Republic Indemnity®

Confined Space Entry Program

This sample program was developed to assist Republic Indemnity policyholders provide workplace protection for their employees and to reduce losses resulting from accidents and injuries. Remember, this is only a guide. Your business is unique and therefore you must chart your own course to ensure compliance with applicable laws and regulations. The material in this publication is based on principles and techniques developed by occupational safety and health professionals. It should not be considered exhaustive of all measures and controls that can be implemented by management to address all potential loss or injury producing causes. It is intended to provide guidance, rather than prescribe requirements and is not intended as a legal interpretation of any state standard, every county or city therein. This sample program must be maintained in order to be effective and may need additional elements to address specific hazards in your work environment. The effectiveness of any loss prevention program should be periodically reassessed against actual loss experience and updated as needed to address new or developing hazards in your work environment.

We strongly encourage that your company customize this sample program by reviewing each section and making appropriate entries or modifications to the program to address your particular business operations and hazard exposures. Most sections of this document can be modified as necessary. Prompts have been included throughout the document where it is advisable to enter your company name and the name(s) of designated responsible personnel. Some forms have protected content and cannot be modified. Forms are designed to be printed for later use.

We hope that you will find this safety program material useful in helping to maintain a safe worker environment.

Confined Space Entry Program

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Preface

Overview

The purpose of this plan is to establish a program and procedures for safe entry into confined spaces.

The National Institute for Occupational Safety and Health (NIOSH) defines "Confined Space" as a space which by design has limited openings for entry and exit, unfavorable natural ventilation which could contain or produce dangerous air contaminants, and which is not intended for continuous employee occupancy.

According to OSHA **1910.146(b)**, "Confined space" is defined as a space that:

(1) Is large enough and so configured that an employee can bodily enter and perform assigned work; and
(2) Has limited or restricted means for entry or exit (for example, tanks, vessels, silos, storage bins, hoppers, vaults, and pits are spaces that may have limited means of entry.); and
(3) Is not designed for continuous employee occupancy.

Management Policy Statement

Company name: _____has designated Name and title: _____ as Program Administrator for the Confined Space Program.

Permit Entry Confined Space

"Permit-required confined space (permit space)" means a confined space that has one or more of the following characteristics:

- Contains or has a potential to contain a hazardous atmosphere
- Contains a material that has the potential for engulfing an entrant
- Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor which slopes downward and tapers to a smaller cross-section
- Contains any other recognized serious safety or health hazard

An entry is considered to have occurred when any part of a person's body crosses the plane of an opening to the space.

Employer Program Requirements

Company name: _____has established a Confined Space Program that contains the following elements:

- Company name: _____shall evaluate the workplace to determine if any spaces are actual or potential permit-required confined spaces (Attachment D).
- If the workplace contains permit-required spaces, the employer shall inform exposed employees of the existence and location of and the danger posed by the permit spaces. Notice will be given by posting danger signs or by any other equally effective means. A sign reading DANGER - PERMIT-REQUIRED CONFINED SPACE, DO NOT ENTER or using other similar language would satisfy the requirement for a sign (Attachment E).
- Training will be provided for all workers whose work is regulated by OSHA 1910.146 in order for the workers to acquire the understanding, knowledge, and skills necessary for the safe performance of the duties assigned.
- Provide the necessary protective clothing and personal protective equipment at no cost to employees, maintain that equipment properly, and ensure that employees use that equipment properly.
- To facilitate non-entry rescue, retrieval systems or methods shall be used whenever an authorized entrant enters a permit space, unless the retrieval equipment would increase the overall risk of entry or would not contribute to the rescue of the entrant.
- Assuring the ready availability of rescue and safety related equipment or services, such as lifting or retrieval devices and others, necessary for the entry.
- When entrance covers are removed, the opening shall be promptly guarded by a railing, temporary cover, or other temporary barrier that will prevent an accidental fall through the opening and that will protect each employee working in the space from foreign objects entering the space.
- Before an employee enters the space, the internal atmosphere shall be tested, with a calibrated direct-reading instrument, for oxygen content, for flammable gases and vapors, and for potential toxic air contaminants, in that order. Any employee who enters the space, or that employee's authorized representative, shall be provided an opportunity to observe the pre-entry testing required by this paragraph.

- Providing an attendant for each entry where required.
- Establish an entry permit system. This is covered in the policy section on ENTRY PERMIT SYSTEM.

Entry Permit System

An Entry Permit is a document prepared by Company name: _____
(See sample Attachment B). The Entry Permit is to be used as a checklist to document the completion of all steps necessary to prepare for a safe entry to a permit-required space. The Entry Permit shall identify:

- The permit-required space to be entered
- Purpose of the entry
- Date and the authorized duration of the entry permit
- Authorized entrants within the permit space
- Personnel, by name, currently serving as attendants
- The individual, by name, currently serving as entry supervisor
- Hazards of the permit-required space to be entered
- Measures used to isolate the permit-required space and to eliminate or control permit-required space hazards before entry
- The acceptable entry conditions
- Results of initial and periodic test performed to evaluate permit space conditions
- Rescue and emergency services that can be summoned and the means
- Communication procedures used by authorized entrants and attendants
- Equipment, such as personal protective equipment, testing equipment, communications equipment alarms and rescue equipment
- Any other information necessary given the circumstances of the particular confined space, in order to ensure worker safety and any additional permits, such as for hot work, that have to be issued to authorize work in the permit space

Responsibilities

Program Administrator Responsibilities

The Program Administrator is the person responsible for:

- Issuing and administering the program and making sure that it satisfies the requirements of all applicable federal, state and local confined space requirements
- Evaluating and updating the program
- Training and retraining employees

Duties of the Entry Supervisor In Charge of the Entry

The Entry Supervisor means the person responsible for determining whether acceptable entry conditions are present at a permit-required space when entry is planned. The Entry Supervisor is also responsible for authorizing entry, overseeing entry operations, and for terminating entry. Additionally, the Entry Supervisor is required to:

- Know the hazards that may be faced during entry, including information on the mode, signs or symptoms, and consequences of the exposure
- Verify, by checking that the appropriate entries have been made on the entry permit, that all tests specified by the permit have been conducted and that all procedures and equipment specified by the permit are in place before endorsing the permit and allowing entry to begin
- Terminate the entry and cancel the permit as required
- Verify that rescue services are available and that the means for summoning additional services are operable
- Remove unauthorized individuals who enter or who attempt to enter the permit space during entry operations
- Determine, when responsibility for a permit-required space entry operation is transferred
- At intervals dictated by the hazards and operations performed within the space, determine that entry operations remain consistent with terms of the entry permit and that acceptable entry conditions are maintained

Authorized Entrant Duties

Authorized entrants are required to:

- Know space hazards, including information on the means of exposure such as inhalation or dermal absorption, signs of symptoms and consequences of the exposure.
- Use appropriate personal protective equipment properly
- Maintain communication with the attendants as necessary to enable attendants to monitor the entrant's status and alert the entrant to evacuate if necessary.
- Exit from the permit-required space as soon as possible when:
    - Ordered by the authorized person
    - Recognizing the warning signs or symptoms of exposure
    - A prohibited condition exists
    - An automatic alarm is activated
- Alert the attendant when a prohibited condition exists or when warning signs or symptoms of exposure exist.

Attendant Duties

Attendant means an individual stationed outside one or more permit-required spaces who monitors the authorized entrants and who performs all attendant's duties assigned in the employer's permit space program.

The attendant is required to:

- Remain outside the permit space during entry operations unless relieved by another authorized attendant

- Perform non-entry rescues when specified by the employer's rescue procedure
- Know the existing and potential hazards, including information on the mode of exposure, signs or symptoms, consequences and psychological effects
- Maintain communication with and keep an accurate account of those workers entering the permit-required space
- Order evacuation of the permit space when:
    - A prohibited condition exists
    - A Worker shows signs of physiological effects of hazard exposure
    - An emergency outside the confined space exists
    - The attendant cannot effectively and safely perform the required duties
- Summon rescue and other services during an emergency
- Ensure that unauthorized people stay away from permit spaces or exit immediately if they have entered the permit space
- Inform unauthorized entrants and the entry supervisor if any unauthorized person enters the permit space
- Perform no other duties that interfere with the attendants primary duties

Pre-Entry Procedures

Testing

Testing is the process of identifying and evaluating the hazards that may confront entrants of a permit-required space. Testing includes specific tests that are to be performed in the permit-required space. Testing enables employers to devise and implement adequate control measures for the protection of authorized entrants and to determine if acceptable entry conditions are present immediately prior to, and during entry.

Evaluation Testing

The atmosphere of a confined space should be analyzed using equipment of sufficient sensitivity and specificity to identify and evaluate any hazardous atmospheres that may exist or arise. Testing is done so that appropriate permit entry procedures can be developed and acceptable entry conditions created for that space. Evaluation and interpretation of the data, and development of the entry procedure, should be done by, or reviewed by, a technically qualified professional based on evaluation of all serious hazards (e.g., OSHA consultation service, or certified industrial hygienist, registered safety engineer, certified safety professional, certified marine chemist, etc.).

Verification Testing

The atmosphere of a permit space which may contain a hazardous atmosphere should be tested for residues of all contaminants identified by evaluation testing. Testing should be performed using permit specified equipment to determine that residual concentrations at the time of testing and entry are within the range of acceptable entry conditions. Results of testing (i.e., actual concentration, etc.) should be recorded on the permit in the space provided adjacent to the stipulated acceptable entry condition.

Duration of Testing

Measurement of values for each atmospheric parameter should be made for at least the minimum response time of the test instrument specified by the manufacturer.

Testing stratified atmospheres. When monitoring for entries involving a descent into atmospheres that may be stratified, the atmospheric envelope should be tested at a distance of approximately 4 feet (1.22 m) in the direction of travel and to each side. If a sampling probe is used, the entrant's rate of progress should be slowed to accommodate the sampling speed and detector response.

Order of Testing

First, perform a test for oxygen because most combustible gas meters are oxygen dependent and will not provide reliable readings in an oxygen deficient atmosphere. Secondly, test for combustible gases because the threat of fire or explosion is both more immediate and more life threatening, in most cases, than exposure to toxic gases and vapors. If tests for toxic gases and vapors are necessary, they are performed last.

The atmosphere may be safe upon entry, but can change very quickly. The work performed within the confined space (such as welding, degreasing, painting or sanding) may produce toxic atmospheres. Monitoring is the only way to detect whether a hazardous atmosphere has developed during entry.

A worker should assume that every confined space may contain a hazardous atmosphere. Therefore, perform testing before each entry, even when re-entering a confined space after a one hour break.

Training Requirements

Company name: _____shall provide training so that all employees whose work is regulated by OSHA 1910.146 acquire the understanding, knowledge, and skills necessary for the safe performance of the duties as follows:

- Training shall be provided to each affected employee at the following times:
    - Before the employee is first assigned to duties related to permit-required spaces;
    - Before there is a change in assigned duties;
    - When there is a change in permit-required space operations that presents a hazard about which the worker has not previously been trained; or
    - Whenever (ENTER YOUR COMPANY NAME HERE) has reason to believe either that there are deviations from the permit-required space entry procedures or that there are inadequacies in the employee's knowledge or use of these procedures.
- The training shall establish employee proficiency in the duties required by permit-required spaces and shall introduce new or revised procedures, as necessary, for compliance with OSHA 1910.146.
- Company name: _____shall certify that the training required has been accomplished. The certification shall contain each employee's name, the signatures or initials of the trainers, and the dates of training. The certification shall be available for inspection by employees and their authorized representatives.

Personal Protection Equipment (PPE)

Personal protective equipment (PPE) is defined as protective equipment for eyes, face, head, and extremities, protective clothing, respiratory devices, and protective shields and barriers. PPE shall be provided, used, and maintained in a sanitary and reliable condition wherever it is necessitated by the hazards of processes or environment, chemical hazards, radiological hazards, or mechanical irritants which may be encountered in a manner capable of causing injury or impairment in the function of any part of the body through absorption, inhalation or physical contact.

Company name: _____is responsible for providing the proper PPE to the workers and is responsible for replacement and repairs as necessary. Employers are also responsible for providing adequate training on the proper use of the equipment, and for enforcing its use and wear.

Respiratory devices/protection is needed whenever:

- An emergency exists and entry cannot be delayed. Assume that an immediate danger to life and health (IDLH) atmosphere exists.
- There is an inert atmosphere or testing shows that an IDLH exists and additional ventilation cannot reduce concentrations to safe levels.
- Current testing indicates atmosphere to be safe, but unsafe conditions could reasonably be expected to develop at any time.

Isolation

"Isolation" means the process by which a permit-required space is removed from service and completely protected against the release of energy and material into the space by such means as: blanking or blinding; misaligning or removing sections of lines, pipes, or ducts; a double block and bleed system; lockout or tagout of all sources of energy; or blocking or disconnecting all mechanical linkages.

Blanking or binding refers to the absolute closure of a pipe, line, or duct. This is done by completely covering the bore with a fastened solid plate that is capable of withstanding the maximum pressure of the pipe, line, or duct without leaking. Double block and bleed refers to the closure of a line, duct, or pipe by closing and locking or tagging two in-line valves and by opening and locking or tagging a drain or vent valve in the line between the two closed valves.

To protect workers against most mechanical hazards, the following methods can be used:

- Physical guards that preclude contact with moving parts.
- Isolation and/or barricading of machinery or equipment that may be accidentally contacted or activated.
- Lockout or Tagout of a machine. Lockout refers to the installation of a lock that prevents another employee from turning on the machine. Tagout refers to the attaching of a sign or label to the isolated machine warning others not to operate it.

In order to avoid electrical hazards, the following methods can be used:

- Inspect all electrical equipment and circuits for proper classification (wet locations or areas otherwise classified as being hazardous).

- Use ground fault circuit interrupters (GFCI) where required and ensure proper grounding of all circuits.
- De-energize circuits and implement lockout/tagout programs where required.
- Use only explosion-proof equipment and spark-proof tools where required.
- Ensure all electrical parts are properly covered, protected, and maintained.

Contractors

When Company name: _____ arranges to have employees of another employer (contractor) perform work that involves permit-required space entry, the host employer shall:

- Inform the contractor that the workplace contains permit-required spaces and that permit-required space entry is allowed only through compliance with a permit space program.
- Apprise the contractor of the elements, including the hazards identified and the host employer's experience with the space that have made the space in question a permit-required space.
- Apprise the contractor of any precautions or procedures that the host employer has implemented for the protection of employees in or near permit spaces where contractor personnel will be working.
- Coordinate entry operations with the contractor, when both host employer personnel and contractor personnel will be working in or near permit spaces.
- Debrief the contractor at the conclusion of the entry operations including any hazards confronted or created in the permit-required spaces during entry operations.

In addition to complying with the permit space requirements that apply to all employers, each contractor who is retained to perform permit-required space entry operations shall:

- Obtain any available information regarding permit-required space hazards and entry operations from the host employer.
- Coordinate entry operations with the host employer, when both host employer personnel and contractor personnel will be working in or near permit spaces.
- Inform the host employer of the permit space program that the contractor will follow and of any hazards confronted or created in permit spaces, either through a debriefing or during the entry operation.

Rescue Operations

Depending on the severity of the emergency, different rescue methods can be employed. When the emergency is minor, self-rescue is often the best approach; however if the worker is disabled, it is likely that non-entry or entry rescue, the latter of which involves putting others at risk, will be necessary.

The following requirements apply to employers who have employees who will enter permit-required spaces to perform rescue services:

- The employer shall ensure that each member of the rescue service is provided with, and is trained to use properly, the personal protective equipment and rescue equipment necessary for making rescues from permit-required spaces.
- Each member of the rescue service shall be trained to perform the assigned rescue duties.

- Each member of the rescue service shall practice making permit-required space rescues at least once every 12 months. Rescues should be simulated by removing dummies, manikins, or actual persons from the actual permit-required spaces or from representative permit-required spaces.
- Each member of the rescue service shall be trained in basic first aid and cardiopulmonary resuscitation (CPR). At least one member of the rescue service should hold current certification in first aid and CPR shall be available.

When Company name: _____ (host employer) arranges to have other persons other than the host employer's employees perform permit space rescue, the host employer shall:

- Inform the rescue service of the hazards they may confront when called on to perform rescue at the host employer's facility.
- Provide the rescue service with access to all permit-required spaces from which rescue may be necessary so that the rescue service can develop appropriate rescue plans and practice rescue operations.

To facilitate non-entry rescue, retrieval systems or methods shall be used unless retrieval equipment would increase the overall risk of entry or would not contribute to the rescue of the entrant. Retrieval systems shall meet the following requirements:

- Each authorized entrant shall use a chest or full body harness, with a retrieval line attached at a suitable point so that when rescued, the entrant presents the smallest possible profile (for example at the center of the entrant's back near shoulder level, or above the entrant's head). Wristlets may be used in lieu of the chest or full body harness if the employer can demonstrate that the use of a chest or full body harness is infeasible or creates a greater hazard and that the use of wristlets is the safest and most effective alternative.
- The other end of the retrieval line shall be attached to a mechanical device or fixed point outside the permit space in such a manner that rescue can begin as soon as the rescuer becomes aware that rescue is necessary. A mechanical device shall be available to retrieve personnel from vertical type permit spaces more than 5 feet deep.

If an injured entrant is exposed to a substance for which a Material Safety Data Sheet (MSDS) or other similar written information is required to be kept at the worksite, that MSDS or written information shall be made available to the medical facility treating the exposed entrant.

Hot Work Permit

Hot work includes any operation capable of providing a source of ignition. Examples include electrical tools with open brushes and commutators or any device that produces sparks or could become an ignition source. One of the dangers of hot work operations is the increased risk of fire and explosion because of an ignition source into a space with an already hazardous atmosphere.

Employers must evaluate existing hazards within the space and potential hazards created from hot work operations, and then:

- Take special precautions (such as improving ventilation, inspecting frayed wires, implementing fire-suppression measures or using low-voltage, non-sparking tools) to reduce potential hazards.
- Have a written hot work permit for every hot work operation (Attachment A).

Attachment A

(Sample) Hot Work Permit

(Attach to Entry Permit)

Company Name: _____

Date: _____ Issue time: _____ Expiration time: _____
Location of permit space: _____ Work tasks: _____
_____

Potential Hazards

O Toxic
O Corrosive
O Flammable
O Radioactive
O Energy release _____
O Stored energy _____
O Electrical
O Mechanical
O Fire/heat
O Spills

Authorized Workers

Entrants: _____
_____
Attendant(s):_____
Fire/safety watch: _____

Procedures/Precautions

O Procedures
O Communications
O Entry permit
O Ventilation
O Training
O CPR/first aid
O Rescue plan
O Sprinkler system in service
O Charged fire hose
O Surfaces wetted down
O Shower/eyewash located

Safety Equipment

O Hard hat
O Eye protection
O Hearing protection
O Foot/hand protection
O Protective clothing
O SCBA
O Respirator
O Tripod
O Barricade/cones
O Communication devices
O First aid kit
O Fire extinguisher

Vessel Prep/Isolation

O Cleaning/purging
O Ventilation
O Signs/barriers
O Lagging cloths/tarps
O Lock-out/Tag-out
O Blanking/bleeding
O Disconnect mechanical linkages
O Secure moving parts

Special Tools

O Low voltage

O Non-sparking
O Tools inspected for frayed/broken wires
O Lighting-intrinsically safe

O _____
O _____

Special Work Procedures

O Never bring gas cylinders or other large equipment into space
O Never block entry/exit with equipment
O Shut down during breaks or overnight
O Fire watch to remain 30 minutes after completion of hot work
O _____
O _____

Entry authorizer (name, title, date): _____

Emergency contact: _____
_____

Attachment B
Confined Space Entry Permit (sample)
(Enhanced Title 8 Version)

Permit valid for 8 hours only. All copies of permit will remain at job site until job is completed.
Site Location and Description: _____
Date _____ Time _____
Purpose of Entry: _____

NATURE OF CONFINED SPACE HAZARD		
____ Oxygen deficiency (less than 19.5%)	____ Oxygen over 23.5%	____ Materials harmful to skin
____ Flammable gases/vapors above 10% of lower explosive limit (LEL)	____ Toxic gases/vapors greater than permissible exposure limit (PEL)	____ Electrical lockout
____ Mechanical hazards	____ Electrical shock	____ Engulfment
____ Valve out/isolation	____ Other(s) _____	

BOLD DENOTES MINIMUM REQUIREMENTS TO BE COMPLETED AND REVIEWED PRIOR TO ENTRY

Preparation Completed	Date	Time
Lock out/de-energize/try-out		
Line(s) broken/capped/blanked		
Secure area (post & flag)		
Breathing apparatus		
Resuscitator/inhalator		
Cleaned, drained, washed & purged		
Ventilation for fresh air		
Emergency response team available		
Employees informed of specific Hazards		
Procedures reviewed with each Employee		
Atmospheric test in compliance		
Continuous monitoring required		
Hot work permit attached (if required)		
Other(s)		

Requirements Completed	Date	Time
Full body harness w/"D" ring		
Emergency escape retrieval equipment		
Lifelines		
Lighting (explosion-proof)		
Protective clothing (PPE)		
Respiratory equipment (specify)		
Communication equipment (specify)		
Rescue equipment (specify)		
Rescue service Phone #		

CONTINUOUS MONITORING Test(s) to be Taken	PERMISSIBLE Entry Level	RECORD MONITORING RESULTS/TIME
Percent of Oxygen	19.5% to 23.5%	
Lower flammable limit	< 10%	
Carbon Monoxide	< 25 ppm*	
Aromatic Hydrocarbon	1-5 ppm	
Hydrogen Cyanide	4.7 ppm (Skin)**	
Hydrogen Sulfide	10 ppm* 15 ppm**	
Sulfur Dioxide	2 ppm* 5 ppm**	
Ammonia	25 ppm* 35 ppm**	
Other(s)		

*8 hour time-weighted average: Employee can work in area 8 hours (longer with appropriate respiratory protection).
**Short-term exposure limit: Employee can work in the area up to 15 minutes.
Remarks:

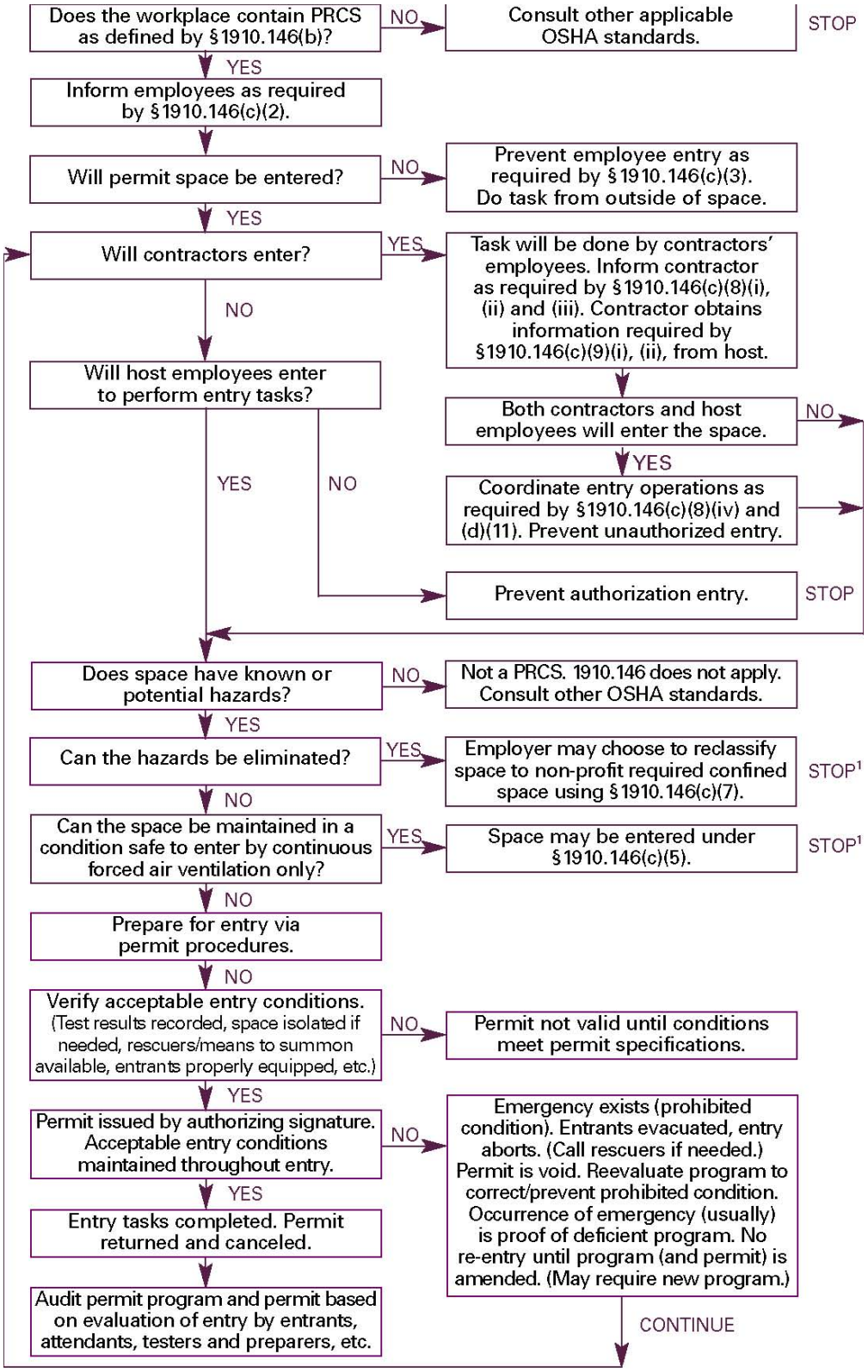
Gas Tester Name & Check #	Instruments Used	Model &/or Type	Serial &/or Unit #

SAFETY STANDBY ATTENDANT IS REQUIRED FOR ALL CONFINED SPACE WORK

Confined Space Entrants	Entry Time	Exit Time	Safety Standby Person(s)	Ambulance Phone #	Fire Dept. Phone #

SUPERVISOR AUTHORIZATION: I certify that all required precautions have been taken and necessary equipment is provided for safe entry and work in this confined space.
Name (Print) _____ Time:_____ Date:_____ Signature: _____
Permit Cancelled _____ Time:_____ Date:_____ Signature: _____

Attachment C
Permit-Required Confined Space Decision Flow Chart



Confined Space Evaluation Worksheet

"Confined space" means a space that: is large enough and so configured that an employee can bodily enter and perform assigned work, and has limited or restricted entry or exit, and is not designed for continuous employee occupancy.

Directions: Use this worksheet to help you evaluate the workplace to determine if any spaces are actual or potential permit-required confined spaces.

Evaluation Completed By:	**Date:**	**Hazards**				
Confined Space	**Location**	**Oxygen**	**Explosive**	**Toxic**	**Other Hazards**	**Provide Details of Hazard or Space**

Attachment E
Confined Space Poster

DANGER

PERMIT-REQUIRED

CONFINED SPACE

DO NOT ENTER