ROSE STATE COLLEGE

Confined Space Entry Program

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James M. Templeman

Safety and Risk Management Office
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Office: 733-6213
Cell: 420-8216

Developed in accordance with the OSHA Permit-Required Confined Space Standard, 29 CFR 1910.146

Introduction

Entering and working in confined spaces has been and will continue to be an integral part of daily activity by Rose State College (RSC or College) employees. This document has been developed to ensure the safety of personnel required to enter and conduct work in confined spaces. The program contained herein describes reasonable and necessary policies and procedures for any and all facilities, departments, and individuals who are associated with confined space entry operations. This program and all parts of 29 CFR 1910.146 shall apply to all confined space entry operations conducted at Rose State institutions. As it is the policy of Rose State College to provide its employees with the safest work environment possible, the College requires compliance with the procedures set forth in this manual. A site-specific program may be used, providing it meets or exceeds the requirements set forth in this policy.

Program Contents

This program has been organized into four sections:

1. Identifying Confined Spaces -
   Department Heads or their designated representatives should determine if any personnel under their supervision are required to enter or conduct work in confined spaces as defined in this section.

2. Identifying Confined Space Hazards -
   This section gives information on the types of hazards that may be present in a confined space. It should be reviewed whenever the hazards of a confined space are being evaluated.

3. Conducting a Confined Space Entry -
   If it is determined that department personnel are required to perform duties in confined spaces, the program outlined in The Permit System should be implemented.

4. Responsibilities and Training Requirements -
   This section lists the responsibilities and training requirements of each individual involved in a confined space entry.

   Appendix A: Confined Space Entry Permit

   Appendix B: Procedures for Atmospheric Testing

   Appendix C: Confined Space Entry Program Training Roster

Part 1: Identifying Confined Spaces

Recognition is an important aspect of making a safe entry into a confined space. All confined spaces located within a facility or under the facility's control should be identified. Once the space has been identified as Confined, the RSC Safety and Risk Management Coordinator shall determine if a permit is required.

All employees shall be made aware of these confined spaces through training or instruction provided by their supervisor or designated representative. Assistance in this training shall be provided by the Safety and Risk Management Coordinator.

All employees shall be instructed by their supervisor or designated representative that entry into a confined space is prohibited without an authorized permit.

To clarify what constitutes a Confined Space, the following definition will be used. A confined space is any space that has the following characteristics:

1. **It is large enough or so configured that an employee can bodily enter and perform assigned work.**

2. **It has limited or restricted means for entry or exit.**
   Confined-space openings are limited primarily by size and location. Openings may be small in size and may be difficult to move through easily. However, in some cases openings may be very large; for example, open-topped spaces such as pits or excavations. Entrance and exit may be required from top, bottom, or side. In some cases, having to access the work area by a fixed ladder may constitute limited or restricted entry or exit. Size or location will generally make rescue efforts difficult.

3. **It is not designed for continuous employee occupancy.**
   Most confined spaces are not designed for employees to enter and work on a routine basis. They may be designed to store a product, enclose materials and processes, or transport products or substances. Because they are not designed for continuous occupancy, frequently they will not have good ventilation or lighting. Therefore, occasional employee entry for inspection, maintenance, repair, cleanup, or similar tasks, can be difficult and dangerous. The danger associated with entry may come from chemical or physical hazards within the space.

Not all confined spaces will be considered permit-required confined spaces, and being able to identify the difference between the two is important.

A **Non-Permit Confined Space** is a confined space that does not contain, nor has the potential to contain, any hazard capable of causing death or serious physical harm. Examples of non-permit required confined spaces might include the interiors of HVAC units, certain air plenums and pipe chases, attics, walk-in freezers or refrigerators, and some building crawl spaces.

A **Permit-Required Confined Space** is a confined space that *is* potentially hazardous. A permit-required confined space has one or more of the following characteristics:

1. Contains or has a potential to contain a hazardous atmosphere.
2. Contains a material that has the potential for engulfing an entrant.
3. Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly-converging walls or by a floor that slopes downward and tapers to a smaller cross-section; or
4. Contains any other recognized serious safety or health hazard. Examples of serious safety or health hazards might include:
    - Fall hazards
    - Unguarded machinery
    - Extreme heat or cold
    - Steam pipes or chemical lines
    - Hazardous noise levels
    - Electrical hazards
    - Presence of asbestos
    - Potentially hazardous levels of dust (such as might occur at the Feed Mill)

Because of the lack of ventilation in most confined spaces, they will have the potential for a hazardous atmosphere. Therefore, they must be designated "permit-required," and the procedures for making entry into a permit-required space must be followed. Examples of permit-required confined spaces at Rose State College include sewers, electrical vaults, steam tunnels, sump pits, certain mechanical rooms, some excavations, and other types of enclosures.

Any space that is accessed by lifting a manhole cover shall be considered a permit-required confined space. These areas shall be clearly marked as permit-required spaces.

RSC has two blanket designations concerning permit-required confined spaces:

- Steam tunnels, regardless of access, shall be considered permit-required confined spaces (i.e., as soon as you step into a steam tunnel, you are in a permit-required confined space, even if you walked into it through a mechanical room).
- Attics are not considered to be permit-required confined spaces.

Supervisors are directly responsible for ensuring the safety of their employees in regards to confined spaces. It is their responsibility to evaluate potentially hazardous spaces within their facilities and areas to ensure that the proper precautions are taken for safety. This includes clearly marking permit-required confined spaces, training employees, and ensuring proper entry procedures are followed. These responsibilities may be delegated to another competent person provided he/she is qualified.

Physical Plant supervisors are responsible for ensuring their employees are properly trained to do the jobs they are sent to do. This includes recognition of confined spaces and proper procedures for making entry into permit-required confined spaces whenever necessary. ***No Physical Plant employee shall be sent on a job that potentially involves work in a confined space unless they have been properly trained in confined space entry procedures***.

It may be determined that a confined space presents no real danger for employees. However, it is recommended that all spaces be considered potentially dangerous until they have been evaluated and tested. Once a space has been evaluated, the Safety and Risk Management Coordinator shall determine if the confined space requires a permit and will apply appropriate labeling.

Part 2: Identifying Confined Space Hazards

Once a space has been identified as confined, the hazards that may be present within the confined space must be identified. Confined-space hazards can be grouped into the following categories:

- Oxygen-deficient atmospheres
- Flammable atmospheres
- Toxic atmospheres
- Mechanical and physical hazards

Every confined space must be evaluated for these four types of hazards. The three types of atmospheric hazards are often the most difficult to identify since they might not be detected without the assistance of a gas monitor.

Oxygen-Deficient Atmospheres

The normal atmosphere is composed of approximately 21% oxygen and 79% nitrogen. An atmosphere containing less than 19.5% oxygen shall be considered oxygen-deficient. The oxygen level inside a confined space may be decreased as the result of either consumption or displacement.

There are a number of processes that consume oxygen in a confined space. Oxygen is consumed during combustion of flammable materials, as in welding, cutting, or brazing. A more subtle consumption of oxygen occurs during bacterial action, as in the fermentation process. Oxygen can also be consumed during chemical reactions such as in the formation of rust on the exposed surfaces of a confined space. The number of people working in a confined space and the amount

of physical activity can also influence oxygen consumption. Oxygen levels can also be reduced as the result of oxygen displacement by other gases.

Flammable Atmospheres

Flammable atmospheres are generally the result of flammable gases, vapors, dust mixed in certain concentrations with air, or an oxygen-enriched atmosphere.

Oxygen-enriched atmospheres are those atmospheres that contain an oxygen concentration greater than 22%. An oxygen- enriched atmosphere will cause flammable materials such as clothing and hair to burn violently when ignited.

Combustible gases or vapors can accumulate within a confined space when there is inadequate ventilation. Gases that are heavier than air will accumulate in the lower levels of a confined space. Therefore, it is especially important that atmospheric tests be conducted near the bottom of all confined spaces.

The work being conducted in a confined space can generate a flammable atmosphere. Work such as spray painting, coating, or the use of flammable solvents for cleaning can result in the formation of an explosive atmosphere. Welding or cutting with oxyacetylene equipment can also be the cause of an explosion in a confined space and shall not be allowed without a hot work permit. Oxygen and acetylene hoses may have small leaks in them that could generate an explosive atmosphere and, therefore, should be removed when not in use. The atmosphere shall be tested continuously while ***any*** hot work is being conducted within the confined space.

Toxic atmospheres may be present within a confined space as the result of one or more of the following:

- The Product Stored in the Confined Space

  When a product is stored in a confined space, the product can be absorbed by the walls and give off toxic vapors when removed or when cleaning the residual material. The product can also produce toxic vapors that will remain in the atmosphere due to poor ventilation.

- The Work Being Conducted in the Confined Space

  Toxic atmospheres can be generated as the result of work being conducted inside the confined space. Examples of such work include: Welding or brazing with metals capable of producing toxic vapors, painting, scraping, sanding, etc. Many of the solvents used for cleaning and/or degreasing produce highly toxic vapors.

- Areas Adjacent to the Confined Space

  Toxic fumes produced by processes near the confined space may enter and accumulate in the confined space. For example, if the confined space is lower than the adjacent area and the toxic fume is heavier than air, the toxic fume may "settle" into the confined space.

Mechanical and Physical Hazards

Problems such as rotating or moving mechanical parts or energy sources can create hazards within a confined space. All rotating or moving equipment such as pumps, process lines, electrical sources, etc., within a confined space must be identified.

Physical factors such as heat, cold, noise, vibration, and fatigue can contribute to accidents. These factors must be evaluated for all confined spaces.

Excavations could present the possibility of engulfment. Employees shall be protected from cave-ins by sloping, benching, or shoring systems when the depth of the excavation is more than four feet, in accordance with 29 CFR 1926.652. In some circumstances, air-monitoring may also be required.

Part 3: Conducting a Confined Space Entry

When a confined space must be entered, a permit shall be completed and authorized by department heads, supervisors, or their designated representatives prior to entry of the confined space. This permit shall serve as certification that the space is safe for entry. The permit shall contain the date, the location of the space, and the signature of the person providing the certification.

A permit shall not be authorized until all conditions of the permit have been met. Supervisors or their designated representatives shall instruct all employees to list their names on the authorized permit before they will be allowed to enter a confined space. The permit to be used by Rose State College personnel can be found in the Appendix of this manual.

A. Plan the Entry

The first step towards conducting a safe confined-space entry is to plan the entry. This will allow for the identification of all hazards, and for the determination of all equipment necessary to complete the project.

1. Gather general data:
    - Identify the confined space. Give the name or location of the confined space.
    - Give the reason for entering the confined space. Be specific. Also, identify if hot work will be done.
    - Identify the contents of the confined space. This refers to any chemicals or other materials and energy that are usually present in the confined space.

2. Identify the Hazards

NOTE: Atmospheric testing shall be conducted prior to entering permit-required confined spaces. It is recommended that the entry supervisor conduct these tests; however, any competent person certified in confined space entry may do so.

- The entry supervisor will determine the oxygen content and record this on the entry permit.
- The entry supervisor will determine flammable gas content and record this on the entry permit.
- The entry supervisor will determine levels of H2S and Carbon Monoxide and record this on the entry permit.
- If a toxic substance is determined to be in the confined space during testing by the entry supervisor, the Safety and Risk Management Coordinator shall be contacted to assist in obtaining a Material Safety Data Sheet or other chemical information to determine what type of personal protective equipment is required, the potential health effects, the Permissible Exposure Limits, and any other information needed to safely conduct the work.
- Entry supervisors will determine mechanical and physical hazards. They should list all items and energy that will require lockout/tagout, blanking and bleeding, disconnecting, or securing. Physical hazards should also be listed.

3. Ventilate the Confined Space
   Indicate whether mechanical or natural ventilation will be used. Describe the procedures to be used.

   NOTE: If mechanical ventilation is to be used, the exhaust must be pointed away from personnel or ignition sources. Also, mechanical ventilators should be bonded to the confined space.

4. Isolate the Confined Space
   Describe the procedures for disconnecting equipment or lockout and tagout. All mechanical, electrical, or heat-producing equipment should be disconnected or locked and tagged out. This would also include any pumps that pull fluid from, or pump fluid into, the confined space.

5. Purge/Clean the Confined Space
   Indicate if the confined space will be purged. Purging with inert gas is not recommended. If the space must be purged, describe the procedures.
   Indicate the type of cleaning methods to be used. If chemical cleaners are to be used, name the type and describe the procedures. The MSDS for the chemical should be consulted prior to use. **NOTE: When introducing a chemical into a confined space, the compatibility of that chemical with the contents of the confined space must be checked. If in doubt, consult the Safety and Risk Management Coordinator.**
   NOTE: If steam is to be used, the hose should be bonded to the confined space.

6. Place Warning Signs
   Indicate if warning signs or barriers will be needed to prevent unauthorized entry or to protect workers from external hazards. If the confined space will be left open and unattended for any length of time, warning signs, and barriers such as barricades and/or caution tape will be required.

7. Identify All Personnel
   List all employees that will be required to prepare the confined space and complete the work inside the space.

8. Identify Necessary Equipment
   List all equipment that will be necessary to complete the project.
   Where practical, all personnel entering a confined space should be equipped with a retrieval line secured at one end to the entrant by a full-body harness with its other end secured to a tripod lifting hoist.

B. Conduct Pre-Entry Training

Once the entry has been planned, supervisors or their designated representatives must train all employees who will be involved in the entry. The training should be conducted no earlier than one day before entry is to be made following the procedure outlined below.

1. Identify the confined space, the reason(s) for entry, and the work detail.
   - Assign each employee the job(s) he/she is to perform in the entry project (entrant, standby person, etc.).
   - If an employee is required to use a piece of equipment, be sure that he/she is capable of using the equipment properly.
   - Inform all personnel that no one is to enter the confined space unless the attendant is present at the work site.

2. Inform entrants of all known and/or suspected hazards
   - Inform personnel of any access or exit problems.
   - Inform personnel of all equipment that must be locked out or tagged out.
   - Inform personnel of the contents of the confined space.
   - Inform personnel of all atmospheric levels that must be maintained before entering and while working in the confined space.

     If a toxic atmosphere or substance is present or could become present, the following additional training must be completed:

   - If respiratory protection is not going to be used, inform personnel of the maximum permissible exposure level (PEL) that can exist within the confined space, and the method used to monitor PEL.

- Inform personnel of the potential health effects of exposure to the toxic atmosphere or substance.
- Inform personnel of the signs and symptoms of exposure to the toxic fume.
- Inform personnel of the personal protective equipment (PPE) that they will be required to wear.
- If entrants are unaware of the proper use of the PPE, they must be trained in the proper use of this equipment.
  NOTE: Supervisors may request assistance from the Safety and Risk Management Coordinator in providing the above-mentioned training.
- Persons should not be assigned to tasks requiring use of respirators unless it has been determined that they are physically able to perform the work and use the equipment. A local physician shall determine what health and physical conditions are pertinent. The respirator user's medical status should be reviewed annually.

3. Identify Isolation Procedures
   - Inform the personnel responsible for the lockout/tagout of all equipment that must be isolated.
   - Inform the personnel responsible for performing this function of the methods to be used.
4. Identify Purging and/or Ventilation Procedures
   - Inform all personnel responsible for performing this function of the methods to be used.
5. Identify All Equipment Needed
   - Inform personnel involved in the project of all equipment that will be necessary to complete the project.
   - Make sure that all employees are capable of using their assigned equipment properly.
6. Determine Necessary Personal Protective Equipment
   - Inform personnel of all PPE that must be used to ensure their safety.
   - Make sure that all personnel required to use PPE are trained in the proper use of the equipment.
7. Establish Communication
   - Inform all entrants that they are required to maintain communication with the attendant.
   - Inform attendant that he/she must maintain constant contact with all entrants.
   - Inform personnel of the type of communication they are to use.

8. Protect from External Hazards
   Inform personnel where signs and barriers will be placed to prevent unauthorized entry and protect entrants from external hazards.

9. Pre-Plan Rescue Procedures
   - The designated attendant(s) should be informed of the rescue procedures to be followed.
   - The attendant should be informed that he/she can have no other duty but to maintain contact with personnel inside the confined space.
   - Inform the attendant(s) that they must not enter the confined space under any circumstances.

10. Placing the Confined Space Back Into Service
    Inform personnel of the steps to be taken to place the confined space back into service.

C. Preparing the Confined Space for Entry

Once the entry has been planned and personnel have been trained, the next step is to prepare the confined space for entry.

The following steps are to be followed when preparing the confined space for entry:

1. Place warning signs or barriers around the confined space to prevent unauthorized entry as necessary.
2. Place all tools, safety equipment, monitoring equipment, etc., near the confined space.
3. Isolate all mechanical and/or electrical hazards as necessary.
4. Purge/ventilate the confined space as necessary.
5. Test the atmosphere using an appropriate gas monitor.
   - If oxygen content is less than 19.5% or greater than 21.5%, perform additional ventilation. Then shut off ventilation equipment and re-test the oxygen content.
   - If oxygen content is between 19.5% and 21.5%, continue entry preparation.
6. Test for flammable gases.
   - If the meter reading is less than 10% of the lower explosive limit (LEL), continue entry preparations.
   - If the meter reading is above 10% of the LEL, continue ventilation of the confined space. Then shut off the ventilation and have the atmosphere re- tested.
   - If the meter reading is still above 10% of the LEL, the confined space must be cleaned before entry is permitted. If the confined space must be entered for cleaning purposes, the procedures outlined in Item 9 of this section must be followed.

7. Test for toxics (If a toxic atmosphere is present, no person should be permitted to enter the confined space at a level exceeding the Permissible Exposure Limit without proper Personal Protective Equipment. The Safety and Risk Management Coordinator should be called to assist in identifying proper precautions and the protective measures to be taken.

8. Assemble all personnel involved and review rescue procedures. The entry supervisor will then add any needed information, then complete and sign the permit.

9. Notify Department Head or supervisor that entry is commencing. If Department Head or supervisor is unavailable, notify the Safety and Risk Management Coordinator.

D. ATTENDANT DUTIES

Regulations dictate the following duties for the person acting as the attendant, the trained individual who observes the workers in the permit entry confined space. They (the attendant) must keep in continuous, though not necessarily constant communication with them. In this way, they could immediately call rescue services if needed. While acting as the attendant at a permit entry confined space, these points must always be followed:

1. Never enter the confined space, even if you see that the workers in the space are in trouble. If you did, there might be no one left at the scene to summon help for the others and yourself.

2. Maintain continuous communication with all workers within the confined space. This may be by voice, radio, telephone, watching them, or any other equally effective means. If it is not possible to maintain communication with a worker because of the actual location in the space, arrangements must be made so that you are continuously aware of that worker's location and condition.

3. Order workers in the confined space to "get out" at the first indication of the following:
    - A condition or set of conditions whose hazard potential exceeds the limits authorized by the entry permit
    - An unexpected hazard
    - A toxic reaction which might be recognized by observing unusual actions in the workers
    - A situation outside the confined space which could pose a hazard to the workers inside the space

4. Know the procedure as to how to summon emergency assistance and the means to do so. Call 9-911 on any St. Olaf College telephone to summon the Northfield Rescue Squad.

5. Remain at your post. Do not leave except to save your own life while work continues inside the confined space, unless you are replaced by an equally qualified person. If you must leave and no one is there to replace you, order the workers to leave the confined space.

6. Warn any unauthorized persons not to enter, or tell them to leave if they have entered. Also, alert the workers in the confined space, as well as anyone else (as your school policy requires) that unauthorized workers have entered the confined space.

OSHA Regulations require specific training for you as an attendant. You would be required to know:

1. The College's emergency action plan.
2. The duties of the attendant position as outlined above.
3. Proper use of any communication equipment used to keep in contact with the workers in the confined space or with rescue services.
4. What early signs and symptoms a worker would exhibit if he were becoming intoxicated by contaminants that could be in the space.
5. The training for a worker authorized to enter a permit entry confined space if the permit calls for rotation of the attendant duties among the workers entering the space.
6. The training for rescue workers if you will function as a rescuer also.

Part 4. Personnel Responsibilities and Training

Everyone involved in a confined-space entry project has certain responsibilities and requires a certain amount of training. It is very important that every individual is familiar with his/her responsibilities. This section outlines the responsibilities and training requirements of each individual involved in a project.

The Safety and Risk Management Coordinator shall be responsible for the following:

1. Reviewing and updating the RSC Confined Space Entry Program to conform to current CFR standards.
2. Ensuring compliance with standards set forth in the program by periodic inspection of entry sites and canceling permits where unsafe conditions are present.
3. Assisting Supervisors with:
    - Providing training as set forth in the program,
    - Identification of confined spaces,
    - Identifying spaces that require a permit for entry,
    - Labeling Permit-Required Confined Spaces.
4. Performing a single annual review covering all entries performed during a 12-month period to ensure employees participating in entry operations are protected from permit space hazards.

Supervisors or Their Designated Representatives are Responsible for:

1. Identifying confined spaces within facilities or areas under their control.
2. Identifying hazards within a confined space under their control.
3. Documenting that all training requirements for a specific confined space entry have been met by signing the pre- entry authorization space on the entry permit.

Entry Supervisors shall be responsible for the following:

1. Ensuring that the required atmospheric tests are performed at the confined space and results recorded on the permit prior to entry authorization.
2. Obtaining and maintaining all equipment necessary to complete the confined-space entry project.
3. Authorizing entry by signing the Entry Authorization space on the entry permit after all conditions for a safe entry have been met.
4. Terminating the entry and canceling the permit when:
    - Entry operations covered by the entry permit have been completed.
    - A condition that is not allowed under the entry permit arises in or near the permit space.
5. Determining, whenever responsibility for a permit space entry operation is transferred, and at intervals dictated by the hazards and operations performed within the space, that entry operations remain consistent with terms of the entry permit and that acceptable entry conditions are maintained.

Authorized Entrants are Responsible for and shall receive training in the Following:

1. The knowledge of hazards that may be faced during entry, including the mode, signs or symptoms, and consequences of the exposure.
2. Proper use of equipment, which includes:
    - Atmospheric testing and monitoring equipment.
    - Ventilating equipment needed to obtain acceptable entry conditions.
    - Communication equipment necessary to maintain contact with the attendant.
    - Personal protective equipment as needed.
    - Lighting equipment as needed.
    - Barriers and shields as needed.
    - Equipment, such as ladders, needed for safe ingress and egress.
    - Rescue and emergency equipment as needed.

- Any other equipment necessary for safe entry into and rescue from permit spaces.

3. Communication with the attendant as necessary to enable the attendant to monitor entrant status and to enable the attendant to alert entrants of the need to evacuate the space if required.

4. Alert the attendant (standby person) whenever:
    - The entrant recognizes any warning sign or symptom of exposure to a dangerous situation, or
    - The entrant detects a prohibited condition.

5. Exiting the permit space as quickly as possible whenever:
    - An order to evacuate has been given by the attendant or the entry supervisor;
    - The entrant recognizes any warning sign or symptom of exposure to a dangerous situation;
    - The entrant detects a prohibited condition; or
    - An evacuation alarm is activated.

Persons authorized to perform duties as attendant shall be responsible for and receive training in the following:

1. Knowing the hazards that may be faced during entry, including information on the mode, signs or symptoms, and consequences of exposure.

2. Awareness of possible behavioral effects of hazard exposure in authorized entrants.

3. Continuously maintaining an accurate count of authorized entrants in the permit space and ensuring that the means used to identify authorized entrants accurately identifies who is in the permit space.

4. Remains outside the permit space during entry operations until relieved by another attendant.

5. Attempting non-entry rescue if proper equipment is in place and the rescue attempt will not present further hazards to the entrant or attendant.

6. Communicating with authorized entrants as necessary to monitor entrant status and to alert entrants of the need to evacuate the space when conditions warrant.

7. Monitoring activities inside and outside the space to determine if it is safe for entrants to remain in the space and ordering the authorized entrants to evacuate the permit space immediately under any of the following conditions:
    - If the attendant detects a prohibited condition.
    - If the attendant detects the behavioral effects of hazard exposure in an authorized entrant.

- If the attendant detects a situation outside the space that could endanger the authorized entrants.
- If the attendant cannot effectively and safely perform all the duties required by this program.

8. Summoning rescue and other emergency services as soon as the attendant determines that authorized entrants may need assistance to escape from permit space hazards.
9. Taking the following actions when unauthorized persons approach or enter a permit space while entry is underway:
    - Warning the unauthorized persons that they must stay away from the permit space.
    - Advising the unauthorized persons that they must exit immediately if they have entered the permit space.
    - Informing the authorized entrants and the entry supervisor if unauthorized persons have entered the permit space.
10. Performing no duties that might interfere with the attendant's primary duty to monitor and protect the authorized entrants.

Confined Space Entry Permit

Date and Time Issued: _____ Date and Time Expires: _____

Job site/Space I.D: _____ Job Supervisor: _____

Equipment to be worked on: _____ Work to be performed: _____

Stand-by personnel: _____ _____ _____

1. Atmospheric Checks: Time _____

Oxygen _____%

Explosive _____% L.F.L.

Toxic _____PPM

2. Tester's signature: _____

3. Source isolation (No Entry): N/A Yes No
Pumps or lines blinded, ( ) ( ) ( )
Disconnected, or blocked ( ) ( ) ( )

4. Ventilation Modification: N/A Yes No
Mechanical ( ) ( ) ( )
Natural Ventilation only ( ) ( ) ( )

5. Atmospheric check after isolation and Ventilation:
Oxygen _____% > 19.5 %
Explosive _____% L.F.L < 10 %
Toxic _____PPM < 10 PPM H(2)S
Time _____

Tester's signature: _____

6. Communication procedures: _____

_____

7. Rescue procedures: _____

_____

_____

8. Entry, standby, and back up persons:	Yes	No
Successfully completed required training?	( )	( )
Is it current?	( )	( )

9. Equipment:	N/A	Yes	No
Direct reading gas monitor - tested	( )	( )	( )
Safety harnesses and lifelines for entry and standby persons	( )	( )	( )
Hoisting equipment	( )	( )	( )
Powered communications	( )	( )	( )
SCBA's for entry and standby persons	( )	( )	( )
Protective Clothing	( )	( )	( )
All electric equipment listed			
Class I, Division I, Group D and Non-sparking tools	( )	( )	( )

10. Periodic atmospheric tests:

Oxygen ____% Time ____ Oxygen ____% Time ____

Oxygen ____% Time ____ Oxygen ____% Time ____

Explosive ____% Time ____ Explosive ____% Time ____

Explosive ____% Time ____ Explosive ____% Time ____

Toxic ____% Time ____ Toxic ____% Time ____

Toxic ____% Time ____ Toxic ____% Time ____

We have reviewed the work authorized by this permit and the information contained here-in. Written instructions and safety procedures have been received and are understood. Entry cannot be approved if any squares are marked in the "No" column. This permit is not valid unless all appropriate items are completed.

Permit Prepared By: (Supervisor)_____

Approved By: (Unit Supervisor)_____

Reviewed By (Cs Operations Personnel):

_____ _____

(printed name) (signature)

This permit to be kept at job site during confined space entry operations. Return job site copy to Safety and Risk Management Office following job completion.

Appendix B

Atmospheric testing is required for two distinct purposes:

Evaluation of the hazards of the permit space and verification that acceptable entry conditions for entry into that space exist.

(1) 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, so that appropriate permit entry procedures can be developed and acceptable entry conditions stipulated for that space. Evaluation and interpretation of these data, and development of the entry procedure, should be done by, or reviewed by, a technically qualified professional (e.g., OSHA consultation service, or certified industrial hygienist, registered safety engineer, certified safety professional, certified marine chemist, etc.) based on evaluation of all serious hazards.

(2) 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 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.

(3) 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.

(4) Testing stratified atmospheres. When monitoring for entries involving a descent into atmospheres that may be stratified, the atmospheric envelope should be tested 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.

(5) Order of testing. A test for oxygen is performed first because most combustible gas meters are oxygen dependent and will not provide reliable readings in an oxygen deficient atmosphere. Combustible gases are tested for next 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.

Appendix C

Confined Space Entry Program Training Roster

Date of Training: _____ Location: _____
Trainer: _____ Number of Participants: _____

Printed Name	**Signature**	**Last 4 of SS#**	**Date**