1.0 Scope

This program[1] applies to all employees who will be working in or near confined spaces.

2.0 Purpose

Entering a confined space can present a significant risk to employees and should only be performed after the hazards of the spaces have been appropriately identified and controlled. This procedure is designed to ensure that appropriate safe work practices are utilized prior to and during activities related to entry into these spaces to prevent personal injuries, illnesses, and/or fatalities.

Specifically, this procedure is to be used ONLY on confined spaces that meet the characteristics of a "confined space that can be entered using alternate procedures", hereafter identified as ALTERNATE PROCEDURE SPACES.

Due to the extreme dangers found in confined spaces, compliance with this procedure at all times is essential.

3.0 Member-Level Responsibilities

On the line below, list the job title of the person who is the **Program Administrator** of this policy. _____

Work areas will be continually evaluated to ensure all spaces that could be considered as confined spaces have been fully evaluated and classified. As part of this procedure, each space identified will be classified as either a non-permit required confined space (NPRCS), a permit-required confined space (PRCS), or a permit required confined space that can be entered using alternate procedures (Alternate Procedures Space).

Under no circumstances will an employee enter into a PERMIT-REQUIRED confined space. Activities that require entry into these spaces will be conducted by a specialized contractor.

Prior to entry into any spaces identified as Alternate Procedures Spaces, an Entry Evaluation Form (Attachment B) will be completed, and specific entry requirements and procedures will be followed. Any hazardous conditions will be addresses prior to entry, and then continually monitored to ensure employee safety

[1] The content of this program is based upon the following regulations:
- Pennsylvania Title 34, Part VIII, Bureau of Workers' Compensation – Chapter 129, Subchapter D §129.452; Group Self-Insurance Fund's AIPP Requirements
- Federal Occupational Safety and Health Administration (OSHA) regulations for Permit-Required Confined Spaces, 29 CFR 1910.146

All employees who may need to enter an Alternate Procedure Space to perform work tasks must receive specific training regarding safe entry into confined spaces. Training will include specific atmospheric safeguarding procedures, atmospheric testing and monitoring, appropriate personal protective equipment, attendant responsibilities, and space evacuation procedures.

This program will be evaluated at least annually, to ensure the program is correct, effective, and being followed by employees, including the classification and hazards of confined spaces,.

Due to the extreme risk of harm to employees entering confined spaces, it is mandatory that a minimum of two employees who have been properly trained be involved in each entry. One employee will serve as the Attendant and one as the Entrant. Both employees must be involved in the onsite evaluation of the space and agree that the space has met all of the requirements and characteristics necessary for safe entry.

IF THESE MINIMUM CONDITIONS CANNOT BE MET,
ENTRY INTO THE SPACE WILL NOT BE MADE.

4.0 Definitions

The following definitions apply to this policy and procedure:

Confined Space – is defined as an area that:

- Is large enough for an employee to enter and work in;
- Has limited means of entry and exit; and
- Is not designed for extended periods of human occupancy

A confined space must meet *all* of the above criteria. Examples of confined spaces include tanks, silos, storage bins, hoppers, vaults, pits, tunnels, wells, sewers, pipelines, crawl spaces, process vessels, or underground areas.

Not all confined spaces pose a danger to employees.

Permit-Required Confined Space (PRCS) – must meet all of the characteristics of a confined space (as defined above), and have one or more of the following characteristics:

- Contains or has the 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 such as noise or mechanized equipment. (Note: other hazards could include hazards introduced into the space by the work being conducted in the space)

In order to be classified as a PRCS, the confined space need only meet *one* of the above criteria. Any Confined Space that is not a PRCS is a Non-Permit Required Confined Space (NPRCS)

Alternate Procedures Space - a permit-required confined space where:

- The only hazard(s) posed is an actual or potential hazardous atmosphere, and
- The atmosphere of the space can be reliably made safe through the use of continuous forced air ventilation.

Entry Evaluation Form - The form that is completed by the Entrant and Attendant that verifies the space can be entered using alternate procedures, identifies the results of initial and continuous atmospheric monitoring, and any other procedures to be used to verify and maintain the safe entry conditions. (See Attachment B - Entry Evaluation Form).

Authorized Attendant – an individual stationed outside the confined space who monitors the authorized entrants and who performs all attendant duties assigned in this policy. The names of employees designated as Authorized Attendants are listed in Attachment C.

Authorized Entrant – an employee who is authorized to enter a confined space. The names of employees designated as Authorized Entrants are listed in Attachment C.

Air Monitoring Equipment (Air Monitor) – equipment that is used to sample the ambient air to assist in determining if the air is safe to breathe. The equipment must be capable of real-time monitoring of oxygen content, lower explosive or lower flammable limit (LEL or LFL), carbon monoxide (CO), and hydrogen sulfide (H_2S). Prior to each use, the monitor must be fully charged, checked, and calibrated, zeroed and/or bump tested according to the manufacturer's instructions. A monitor that cannot be properly calibrated, zeroed, or bump tested will be taken out of service until it can be serviced.

Assisted Entry and Exit Process – The process of using a harness, hoisting device, and tripod for use in assisting the Entrant when entering and/or exiting a space. This process is not intended to serve as a rescue method.

5.0 Confined Space Identification and Evaluation Process

All spaces that could potentially be considered confined spaces must be identified. These spaces have been evaluated to determine if they meet the basic definition of a confined space, and if they present any additional hazards that would make them Permit-Required Confined Spaces. The evaluation process involved using operator knowledge of the spaces and locations, physically inspecting the locations, and conducting initial/preliminary atmospheric evaluations of the spaces. In addition, the spaces were evaluated to determine if they met the requirements for the use of Alternate Procedures.

Spaces that typically meet the requirements for Alternate Entry Procedures could include:

- Dry (enclosed or closed loop) lift stations
- Sewer access manholes
- Empty WWTP digesters
- Empty fuel storage tanks
- Trenches in Type A soil
- Trenches with proper shoring/sloping/benching in Type B and Type C soils

Spaces that have been identified as meeting the requirements for use of alternate procedures are identified in Attachment A.

Any new spaces identified, or spaces that have significant changes that could affect the hazards of the space, will be evaluated to fully identify the hazards and any new procedures that may be required to safely enter those spaces. This evaluation will be added to the list of spaces found in Attachment A.

To assure that employees do not accidentally enter a PRCS, signs reading "DANGER - PERMIT-REQUIRED CONFINED SPACE, DO NOT ENTER" or other similar language will be posted as needed. Additional steps to prevent the unauthorized entry into the space by a lock or other equally effective means will also occur.

6.0 Alternate Procedures for Safe Entry

In general, conducting an entry into an Alternate Procedures Space will follow the below standardized process:

Pre-Entry (Offsite)

- Review information about the space/category of space to determine entry procedures
- Review work process to be completed in space to determine if there will be introduced hazards
- Initiate the completion of the Entry Evaluation Form (See Attachment B)
- Gather tools and equipment (including air monitoring and ventilation equipment, and communications)
- Verify that the air monitoring equipment is fully charged and has been properly calibrated

Pre-Entry (Onsite)

- Inspect area for additional hazards and establish any additional controls needed
- Establish work area boundaries (if space is in a public area or there are other employees working in the area)
- Verify/Validate atmospheric conditions and record results on the form
- Set up and turn on the continuous forced air ventilation system
- Review the communication process/signals that will be used during the entry
- Review the emergency/evacuation signal to be used
- Visually check/inspect all equipment

Space Entry

- Entrant enters the space to conduct the work that necessitated the entry
- Entrant wears an appropriate CSE real-time monitor
- Attendant continuously monitors the area outside the space for hazards
- If necessary, Attendant will order an evacuation of the space

Conclusion of Entry

- Once the work in the space is complete, gather tools/equipment/supplies and exit space
- Note any unusual conditions on the Entry Evaluation Form
- Replace/secure the cover or other physical barriers to the space
- Clean and inspect CSE equipment and tools; note any issues on the form
- Repair or replace any damaged or used supplies and equipment.

6.1 Pre-Entry Preparation

Review Data - Any available information about the hazards of the space to be entered should be reviewed to determine the best approach to addressing those hazards, including the classification of the space and the hazards previously identified (see Attachment A for a complete list of identified spaces and their hazards). This review is especially important for spaces that are entered infrequently, as conditions can change significantly and employee recollection of the spaces may be inadequate.

Start Completing The Entry Evaluation Form - Based on the information reviewed, the Entrant and Attendant can begin completing the Entry Evaluation Form. Some of the information on the form must be completed onsite after reviewing/inspecting the site conditions (see Attachment B-Entry Evaluation Form).

Gather and Inspect Equipment - Based on the task to be completed in the space, specific safety equipment will be necessary. Equipment could include atmospheric monitors, ventilation equipment, ladders, and personal protective equipment (PPE) such as coveralls, gloves, or goggles. This equipment should be inspected prior to taking it into the field. Any damaged equipment should be tagged as "Out of Service" until it is repaired or replaced. All equipment identified as "necessary" must be available and in good working condition to proceed with entry into the space.

Calibrate Monitor - To ensure the atmosphere of the space is safe to breath, an atmospheric monitor (air monitor) must be used. The monitor requires regular calibration and "bump" testing, as per the manufacturer's instruction. Prior to a monitor being used, it must have a current calibration sticker. The monitor will be zeroed in fresh air, and verified using the proper calibration gas. If the atmospheric monitor is beyond its calibration due date, will not zero in fresh air, or does not pass a bump test it will be taken out of service until it is repaired or replaced.

6.2 Pre-entry Onsite Evaluation & Preparation

Onsite Conditions- Before entry is made into an Alternate Procedures Space, the Entrant and Attendant will evaluate the conditions outside of the space that could affect the entry. Conditions to observe or be aware of include:

- Road Traffic (vehicle exhaust, vibrations that could affect trenches)
- Other employees working in the area
- Hazards that could be introduced by the activities of the Entrant (welding, painting, using aerosols, etc.)
- Pedestrian traffic, including members of the general public.

Any additional hazards identified will be noted on the form, and controls will be put in place to address the hazards prior to the entry.

After opening the space, continuous forced air ventilation equipment will be placed at and into the space and allowed to actively ventilate the space to remove any accumulations of hazardous gases in the space. The intake of the blower will be placed well away from sources of contaminants such as vehicle and generator exhausts. The space will be ventilated prior to space entry, and throughout the entire entry activity. Continuous forced air ventilation is required to be used for every entry into an Alternate Entry Procedure Space.

After allowing the space to be ventilated, but before allowing Authorized Entrants to enter an Alternate Procedures Space, the Entrant and Attendant must ensure that conditions inside the space are evaluated to determine if the conditions are safe for entry. Any employee who will be required to enter the space is permitted to observe the pre-entry and any subsequent testing or monitoring.

The internal atmosphere must be tested with a calibrated direct-reading instrument. The results of the atmospheric monitoring will be recorded on the Entry Evaluation Form. The following will be considered acceptable entry conditions:

- Atmospheric oxygen concentration **above 19.5% and below 23.5%;**
- Flammable/combustible gas, vapor, or mist of **less than 10%** of its lower flammable/explosive limits (LEL or LFL); and
- Atmospheric concentration of any substance for which a dose or commonly accepted exposure limit is available such as those published in OSHA General Industry Standards, Subpart Z, Toxic and Hazardous Substances, or by the American Conference of Governmental Industrial Hygienists (ACGIH) as a Threshold Limit Value (TLV) (Safety Factor level set at ½ the PEL or at the OSHA Action Level). Commonly encountered substances include:

  Carbon Monoxide (must be less than 25 ppm)
  Hydrogen Sulfide (must be less than 10 ppm)

Once the ventilation blower has been allowed to purge the confined space of any atmospheric hazards, the condition of the atmosphere will be verified using the calibrated air monitor. The results of the testing will be documented on the Entry Evaluation Form.

Once the hazards associated with entry into the spaces have been eliminated or controlled, and the results of the air monitoring documented on the Entry Evaluation Form, the Entrant is authorized to entry the space.

6.3 Entry into Alternate Procedures Space

To continuously verify the effectiveness of the ventilation system in eliminating any atmospheric hazards, at least one of the entrants will wear a calibrated continuous reading air monitor. As long as the monitor verifies the condition of the air as being acceptable, the entry can continue.

If the monitor indicates an unsafe condition, by way of visual and audible alarms, all entrants will exit the space immediately. Employees cannot reenter the space until a safe atmosphere has been reestablished. If a safe atmosphere cannot be reliably reestablished, the space will not be entered by employees and a contracted service will be retained to complete the necessary work.

While the Entrant is in the space conducting the tasks necessitating the need to enter the space, the Attendant will be stationed outside of the entrance to the space. Ideally, the Attendant will be able to maintain visual contact with the Entrant at all times.

During entry activities, the Attendant is also responsible for being vigilant to the areas and activities outside of the space that could create an increased risk for the entry activity. If there is an increased risk for any reason, the Attendant will make the Entrant aware of the risk and, if necessary, order an evacuation of the space.

An evacuation of the space could be ordered due to:

- An alarm on the atmospheric monitor,
- Change in hazards outside the confined space entrance,
- Malfunction of the ventilation blower,
- Visual observations or interactions with the entrant that cause concern, or
- Any other hazard or risk that could impact the safety of entrant(s).

If the Entrant is required to evacuate the space, the Entrant is not allowed to re-enter the space until all risks have been appropriately controlled, and, in the case of an atmospheric monitor alarm, the space has been allowed to be flushed with additional fresh air.

Under no circumstances may the duration of the entry exceed the time required to complete the assigned task or job.

6.4 Conclusion of Entry

Once the work inside of the space is completed, the Entrant should ensure all tools and materials are gathered and removed from the space, and the Entrant should exit the space.

Once outside of the space, the air ventilation equipment can be shut down and removed from the opening of the space. The opening to the space should be secured to prevent any unauthorized entry into the space. Any issues encountered during the entry operation must be noted on the Entry Evaluation Form and submitted to the Program Administrator. If necessary, based on the issue, the space will be re-evaluated to ensure that it still meets the requirements and conditions to be entered using Alternate Entry Procedures.

7.0 Equipment

The following equipment will be provided to employees who are required to participate in Alternate Entry Procedures, as needed by site conditions and hazards:

- Atmospheric testing and monitoring equipment needed for evaluation of interior of the space. Equipment will be calibrated, serviced, and maintained as per the manufactures instructions
- Ventilating equipment needed to obtain and maintain acceptable atmospheric conditions
- Communications equipment
- Personal protective equipment
- Ladder for safe entry into vertical spaces
- Lighting equipment to enable employees to see well enough to work safely and to exit the space quickly in the event of an emergency
- Pedestrian and vehicular Barriers and shields
- Equipment, such as ladders, needed for safe ingress and egress by authorized entrants;
- First aid kit
- Any other equipment necessary for safe entry into the Alternate Entry Spaces

In addition to the above, each Authorized Entrant and Attendant will use the following equipment, when necessitated by the method of entry and exit from the space or to assist the Entrant in exiting the space:

- A full body harness, with retrieval line attached at the center of the Entrant's back near shoulder level, above the Entrant's head, or at another point which can establish a profile small enough for the successful removal of the Entrant.
- When a space entry involves vertical descent of more than 5 feet, a mechanical device must be available and in the vicinity of the entry. In addition, the Authorized Entrant must wear a harness and be attached to the mechanical device prior to entry.

8.1 Duties of Authorized Entrants

Employees who are assigned duties as Authorized Entrants will have completed the training noted below no more than one year prior to executing these critical responsibilities. Their duties and responsibilities include the following:

- Know the hazards that may be faced during entry, including information on the mode, signs or symptoms and consequences of exposure to low concentrations of oxygen and/or the toxic substances that may be present inside of the space;
- Use communication devices properly to converse with the Authorized Attendant as necessary to enable their status to be monitored and to enable the Authorized Attendant to alert Authorized Entrants to the need to evacuate the space in the event of an emergency.
- Be familiar with the requirements and conditions allowing for the use of Alternate Procures for space entry; and
- Exit from the PRCS as quickly as possible whenever:
- An order to evacuate is given by the Authorized Attendant or the Entry Supervisor;

- The Authorized Entrant recognizes any warning sign or symptom of exposure to a dangerous situation;
- The Authorized Entrant detects a prohibited condition; or,
- An evacuation alarm is activated.

8.2 Duties of Authorized Attendants

Employees who are assigned duties as Authorized Attendants will have completed the training noted below no more than one year prior to executing these critical responsibilities. Their duties and responsibilities include the following:

- Know the hazards that may be faced during entry, including information on the mode, signs or symptoms and consequences of exposure to low oxygen concentrations and/or the toxic substances that may be present inside of the space
- Be aware of possible behavioral effects of hazard exposure in authorized entrants
- Continuously maintain an accurate count of Authorized Entrants in the space
- Remain outside the space during entry operations until relieved by another Authorized Attendant
- Communicate with authorized entrants as necessary to monitor status and to alert Authorized Entrants of the need to evacuate the space
- Monitor activities inside and outside the space to determine if it is safe for Authorized Entrants to remain in the space and order the Authorized Entrants to evacuate the permit space immediately under any of the following conditions:
- If a prohibited condition is detected;
- If the behavioral effects of hazard exposure in an Authorized Entrant are detected; and
- If a situation outside the space that could endanger the Authorized Entrants occurs; and
- If the Authorized Attendant cannot effectively and safely perform all the duties required.
- Take the following actions when unauthorized persons approach or enter a permit space while entry is underway:
    - Warn the unauthorized persons that they must stay away from the permit space
    - Advise the unauthorized persons that they must exit immediately if they have entered the permit space
    - Inform the Authorized Entrants and the Entry Supervisor if unauthorized persons have entered the permit space
    - Perform non-entry rescues
    - Perform no duties that might interfere with the primary duty to monitor and protect the Authorized Entrants
- Assist the Entrant in entering and/or exiting the space if the space does not have a safe and reliable means to do so. The method to be used to assist the Entrant involves the use of a tripod, hoisting device, and harness.
- Assist the Entrant in entering and/or exiting the space if the Entrant suffers a non-life threatening, non-atmospheric hazard related injury (i.e. twisted ankle)

9.0 Training

All employees who are involved in Alternate Entry Procedures will participate in a training program to assure that they acquire the understanding, knowledge and skills necessary for the safe performance of the duties assigned to them.

9.1 Training Content

Training content will include, at a minimum:

- Methods used to evaluate spaces and determine the hazards associated with confined spaces that employees might need to enter;
- Methods used to determine the specific category that a space falls into;
- Method/process used to ensure space is made safe to enter including, but not limited to:
    - Proper air monitoring procedures
    - Proper ventilation equipment operations
    - Ensuring adequate methods of entry and exit from the space
    - Methods that will be used for communication between the Entrant and Attendant
- Proper use of safety equipment and PPE
- Proper use of retrieval equipment for assisting the Entrant in entering or exiting the space
- Completion of documentation associated with each space entry

9.2 Frequency of Training

This training will occur:

- Prior to any employee participating in an entry
- When changes occur that may impact the employee's ability to work around and enter confined spaces safely
- When there is a change in Alternate Space Entry operations that presents a hazard for which an employee has not previously been trained.
- Whenever a Supervisor believes that the participant may not have retained the requisite skill and/or knowledge to perform Alternate Space entries safely, he/she will require that the employee be retrained.
- At least annually.

All training will be documented by the use of sign-in sheets. All training documentation is maintained by the Program Administrator.

10.0 Program Review

In order to assure that the procedures specified in this policy remain appropriate for the types of operations encountered by employees and to provide for a mechanism to revise the procedures as necessary, Program Administrator will undertake a yearly review of this procedure. One of the major tasks of this process is the review of all completed Entry Evaluation Forms from the previous twelve months. In addition to the review of completed forms, the Program Administrator will solicit feedback from various employees who may have participated in entries during the year. Revisions to this procedure and the Entry Evaluation Forms will be completed as indicated by the results of the review and will be communicated to the appropriate employees. Training will occur, if necessary to assure that all employees are aware of the changes made.

In addition to the annual evaluation of the written procedure, the evaluation of each of the identified confined spaces will be reviewed to ensure the classification of the spaces and hazards of the spaces are accurate. Program Administrator will use completed Entry Evaluation Forms and interviews with key employees in this evaluation, and may conduct an onsite inspection of a space, if necessary. Any issues identified will be corrected, with the written procedures updated to reflect any changes. Employees will be notified and/or trained on any changes, based on the significance of the change.

Any questions of this procedure should be directed to a supervisor or Program Administrator.

Attachment A - Classification of Confined Spaces

Name of Confined Space/Location	Classification[1]	If PRCS or APS, Give the Reason for Classification

Completed by: _____ Date: _____

[1] Classification Definitions:

NPRCS = Non-Permit-Required Confined Space
PRCS = Permit-Required Confined Space
APS = PRCS that can be entered using Alternate Entry Procedures

Attachment B - Alternate Entry Procedure Entry Evaluation Form Project Information

Entry Date:		Start Time:		Anticipated Duration:	
Location of Space/Entry:					
Description of Work Being Conducted:					
Name of Attendant:			Name of Entrant(s):		

Equipment

Air Monitoring Device ID:		Last Calibration Date:	
Ventilation Equipment ID:		Last Inspection Date:	
Other Equipment Needed:			
PPE Communication	Ladder Tripod & Harness	Lighting Barricades and Cones	First Aid Kit Specialized Tools

Alternate Procedures

Verify Alternate Procedures Can Be Used (All must be checked)			
Actual or Potential Atmospheric Hazard			
No Mechanical, Biological or Chemical Hazards exist			
Continuous Forced Air Ventilation in Place and Effective			
Results of initial atmospheric Testing		Monitoring Performed By:	
Parameter	Acceptable Range	Results	Time Taken
Oxygen	<23.5%, > 19.5%		
% LEL	< 10%		
CO	< 25 ppm		
H_2S	< 10 ppm		

Attachment C - List of Current Authorized Entrants and Authorized Attendants

Authorized Entrants	
Name	**Department**
1.	
2.	
3.	
4.	
5.	
6.	
7.	
8.	
9.	
10.	

Authorized Attendants	
Name	**Department**
1.	
2.	
3.	
4.	
5.	
6.	
7.	
8.	
9.	
10.	