Author:	M. Heminuk	Revision #:	3
Approved By:	Ronnie Keeter	Date Revised:	April 2022

SAFETY POLICY & PROCEDURE

Confined Permit and Non-Permit Required Confined Space SPP# 1910.146

Quick Reference

1.0 Purpose 2
2.0 Scope and Applicability 2
3.0 Reference 3
4.0 Policy 3
5.0 General Responsibilities 3
6.0 Procedure 3
6.1 Definitions 3
6.2 General Provisions 5
6.2.1 Training 5
6.2.2 Confined Spaces 6
6.2.3 Hazards if Confine Spaces 7
6.2.4 Identifying Confined Spaces at Your Facility 8
6.2.5 Evaluating Confined Spaces 8
6.2.6 Permit Required Confined Space Entry Requirements 9
6.2.7 Recordkeeping 12
6.3 Specific Responsibilities 13
6.3.1 Managers & Unit Heads 13
6.3.2 Supervisors 13
6.3.3 Employees 13
6.3.4 Entrant 13
6.3.5 Attendant 14
6.3.6 Entry Supervisor 14
6.3.7 Qualified Person 14
6.3.8 Safety and Risk Management 14
APPENDIX A: Certification Training Form for Authorized Employees 15
APPENDIX B: Confined Spaces Inventory 196
APPENDIX C: Atmospheric Testing Procedure 17
APPENDIX D: Confined Space Evaluation Form 18
APPENDIX E: Confined Space Entry Permit 19
APPENDIX F: Confined Space Entry Program Elements 20
APPENDIX G: Confined Space Entry Team Responsibilities 21
APPENDIX H: Confined Space Decision Tree Flowchart 23

1.0 Purpose

The purpose of this safety policy and procedure is to protect North Carolina Department of Transportation (NCDOT) employees who enter confined spaces.

2.0 Scope and Applicability

A Confine Space by design is large enough and so configured that an employee can bodily enter and perform assigned work, has limited or restricted means for entry or exit and is not designed for continuous employee occupancy.

A Permit-Required Confined Space 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 or contains any other recognized serious safety or health hazard. Permit-Required Confined Spaces are located throughout NCDOT with different types of hazards associated with them. Permit-Required Confined Spaces can present dangerous hazards to NCDOT employees who perform work activities in them.

This safety policy and procedure provides guidelines for entry into Permit-Required Confined Space to protect NCDOT employees who work in them. It includes provisions for training and discussion on what defines a confined space. This safety policy and procedure presents details on the hazards of Permit-Required Confined Spaces and on identifying them. Additionally, it presents discussion on evaluating Permit-Required Confined Spaces and the requirements for Permit-Required Confined Space entry. This document also provides recordkeeping requirements.

This safety policy and procedure details the areas of responsibility for managers/unit heads, supervisors, employees, entrants, attendants, entry supervisors, qualified persons, Safety and Risk Management, and Central Equipment Unit within NCDOT.

This document applies to any operation that requires NCDOT employees or contractors to enter or work inside any existing tank, tank car, tower, sewer, manhole, sump, vault, vat, process vessel, pit, tunnel, or similar confined spaces. This safety policy and procedure applies to but is not limited to the following NCDOT employees and operations:

- Employees who enter weigh station pits.
- Employees who enter trenches.
- Ferry Maintenance employees who enter areas below the weather deck excluding the engineering room below deck.
- Maintenance and Bridge employees who work in pipes and culverts.
- Inspectors and Maintenance employees who work in specified bridge beam areas.
- Employees who work on sewage and water treatment facilities located at rest stops or welcome centers.
- Maintenance employees who work in catch basin areas.
- Maintenance employees who enter weigh scale pits for operational service.
- Traffic Service employees who enter paint tanks.

- Any employee who enters boilers.
- Employees who use and/or maintain grease pits at equipment shops.
- Bridge employees who enter caissons.

3.0 Reference

This safety policy and procedure is established in accordance with Occupational Safety and Health Standard for General Industry (29 CFR 1910.146) and Occupational Safety and Health Standards for the Maritime Industry (29 CFR 1915.11-16) and Occupational Safety and Health Standards for Construction (29CFR 1926.1200-1213.

4.0 Policy

It is the policy of NCDOT to provide a place of employment that is free from recognized hazards that cause or are likely to cause death or serious physical harm to employees or the public. Therefore, at each NCDOT facility and/or jobsite, confined spaces will be identified and, as applicable, permitted and posted with warning signs. When confined space hazards exist that cannot be eliminated, then engineering practices, administrative practices, safe work practices, Personal Protective Equipment (PPE), and proper training regarding Permit-Required Confined Space Entry will be implemented. These measures will be implemented to minimize those hazards to ensure the safety of employees and the public.

5.0 General Responsibilities

It is the responsibility of each manager/unit head, supervisor, and employee to ensure implementation of NCDOT's safety policy and procedure on Permit-Required Confined Space Entry It is also the responsibility of each NCDOT employee to report immediately unsafe conditions to his or her supervisor. Specific responsibilities are found in Section 6.3.

6.0 Procedure

This section provides applicable definitions, establishes general provisions, and identifies responsibilities required by NCDOT's safety policy and procedure on Confined Space Entry.

6.1 Definitions

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

Non-Permit Required Confined Space
A confined space by design large enough and so configured that an employee can bodily enter and perform assigned work, 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 is not designed for continuous employee occupancy.

Controlling Contractor is the employer that has overall responsibility for construction at the worksite.

Entrant
An employee who is authorized and trained by the employer to enter a permit required confined space.

Entry Permit
A written document that is provided by the employer to allow and control entry into a permit required space.

Entry Supervisor
The person responsible for determining if acceptable entry conditions are present at a permit space where entry is planned, for authorizing entry and overseeing entry operations, and for terminating entry as required.

Hazardous Atmosphere
An atmosphere that may expose employees to the risk of death, incapacitation, and impairment of ability to self-rescue (that is, escape unaided from a permit space), injury, or acute illness from one or more of the following causes:

1. Atmospheric oxygen concentration below 19.5 percent or above 23.5 percent
2. Flammable gas, vapor, or mist in excess of 10 percent of its lower flammable limit (LFL)
3. Airborne combustible dust at a concentration that meets or exceeds its LFL
4. Atmospheric concentration of any substance for which a dose or a permissible exposure limit is published in Subpart G, Occupational Health and Environmental Control, or in Subpart Z, Toxic and Hazardous Substances, of this Part and which could result in employee exposure in excess of its dose or permissible exposure limit
5. Any other atmospheric condition that is immediately dangerous to life or health.

Host Employer
The employer that owns or manages the property where the construction work is taking place.

Hot Work Permits
A permit allowing employees to perform work involving welding, cutting, or any task that would deplete oxygen, create toxic fumes and vapors, or create the potential for fire or explosion.

IDLH (Immediately Dangerous to Life or Health)
Any condition that poses an immediate or delayed threat to life or that would cause irreversible adverse health effects or that would interfere with an individual's ability to escape unaided from a permit space.

Lower Explosive Limit (LEL)
The minimum concentration of a combustible/flammable gas or vapor in air which will ignite if an ignition source is present.

Oxygen Deficient Atmosphere
An atmosphere containing oxygen at a concentration of less than 19.5% by volume as measured by an oxygen measuring device.

Oxygen Enriched Atmosphere
An atmosphere containing oxygen at a concentration of more than 23.5% by volume as measured by an oxygen measuring device.

Permit-Required Confined Space
A confined space that 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 which slopes downward and tapers to a smaller cross-section; or
4. Contains any other recognized serious safety or health hazard.

Qualified Person
A person who has been trained and authorized to perform atmospheric testing.

Upper Explosive Limit (UEL)
The maximum concentration of a combustible/flammable gas or vapor in air before its saturation point which will ignite if an ignition source is present.

6.2 General Provisions

This section details the provisions of this safety policy and procedure with each provision discussed in a separate subsection. These provisions are:

- Training
- Confined Spaces
- Hazards of Confined Spaces
- Identifying Confined Spaces
- Evaluating Confined Spaces
- Permit-Required Confined Space Entry Requirements
- Recordkeeping
- Rescue
- Coordination w/ Contractors

6.2.1 Training

Confined space entry training is to provide employees with the necessary understanding, skills, and knowledge to safely perform their jobs. Components for confined space entry training include:

- Types of confined spaces
- Confined space hazards
- Atmospheric testing of confined spaces

- Cleaning and ventilation
- Lockout of confined spaces
- Personal Protective Equipment (PPE)
- Respirator use and care
- Buddy systems and emergency procedures
- Communication procedures
- Emergency rescue and procedures
- Hot work

Initial and refresher training are to be provided to employees. Refresher training must be conducted whenever an employee's duties change, whenever hazards in the confined space change, or whenever an evaluation of the confined space entry program identifies inadequacies in the employee's knowledge.

Employees designated to enter confined space work areas will be trained in the following areas (this includes entrant, attendant, and rescue team):

- Emergency entry and exit procedures
- Applicable respirators
- First Aid and CPR
- Lockout barriers at worksites
- Safety equipment use
- Rescue equipment
- Permit system
- Work practices

Appendix A presents a training certification form to document the affected employees' training on confined spaces.

Qualified persons shall be trained in:

- Atmospheric testing methods
- Meter calibration
- Atmospheric behaviors of oxygen, combustible, and toxic gases

Qualified persons shall receive initial and refresher training

6.2.2 Confined Spaces

In NCDOT, a confined space is one by design that:

- Is large enough for a person to enter and perform assigned work
- Has entry and exit openings that may be limited in size and/or number
- Is not intended for continuous human occupancy

Confined spaces in NCDOT can include any existing tank, tank car, tower, sewer, manhole, sump, vault, vat, grease pit, tunnel, or other similar confined spaces as shown in Figure 1.

6.2.3 Hazards if Confine Spaces

Confined spaces present many hazards to employees due to the nature of the space's shape, size, lack of ventilation, proximity to toxic gases, and other contributing substances. Potential confined space hazards include hazardous atmospheres, and general safety hazards.

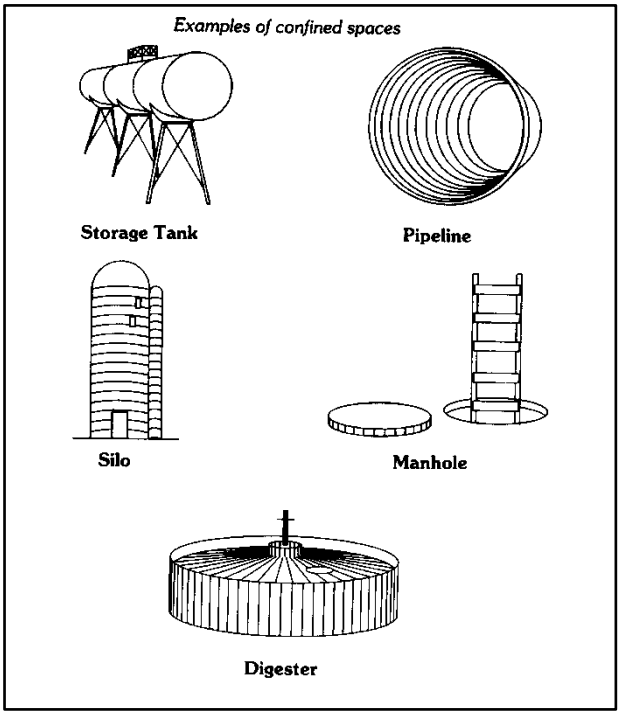

Figure 1

Hazardous atmospheres expose employees to risks of death, incapacitation, injury, or acute illness. These hazardous atmospheres include:

- A flammable gas, vapor, or mist in excess of ten percent of its lower flammable limit (LFL)
- An airborne combustible dust at a concentration that obscures vision at a distance of five feet or less
- An atmospheric oxygen concentration below 19.5 percent or above 23.5 percent
- An atmospheric concentration of any substance for which a permissible exposure limit is published in Subpart Z of 29 CFR Part 1910 and could result in employee exposure in excess of its permissible limit(s)
- Any atmospheric condition recognized as immediately dangerous to life or health (IDLH)

General safety hazards include but are not limited to:

- Physical hazards include non-chemical, physiologic stressors and include noise, vibration, slick/wet surfaces, falling objects, temperature extremes, employee fatigue, and engulfment
- Structural hazards include confined space areas that may contain converging or sloping/tapered walls
- Electrical hazards include shock, burns, and/or electrocution due to exposed or ungrounded electrical energy sources.
- Mechanical hazards include any inadvertent mechanical movement of or within a confined space that threatens the safety of the employee working in the confined space.

- Biological hazards include bacterial action that can consume oxygen to produce carbon monoxide or emit hydrogen sulfide or methane.
- Radiation hazards include those sources that can inadvertently expose employees to dangerous levels of radiation.

6.2.4 Identifying Confined Spaces at Your Facility

All confined spaces at your worksite/facility must be identified and located so the permit-required confined space permit program can be established. Visually survey your worksite/facility to identify confined spaces that are present and that will be included in the confined space inventory. List all suspected confined spaces.

If a work space meets the confined space criteria, note it for inclusion into your worksite/facility's confined space inventory. Appendix B provides a convenient format for inventorying your confined spaces.

6.2.5 Evaluating Confined Spaces

Once all the confined spaces have been identified, then those confined spaces must be evaluated to determine the hazards that may be present. Hazardous atmospheres and general safety hazards must be evaluated for all the confined spaces.

A hazardous atmospheric evaluation must be performed by conducting atmospheric testing to assess the conditions in the confined space. Appendix C presents atmospheric testing procedures that should be followed by a qualified person. Results of the atmospheric testing should be documented for later use.

General safety hazards should be assessed by physical observation. This physical observation should include a visual assessment of:

- The engulfment potential
- The internal configuration of the confined space
- Other safety hazards such as exposed live electrical components , mechanical moving parts, pressurized lines. thermal, etc.)

Additionally, assessment should be based on knowing the existing conditions and use of the confined space along with the actual and potential hazards posed by materials and substances in the confined space. Appendix D presents a Confined Space Evaluation Form.

If any of these hazards are present, then the confined space is a permit- required confined space. If none of these hazards is present, then it is not a permit-required confined space.

If a change in use or configuration of a non-permit-required confined space increases hazards to entrant, then the space must be reevaluated for possible reclassification to a permit-required confined space.

A permit-required confined space may be reclassified to a non-permit- required confined space if:

- The permit-required confined space poses no atmospheric hazards and all non-atmospheric hazards are eliminated without entry
- Entry is necessary to eliminate hazards and such entry is performed in accordance with the confined space entry program, and testing and inspection during entry indicate that hazards have been eliminated
- The basis for determining that all hazards are eliminated is documented and certified

Reclassification is effective as long as the hazards remain eliminated.

6.2.6 Permit Required Confined Space Entry Requirements

Once all permit-required confined spaces have been identified, no employee can enter that space until several requirements are met. These requirements include:

- Establishing a permit system
- Conducting pre-entry atmospheric testing
- Isolating energy sources (lockout/tagout)
- Ventilating and cleaning the confined space
- Posting permit-required confined spaces with warning signs
- Having appropriate PPE
- Having appropriate tools in place
- Having attendants in place
- Having rescue teams in place
- Having provisions for contractor compliance with these requirements

The permit system for each worksite/facility shall include a listing of all permit-required confined spaces, a warning sign/label at each permit-required confined space, and permit issuance by a qualified supervisor or safety professional.

Once all permit-required confined spaces are identified, they will be marked with a sign (examples shown in Figure 2) advising personnel and the general public as to the dangers involved. Where practical, all permit-required confined spaces will be locked or blocked to prevent entry

A qualified supervisor must authorize entry, prepare and sign written permits, order corrective measures if necessary, and cancel permits when work is completed.

Figure 2

The entry permit is completed and posted in a conspicuous location near the entrance.

Permits must be available to all permit space entrants at the time of entry and should extend only for the duration of the task. They must be retained for a year to facilitate review of the confined space program.

Appendix E presents a Confined Space Entry Permit. This permit must be completed prior to a permit-required confined space entrance. Appendix F presents a Confined Space Entry Program Element Contact List. These forms shall be maintained at each facility or operation by the individual charged with administering the Confined Space Permit Program.

If welding, cutting, burning, riveting, heating, or any other tasks where a source of ignition is present are to be performed in the confined space (permit-required or non-permit-required), a hot work permit must also be obtained. See Welding, SPP # 1910.252 for additional information.

Pre-entry atmospheric testing for the confined space shall be performed prior to employee entrance. See Appendix C for atmospheric testing procedures.

Energy sources will be completely isolated by physical disconnection, double blocking, bleeding, or by lockout/tagout procedures. Figure 3 presents some typical lock/tagout devices. Also, see SPP# 1910.147, Lockout/Tagout, for additional details.

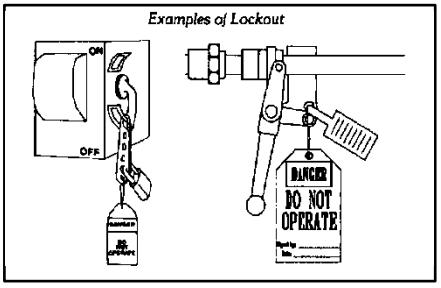

Figure 3

Ventilation and cleaning shall be performed to empty, flush, or purge spaces from the outside if feasible. Figure 4 presents a typical ventilation configuration to empty, flush, or purge a confined space.

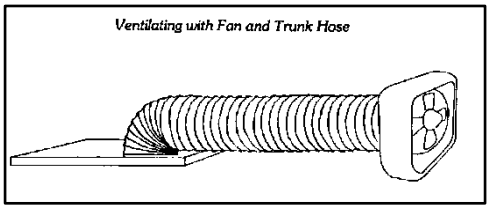

Figure 4

During pre-entry ventilation, the blowing duct outlet should be positioned for uniform dilution and elimination of any hazardous atmospheres pockets as shown in Figure 5.

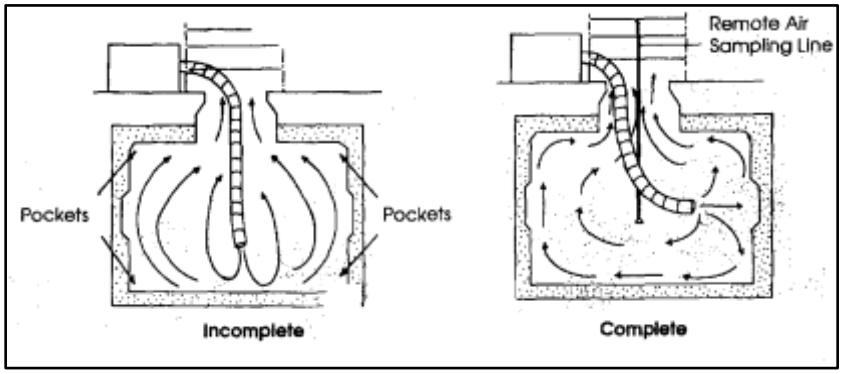

Figure 5

When a hazardous atmosphere is detected, ventilation will continue until:

- The space has no harmful concentration of toxic gases or vapors and acceptable oxygen concentrations
- The space shall be tested 3 times until safe levels are maintained.
- Upon entry, the atmosphere will be continually monitored by the entrant to ensure safe levels are maintained. The gas monitor will have audible alarms to signal when unsafe conditions are detected signaling that space should be immediately evacuated.

The appropriate PPE should be worn based on the hazard(s) and include:

- Eye and face protection
- Head protection
- Foot and leg protection
- Body protection
- Hearing protection
- Respiratory protection
- Hand and arm protection
- Harness, safety belts, and lifelines

See SPP# 1910.132, Personal Protective Equipment, for details on matching PPE to the hazard.

Appropriate equipment and tools must be in place and in good condition. See SPP# 1910.241, Hand and Portable Power Tools, for additional details.

The attendant shall be stationed immediately outside permit-required confined spaces and shall:

- Be trained in non-entry rescue
- Not enter the permit-required confined space
- Be within sight or call of the entrant
- Have means to summon assistance
- Have tripod set-up w/ lifeline attached to entrant for non-entry rescue

The attendant shall be physically capable of assisting any employee inside the confined space in the event of an emergency. This individual will be responsible for alerting others that a rescue is in progress and for taking appropriate measures to ensure the safety of all co-workers in the area. No employee is to enter a confined space if another employee goes down! The attendant shall always seek assistance.

Appropriate communications shall be established such as radios or walkie- talkies if the employee gets out of sight or earshot.

Rescue teams must be available and on-call for permit-required confined space entry. The Rescue team must be able to respond in a timely matter, be properly trained, and equipped with rescue equipment including SCBAs.

Contractors who perform permit-required confined space entry must comply with all the OSHA requirements.

- If NCDOT owns the property on which the construction activity occurs and has contracted with an entity for the general management of that property, and has transferred to that entity the information specified in § 1926.1203(h)(1), OSHA will treat the contracted management entity as the host employer for as long as that entity manages the property. Otherwise, OSHA will treat NCDOT as the host employer. In no case will there be more than one host employer.

- Permit space entry communication and coordination with Contractors before entry operations begin, NCDOT must provide the following information, if it has it, to the controlling contractor:
    1) The location of each known Permit-Required Confined Space;
    2) The hazards or potential hazards in each confined space or the reason it is a permit space; and
    3) Any precautions that the host employer or any previous controlling contractor or entry employer implemented for the protection of employees in the Permit-Required Confined Space.

6.2.7 Recordkeeping

Recordkeeping requirements include:

- Retaining each cancelled permit for at least one year to facilitate review of Permit-Required Confined Spaces program.
- Noting problems encountered during entry on permit to facilitate revisions to program.
- Certification of training with name, identity of trainers and training dates.

- Reclassification from permit to non-permit space certification with date, location, and signature of person making determination.

6.3 Specific Responsibilities

6.3.1 Managers & Unit Heads

Managers/Unit Heads are responsible for ensuring that adequate funds are available and budgeted for the purchase of confined space equipment in their areas. They will also be responsible for identifying the employees affected by this safety policy and procedure

Managers/Unit Heads shall be responsible for having Safety Engineers or Safety Officers identifying confined spaces at their worksite/facility. Additionally, they will be responsible for ensuring all confined spaces are evaluated to determine if a permit is required prior to entry.

Managers/Unit Heads shall also designate entry supervisors and qualified persons. Managers/Unit Heads will obtain and coordinate the required training for affected employees. Managers/Unit Heads will also ensure compliance with this safety policy and procedure through their auditing process.

6.3.2 Supervisors

Supervisors will not allow any employee who has not received the required training to perform any of the tasks or activities associated with this safety policy and procedure.

Supervisors will be responsible for communicating appropriate needs to managers/unit heads and/or supervisors.

Supervisors will be responsible for knowing where confined and permit- required confined spaces are located at their worksite/facility. They will also be responsible for ensuring permit-required confined spaces are posted with warning signs.

Supervisors will ensure employees are provided with PPE as necessary for their job. Supervisors are responsible for ensuring that only employees trained and qualified will operate material handling equipment

6.3.3 Employees

Employees shall comply with all applicable guidelines contained in this safety policy and procedure.

It is the responsibility of the employee to follow all instructions pertaining to confined spaces. Employees are never to enter confined spaces unless authorized by training and job duties.

6.3.4 Entrant

The attendant is responsible for maintaining communication with the entrant at all times. Appendix G presents additional details on the attendant's responsibilities.

6.3.5 Attendant

Safety and Risk Management will provide prompt assistance to managers/unit heads, supervisors, or others as necessary on any matter concerning this safety policy and procedure. Safety and Risk Management will assist in developing or securing required training. Safety and Risk Management will work with Purchasing and Central Equipment Unit to ensure that all newly purchased Locks and Tags comply with this safety policy and procedure.

Safety and Risk Management shall be responsible for monitoring the Lockout/Tagout Program and any changes in the machinery and equipment that may require modification of the Program.

Additionally, Safety Engineers will provide consultative and audit assistance to ensure effective implementation of this safety policy and procedure.

6.3.6 Entry Supervisor

Entry supervisor is responsible for ensuring that only employees who are trained are allowed to enter confined spaces. The entry supervisor is responsible for ensuring proper permits and safety procedures are followed closely at the jobsite.

The entry supervisor must also be familiar with all hazards associated with the entry operation. He is responsible for all safety precautions, rescue procedures, and safety equipment needed for the operation. Appendix G presents additional details on the entry supervisor's responsibilities.

6.3.7 Qualified Person

Qualified person is responsible for checking the atmosphere of a confined space and correctly reading and using the gas detection instruments. Qualified Person is also responsible for documenting all confined space measurements

6.3.8 Safety and Risk Management

Safety and Risk Management will provide prompt assistance to managers/unit heads, supervisors, or others as applicable on any matter concerning this safety policy and procedure. Safety and Risk Management will assist in developing or securing the required training. Safety and Risk Management will provide guidelines for using air monitoring and gas detection equipment.

Safety and Risk Management will provide guidance to the qualified person on atmospheric testing. As applicable, the air monitoring data will be evaluated for completeness, accuracy, and precision.

Additionally, the Safety & Risk Management and the Safety Engineer will provide consultative and audit assistance to ensure effective implementation of this safety policy and procedure.

APPENDIX A: Certification Training Form for Authorized Employees

Location: _____

Instructor: _____

Employee Name: ***Employee #*** _____

Has the OSHA required training been completed in the following categories?

Topic	Completion Date	Instructor's Initial	Employee's Initial
Types of Confined Spaces			
Confined Space Hazards			
Atmospheric Testing of Confined Spaces			
Evaluating Confined Spaces			
Cleaning and Ventilation			
Lockout of Confined Spaces			
PPE			
Respirator Use and Care			
Buddy Systems and Emergency Procedures			
Communication Procedures			
Emergency Rescue			
Employees designated to enter confined spaces (includes entrant, attendant, and rescue team) shall also be trained in the following topics	Completion Date	Instructor's Signature	Employee's Initial
Emergency Entry and Exit Procedures			
Applicable Respirators			
First Aid and CPR			
Lockout Barriers at Worksites			
Safety Equipment at Worksites			
Rescue Equipment			
Permit System			
Work Practices			

Attach Course Roster to this Form
(See SPP# 1926.21 for Course Roster Form)

APPENDIX B: Confined Spaces Inventory

Facility:
Location:
Inventory Date:

All permit-required confined spaces shall be posted with signs stating "Confine Space-Do Not Enter" or "Unauthorized Entry Prohibited

Confine Space	Purpose	Hazards	Work Done	Permit Required

This inventory must be kept up to date. All operational changes should always be evaluated for its impact on this facility's confined spaces.

APPENDIX C: Atmospheric Testing Procedure

A qualified person shall test spaces a minimum of 3 times at all stratified levels prior to permit required confined space entry. Figure 5 illustrates the common gases found at each of these (3) stratified levels. Using a direct reading instrument with remote sampling capacity, the qualified person shall test the atmosphere for in the following order:

1. Oxygen level (19.5 percent minimum/maximum 23.5 percent)
2. Potential flammable hazard, not to exceed (10 percent LEL Max.) or Lower Flammable Limit (LFL)
3. Toxic materials which potentially could be present: Carbon Monoxide – 35 ppm Max., Hydrogen Sulfide 10ppm Max. & other gases must be less than the known TLV for that gas.

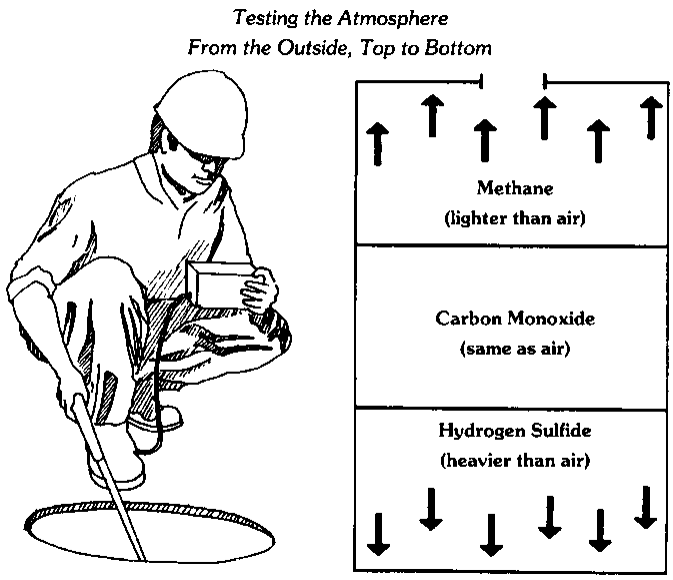

Figure 5

The qualified person shall record all atmospheric test results on the permit prior to entry. A qualified person shall perform atmospheric testing during occupancy; if the entrant wears the four-gas monitor with audible alarms for continuous monitoring, this will fulfill the requirement for periodic testing and will not need

Each testing instrument shall be:

- Calibrated per manufacturer's instructions (instruments out of calibration or that fail field checks cannot be used until calibrated).
- At least annually calibrated by the manufacturer.
- Field checked immediately prior to use. This field check shall include checking with a test gas at least monthly.

APPENDIX D: Confined Space Evaluation Form

Confined Space Evaluation

Confined Space Identification number: _____
Confined Space Description: _____
Location of space: _____
Is a Permit Required? _____
List the typical tasks performed: _____

Potential Hazards:	Required Work Procedures
☐ Flammable or Explosive atmosphere	☐ Atmospheric Testing Prior to Entry (see acceptable limits below)
☐ Oxygen deficient atmosphere	☐ Continuous Atmospheric Testing (see acceptable limits below)
☐ Toxic atmosphere / Specify:_____	☐ Standby attendant required
☐ Eye contact	☐ Lock/Tag equipment*
☐ Skin contact	☐ Blank or Disconnect lines*
☐ Electrocution	☐ Double block and bleed*
☐ Moving mechanical equipment	☐ Ventilation/Purge (continuous forced air)
☐ Slip or fall	☐ Inert/Purge space prior to Ventilation
☐ Heat stress or thermal contact	☐ Decon/Clean space prior to work
☐ Engulfment	☐ Barricade area
☐ Entrapment	☐ Communications equipment
☐ Drowning	☐ Attach MSDS to permit
☐ Other / Specify:___	☐* Attach Job specific hazardous work permit
☐ Other / Specify:_____	

Atmospheric testing acceptable limits: Oxygen 19.5% - 23.5%, Combustibles <10% LFL / LEL, Toxics See MSDS

Elimination of Hazards §(c)(7) applicable? ___ (note: if §(c)(7) used, this hazard assessment may not apply)
Alternate Procedures §(c)(5) applicable? ___ (note: if §(c)(5) used, this hazard assessment may not apply)

Required Equipment for entry

☐ Survey atmosphere monitor	☐ Tripod with hoist (gantry hoist)
☐ Personal monitor, continuous	☐ Harness with retrieval line
☐ Respirator:_____	☐ Ladder
☐ Gloves:_____	☐ Spark/Explosion proof or Intrinsically safe equipment required
☐ Boots:_____	☐ GFCI Protected equipment
☐ Eye/Face protection	☐ Additional illumination
☐ Chemical protective clothing (CPC):_____	☐ Personal fall arrest system (PFAS)
☐ Hearing protection	☐ Fire extinguisher _____
☐ Other equipment / Specify:_____	

Emergency Plan

☐ Non-entry retrieval rescue attempted after notification
☐ Non-entry notification rescue only

Rescue team must be on On Call Standby:

Initial assessment reviewed by: _____ Date:_____
Annual review by: _____ Date:_____
Annual review by: _____ Date:_____

APPENDIX E: Confined Space Entry Permit

(Valid for one 8-hour shift only)
All copies of permit will remain at jobsite until job is completed

Entry Supervisor Approval Signature:_____

Location and Description of Confined Space:	**Date:**		
Scheduled Work to be Done:	**Time Started:**		
Division / Unit:	**Time Completed:**		
Persons Authorized to Enter:	**Continuous Monitoring By Entrant w/ 4 Gas Monitor**	**Yes**	**No**
Entry Supervisor:	**Attendant:**		

Check Yes or No for Each Potential Hazard Present

Potential Physical Hazards Present	**Yes**	**No**	**Potential Hazard Atmosphere Present**	**Yes**	**No**
Engulfment			Low Oxygen (<19.5%)		
Moving Machinery			High Oxygen Enriched (>23.5%)		
Hazardous Materials			Flammable (>10% LEL)		
Converging Walls			Carbon Monoxide (>35 ppm)		
Exposed Electricity			Sulfur Dioxide (>10 ppm)		
Slips/Falls			Other (list):		
Other (list):					

Check Yes / No or Enter N/A for Each Special Requirement

SPECIAL REQUIREMENTS	**Yes**	**No**		**Yes**	**No**
Lockout/Tagout - Deenergize			Tripod for Non-entry Rescue		
Lines Broken - Capped or Blanked			Body Harness		
Ventilation			Life Line		
Purge - Flush and Vent			Fire Extinguisher		
Secure Area			Alternate Procedure		
Hot Work Permit			Respirator		
Communication Equipment			Rescue Procedure		

Record Gas Monitor Readings & Enter Time for Initial Check. If the entrant is wearing a four gas meter w/ audible alarms, periodic checks do not have to be entered. If continuous monitoring is not feasible, Periodic Checks must be completed w/ readings and time documented.

Atmospheric Checks	**Permissible Entry Level**	**Initial Check (Enter Time)**	**Periodic Checks (Enter Time)**		
% Oxygen	19.5% to 23.5%				
%of Lower Explosive Limit	Less than 10%				
Carbon Monoxide	35 ppm				
Hydrogen Sulfide	10 ppm				
Other					

Continuous Monitoring shall be performed during the job unless not feasible.
State Reason for not feasible: _____

Name of Qualified Person - Gas Tester(s):					
Monitor Name & Model		S/N		Date Calibrated	

Never Enter a Confined Space to Attempt Rescue; Tripod for Non-Entry Rescue Must Be Set-up Prior to Entry w/ Entrant Wearing Body Harness &Lifeline Attached to Tripod.
Arrangements Must Be Made for Nearest Entry Rescue Team to be On Call Stand-By:
List: _____
Rescue team must be On-Call Standby. If not available reschedule confined space entry.

APPENDIX F: Confined Space Entry Program Elements

Facility:_____

Program Element	Contact Person
Hazard Identification	
Hazard Control	
Written Permit System	
Posting Confined Spaces	
Confined Space Training	
Special Safety Equipment (i.e. Four Gas Direct Reading Monitor w/ Audible Alarms & Remote Sampling Capabilities, Tripod, Life Line)	
Written Rescue Plan & Procedures	
External Hazard Protection	
Communication Equipment	
Contractor Notification	

Notes: _____

_____

_____

_____

_____

_____

_____

APPENDIX G: Confined Space Entry Team Responsibilities

A permit-required confined space team performs four functions:

- The attendant (observer) who remains outside while the work is being done
- The entry supervisor who authorizes permits
- The rescue team who performs rescue

The entrant:

- Does the assigned task
- Reviews the permit before entry
- Wears appropriate personal protective clothing, as required
- Uses appropriate PPE, as required
- Uses and attends to area and personal monitoring equipment
- Pays attention to own physical reactions that could signal an unsafe condition
- Maintains contact with the attendant and responds to evacuation orders
- If the entrant senses any reaction to the environment, he or she should signal the attendant for help, if necessary, and leave the confined space immediately

The attendant:

- Reviews the permit before entry
- Keeps track of who is in the space at all times
- Keeps unauthorized people out of the area
- Maintains continuous communication, visual or voice, with the entrant during the entry
- Makes sure the ventilation equipment, if used, is working
- Monitors the atmospheric testing equipment
- Attends to the lifeline, if worn by the entrant
- Attends to the airline, if used, to prevent tangles and kinks
- Remains alert for early symptoms of danger within the space
- Watches for hazards outside and inside the space
- Maintains clear access to and from the space
- Notifies the entrant and orders evacuation if conditions warrant or if the permit limits expire
- Is prepared to call for emergency help, if needed

APPENDIX G: Confined Space Entry Team Responsibilities (Continued) 2

The Entry Supervisor (person authorizing permits) :

- Plans each entry. Planning means to:
  - Describe the work to be done
  - Identify the workers involved
  - Evaluate the hazards of the space
  - Perform (or arrange for) atmospheric testing and monitoring
  - Develop rescue plans
- Ensures that the permit is complete, dated, and signed
- Determines the need for certain equipment
- Ensures atmospheric testing
- Ensures that all necessary procedures, and equipment for safe entry are in effect
- Determines, at "appropriate" intervals, that operations remain acceptable
- Cancels the permit and terminates the work if the conditions are not acceptable
- Trains (or provides training for) all workers on the Confined Space Entry Team
- Keeps records on training, safety drills, test results, equipment inspections, and equipment maintenance.
- Cancels the permit and secures the space when the work is done
- Determines if a written rescue plan is necessary for a particular confined space entry
- Verifies that emergency help is available and that the method of summoning help is operable

APPENDIX H: Confined Space Decision Tree Flowchart