if any near misses or accidents occur, the Program Manager will immediately review the program to determine if procedures were followed and to determine what if any changes in procedures are needed to prevent future incidents.

Entry Supervisor

The OSHA Confined Space Entry Standard requires the designation of one or more “Entry Supervisors”. The Entry Supervisor is required to know the hazards of all spaces, and to review entry procedures into all confined spaces. In cases where a permit is required, the entry supervisor will be responsible for assigning adequate numbers of entrants and attendants and for filling out and signing the permit. For reclassified spaces and spaces that can be entered using alternate procedures, the entry supervisor will issue the certification form to entrants after reviewing the work to be done in the space. The entry supervisor has full authority to stop entry operations or to cancel permits if a hazard should arise.

The following individuals have been designated and trained as Entry Supervisors and are considered to have this level of competency and authority. (List Names and Titles)

Authorized Attendants

The authorized attendant is responsible for monitoring the entrant’s activities from outside the space. The attendant must stay outside the space during the entire entry and must continually air monitor the space unless the entrant is wearing the gas monitor inside the space. The attendant must maintain communication with the entrant(s) at all times using visual, verbal or radio contact. The attendant must be knowledgeable about the signs and symptoms of exposure to oxygen deficient and toxic environments that may occur in the space. The attendant has the authority to order the entrant out of the space should a hazardous condition arise and is responsible for non-entry rescue using the tripod, harness, winch system and fall protection system if required.

The following individuals have been designated and trained as authorized attendants and are considered to have this level of authority and competency. (List Names and Titles)

Authorized Entrant

The entrant will not enter a permit required confined space until a permit has been issued and signed by the entry supervisor. The entrant must wear the harness attached to the tripod, winch system whenever entering a confined space, and must never detach from the retrieval system. The entrant must be aware of the hazards of the space as well as the symptoms and consequences of exposure to toxic or hazardous atmospheres and wear the appropriate personal protective equipment listed on the permit or certification form. The entrant must maintain communication with the attendant at all times and must leave the space immediately when a gas monitor alarm goes off or when ordered by the attendant or entry supervisor to evacuate.

The following individuals have been designated and trained as authorized entrants and are considered to have this level of competency. (List Names and Titles)

Responsibility of all employees, supervisors and managers

ALL employees are required to follow all safety procedures established by this written policy and to make management aware of any safety concerns or near misses. Employees are expected to stop work immediately and notify either the entry supervisor or Program Manager should any safety or health concerns arise before, during or after entry. **Employees MUST NOT to work or allow others to work in a situation that they feel is unsafe.**

Identification/labeling of Confined Spaces in (Town/Facility)

A permit required confined space has all of the following three characteristics: (1) is large enough and so configured that an employee can bodily enter and perform work; (2) has limited or restricted means for entry or exit; and (3) is not designed for continuous human occupancy. In addition it has a hazardous or potentially hazardous atmosphere and/or a safety hazard such as engulfment by water or other materials, electrical, mechanical or hydraulic hazards. An employee has entered a confined space when his/her face or feet have broken the plane of the confined space entrance.

All permit required confined spaces have been identified and are listed in Appendix A. All confined spaces, with the exception of sewer and water manholes, will be identified by posting danger signs. The signs will be prominently displayed and say "**DANGER - PERMIT REQUIRED CONFINED SPACE, DO NOT ENTER**".

Entry into a permit required confined space may take place in one of three ways:

- Alternate Procedures-may be used where there are no safety hazards and atmospheric hazards controlled by ventilation
- Reclassification-spaces where all hazards have been eliminated
- Full Permit-safety or atmospheric hazards exist or exist or may exist and cannot be controlled

All spaces have been identified and classified as requiring one of these three types of entries depending on the hazards in the space and the type of work to be performed. The spaces and classifications are given in Appendix A.

(Refer to Section 2 of your manual for assistance in determining entry options)

Note that in all cases entry into a confined space requires some type of written documentation prior to entry. Forms for each type of entry are given in Appendixes B, C and D.

IF YOU ARE UNCLEAR AS TO WHAT PROCEDURE TO FOLLOW-
DEFAULT TO FULL PERMIT ENTRY PROCEDURES WITH AN ATTENDANT
AND RESCUE MEANS SINCE THIS IS THE SAFEST MEANS OF ENTRANCE.

Option One-Alternate Procedures

Alternate procedures allow for one-person entry so long as there are no safety hazards, AND the atmospheric hazards are controlled by ventilation. If you are entering a space for a job that is listed in Appendix A as requiring alternate procedures, you must obtain a signed Alternate Procedures Certification form from an entry supervisor prior to entry. Alternate Entry forms are given in Appendix B.

The atmosphere in the confined space must be tested every four feet top to bottom and side to side in all directions with a calibrated four-gas monitor prior to entry. (See GAS MONITORS/ATMOSPHERIC TESTING page 8) If levels are not within the given specifications then the supervisor should be contacted to make a determination on actions to be taken-including possibly requiring a full permit entry instead. If readings are within specifications, a blower used in the positive pressure mode must be used except where noted. The entrant must wear the gas monitor at all times during entry and should be able to communicate with an entry supervisor or program manager during the entire entry. If at any time the gas monitor alarm goes off, the entrant must immediately leave the space and contact the entry supervisor or program manager for further instructions.

Option Two-Reclassification

Reclassification of a space can take place when all safety and health hazards within a space can be completely eliminated. There are limited situations when reclassification can occur. If reclassification is to take place, obtain the appropriate signed Reclassification Certification Form (Appendix C) from the Entry Supervisor. Ensure that all hazards have been eliminated and verify that the atmosphere is acceptable prior to entry.

Note that reclassification is NEVER an option when entering a confined space to do work such as painting or welding since hazards are being introduced to the space that potentially create hazardous atmospheres.

Option Three-Full Permit Required Confined Space Entry

1. Obtain a confined space entry permit- from the Entry Supervisor. The signed permit is your authorization to evaluate the assigned confined space for entry for the purpose expressed by the Entry Supervisor and/or as described on the work order. The permit must be kept at the work site and be made available to entrants for the duration of the work being performed. The scope of the work performed cannot exceed that for which the permit was issued. (Models provided in Appendix D)

2. Required Personnel- At a minimum, there must be one entrant and one attendant for each PERMIT REQUIRED confined space.

(Note-The Town or Facility may wish to establish policy requiring two attendants to be present and remain outside a confined space throughout the duration of entrant occupancy either for ALL permit entries or for particular entries-List here).

3. Communication-Attendants and entrants must remain in continuous contact with each other. If visual contact cannot be maintained, effective communication must be maintained by portable radios or some other reliable, pre-approved means. All attendants must have radio communication readily available for the purpose of summoning off-site emergency services. Note that intrinsically safe, or explosion-proof equipment must be used inside the confined space if the potential for an explosive atmosphere exists.

4. Non-Entry Rescue-All authorized entrants must wear a full body harness with attached lifeline, hardhat and safety shoes. Protective clothing, gloves and eyewear must be used if determined to be necessary to protect against specific, potential or existing hazards.

All entrants must descend into a confined space while securely attached to a tripod/winch system, or other approved retrieval device. A secondary line for fall protection must be used if entrants are lowered into the space instead of climbing into the space on a ladder.

Detachment from the mechanical retrieval system is **prohibited** unless a pre-approved contingency plan is in effect for rescue. Refer to Non-Entry Rescue section of this policy for further information.

Attendants must always be at the confined space site ready to retrieve entrants whenever a prohibited condition occurs (e.g., entrant exhibits behavioral changes, gas monitor alarms).

5. Traffic Control/Protection of Opening-Determine if a police detail is necessary and ensure that one has been scheduled for traffic control in accordance with (City/Town) Work Zone Safety policy. Guard all openings if necessary to protect from falls with guardrails or other devices to prevent accidental falls through openings. A tripod can be used as a guarding device.

6. Atmospheric Testing/Ventilation Blowers-Provide initial atmospheric testing as required in GAS MONITORS/ATMOSPHERIC TESTING procedures given on pages 7-8 in this policy. If the atmosphere is within acceptable limits, then entry can occur. If not, a ventilation blower must be used. Retest the atmosphere to confirm that levels are acceptable. Ventilation blowers should be used continuously throughout the entry if the atmosphere had initially been outside of the acceptable range. See VENTILATION procedures given on page 9 of this policy.

Atmospheric testing with a gas monitor must be done continuously throughout the occupancy period. This can be done by having the gas monitor worn by the entrant in close proximity to his/her breathing zones (e.g., clipped to full body harness chest strap), or it can be done externally. If the attendant is responsible for monitoring the atmosphere, the tubing for the gas monitor should draw air from the vicinity of the breathing zone of the entrant.

Gas monitors/Atmospheric Testing

The gas monitors used at (Town/Facility) are (type). They will be kept (location) when not in use. (Name/Title) will be responsible for calibrating and maintaining the gas monitors. The monitors will be span calibrated (monthly) and factory calibrated (annually) in accordance with manufacturers recommendations.

1. **Check the date of the calibration** before each use to ensure proper functioning of the meter. ANY GAS MONITOR THAT IS OUT OF CALIBRATION WILL NOT BE USED.
2. **Fresh air calibrate gas monitor.** Be sure not to zero the instrument inside an area that may have background levels of contaminants.
3. **Use bump gas**-to confirm that the meter is reading properly and that the visual and auditory alarms are working. Bump gas is kept with the meter and verifies that the gas monitor is working properly between calibrations.

4. **Vent Openings/Manhole Covers-** If the confined space cover has a vent opening, obtain gas monitor readings before opening the confined space cover by inserting monitor probe 3 to 4 inches into cover vent hole. Do not remove cover if a reading of 50% of the LEL or greater is measured. Contact the Entry Supervisor for further instructions should this occur. (Refer to Section 8 of the manual page 14 for further information)

5. **Test Initially-** Prior to entry, test the confined space for atmospheric hazards. Test first for oxygen deficiency. If these levels are low the other sensors in the gas monitor may not work properly and cannot be relied on. Then check for LEL and toxics. **Under no circumstances can entry be attempted if alarm readings exist.**

NO ENTRY IF:

- Oxygen is lower than 19.5% or higher than 23.5% or,
- Hydrogen sulfide is greater than 10 ppm* or,
- LEL is greater than 10%,
- Carbon Monoxide greater than 35 ppm*

*(Note-Four Gas Meters always test for Oxygen and flammables, however the other two gases selected to be tested are dependent upon the hazards in the Space. Your facility may need to monitor gases other than carbon monoxide or hydrogen sulfide (such as chlorine or ammonia). In addition, the alarm settings for the toxic gases may be different for different gas monitors. Check with the gas monitor manufacturer and modify this section as required for your facility)

If a hazardous atmosphere develops during occupancy and the gas monitor alarms, all entrants **must exit immediately**.

WARNING: Certain work activities (e.g., opening a valve, cleaning debris from within a pipe or on surfaces, agitating water) can activate **sudden, life-threatening oxygen-deficient or toxic atmospheres**. Do not rely on the gas monitor alarm to provide sufficient warning time to self-rescue. It is possible for a worker to become immediately incapacitated and unable to move the moment a sudden life-threatening atmosphere develops. It is also possible that a gas monitor cannot detect the unexpected toxins in the confined space that are causing the life-threatening situation. This is why it is critical to maintain communication with the attendant and is the reason why you must stay attached to the rescue equipment during permit required entries.

Ventilation

Ventilation blowers used at (Facility/Town) are (gas/electric) and are located (location). (Person) is responsible for maintaining the blowers in good condition. If there is any problem with the blowers you must make him/her aware of the problem. (NOTE-If gas blowers are used they should be equipped with an exhaust hose to direct the exhaust away from the entrance of the confined space)

Forced **positive** air ventilation will be used to control atmospheric readings that are outside acceptable levels and/or cause the gas monitor to alarm. NO employee shall be allowed to enter until the hazardous atmosphere has been eliminated. If hazardous atmospheric conditions cannot be eliminated, the Entry Supervisor must cancel the permit and notify the Entrant and Attendant of hazardous atmospheric conditions.

Introduce fresh air near the bottom of the immediate area where the worker will be present. Position the fresh air intake in a clean air zone away from all combustion sources (e.g., vehicle exhaust).

NOTE-IF an additional hazard is being introduced to the space such as welding, then ADDITIONAL ventilation is required. See Welding section of this policy- page 10.

Non-Entry Rescue/Fall Protection

All permit required confined space entries will be done while attached to a tripod/harness winch system. If attached non-entry rescue is not possible due to the configuration of the space and there is a need to enter the space, then a full emergency rescue contingency plan will be developed

(See MWRA Reference Document in Rescue section 9 of Manual-pages 11-14)

All equipment will be inspected prior to use. A secondary line for fall protection will be used whenever the entrant is lowered into the space rather than climbing down a ladder. (Refer to Section 8 of Manual pages 1-2 for more details on proper use of tripod/harness/winch systems). (Name) is responsible for maintaining the tripod/harness winch system in good condition. If you notice any problems with the system, please let him/her know immediately.

Slack on the retrieval line must be avoided whenever entrants use a ladder or built-in rungs as the primary work platform. The retrieval system must be monitored by an attendant continuously throughout the occupancy period.

Personal Protective Equipment (PPE)

Entry into confined spaces may require the use of various types of personal protective equipment such as hardhats (for all permit entries), safety shoes, insulating or chemical protective gloves, eye protection and hearing protection. The Entry Supervisor will make the determination for the type of PPE required for a particular job. Entrants and attendants must wear the required PPE listed on the permit or certification. Note that only in unusual circumstances will respirators be required. If respirators are required, they must only be worn after training, fit testing and medical screening has occurred.

(Model PPE and Respiratory Protection Programs are provided on the CD)

Electrical Safety

If there is an electrical/hydraulic/mechanical/pneumatic/thermal/liquid energy source that an employee may be exposed to during servicing or maintenance of equipment in a confined space then it must be disabled or deenergized in accordance with the (Town/Facility Lockout/Tagout Policy/Procedure). Examples include disconnecting lines, blanking, physically blocking machinery, , locking electrical equipment, de-energizing electrical equipment and **verifying** that these procedures are complete before work begins.

(A model Lockout/Tagout program is provided on CD and in the Electrical Safety section of your manual)

Welding/Cutting in Confined Spaces

All welding, torching, brazing and cutting operations carried on in confined spaces must be done with extreme caution.

1. **Hot work Permit**-All hot work requires written authorization from the Program Manager or Entry Supervisor to insure that precautions are taken to prevent fires and to protect workers.

(A model hot work permit is provided in the Safety section of manual-page 90)

2. **Gas cylinders** and welding machines must be safely secured outside the confined space in a vertical position.

3. **Fuel gas and oxygen gas flows to the torch** must be positively shut off at some point outside of the confined space when not in use for an extended period of time (e.g., lunch time).

4. **Two types of ventilation are required-A portable, closed local exhaust ventilation system** with freely moveable hood shall be used to control the accumulation of toxic materials or possible oxygen deficiency. This ventilation shall operate in the EXHAUST mode and shall be located as close as possible to the work being performed. NOTE THAT THE EXHAUST hose for the welding must be located within inches of the work being performed in order to adequately exhaust the welding fumes. If the exhaust hose is placed more than one duct diameter away (i.e.-for an 8 inch duct, more than 8 inches from the welding) then you are getting only 10 % of the exhaust volume. Placing the exhaust far away from the source will do nothing to control the fumes from welding.

3. **Additional positive pressure ventilation** (ventilation blowers) will also be provided as it normally would be in a permit required confined space entry to control potentially hazardous atmospheres.

Completion of Work in Confined Spaces

When all work has been completed, the entry permit, or certification must be provided to the (Program Manager). If problems were encountered during the entry, this should immediately be discussed with the Entry Supervisor and Program Manager.

Training Requirements

(Responsible Person) will be responsible for ensuring that all employees in the Department are trained to the level of competency required by their job assignment. Initially, all entrants, attendants and entry supervisors must successfully complete a basic training program. The training program must provide employees with the information and hands-on experience and skills necessary to safely perform their assigned confined space job duties. This training will be done by (training source-or in house trainer).

(NOTE-Outside training sources may be used for this training, however all employees MUST BE TRAINED IN HOUSE AS WELL on the specific procedures and equipment used at their facility in accordance with this confined space policy).

In addition the (Program Manager/Trainer) will train all employees on the in-house equipment and policies and procedures outlined in this policy. Employees will be given the opportunity to ask questions about the policy. All employees will be provided with a copy of this policy and will be required to sign the attached form indicating that they understand the policy.

Annually, entrants and attendants must be provided with and successfully participate in a refresher training program. This refresher training will be done by (trainer). A training certification form will be filled out for each employee who is trained.

(A sample training certification form is provided in Appendix E)

Recordkeeping Requirements

Employee training records will be kept on file by the (Program Manager) for a period of three years. All written certifications and permits will be kept for a period of one year.

Contractors

Contractors hired by (Town/Facility) will be given a copy of this procedure required to follow this confined space procedure in addition to all applicable OSHA standards. All contractors will be informed of the hazards and potential

hazards in the confined spaces they will be entering. If procedures are not being followed, employees and supervisors should immediately notify the contractor that proper procedures are not being followed and if the contractor does not immediately correct the situation, the Program Manager must be notified to stop all work.

Reporting of Accidents or Near Misses

All accidents or near misses, including failures of retrieval systems, ventilation systems, gas monitor alarms sounding, etc. are to be reported to the Program Manager. The Program Manager will investigate and make changes as needed.

Review of Written Policy

This policy will be reviewed annually and revised as necessary. In addition, if a near miss or incident occurs, this policy will immediately be reviewed and revised if necessary.

Version/Revision #	
Date of Last Revision or Review	
Signature of Program Manager	

Confined Space Entry Policy and Procedures

I have read the Department's Confined Space Entry policy and understand what procedures to follow in order to safely enter a confined space. I have been provided with a copy of this policy and I understand that I am responsible for following these procedures and for notifying the entry supervisor or Program Manager if I feel an unsafe condition exists for me or my coworkers.

Signature _____ Date _____