**CONFINED SPACE PROGRAM**

Piedmont Service Group (PSG) understands that some of our work takes place inside of confined spaces. This program has been developed to protect our employees when they work in these areas. Our program follows the regulations in 1926.1200 Subpart AA Confined Spaces and 1910.146 Permit Required Confined Spaces.

PSG recognizes that certain conditions within confined spaces are capable of causing death to anyone who enters the space without precautionary measures. Therefore, this program establishes a permit-required confined space program to regulate entry into confined spaces and to ensure the safety of employees who enter or work in confined spaces. Any individual entering into a confined space shall do so in accordance with the procedures outlined within this program.

## **Definitions**

### **Confined Space:**

### 1) An area that has limited means of entry or exit.

### 2) Is large enough for workers to enter and perform the task assigned.

### 3) Is not designed for continuous employee occupancy.

### Examples of confined spaces may include but are not limited to; storage tanks, pits, trenches, ventilation ducts, press pits, vessels, manholes, boilers, furnaces, sewers, tunnels, silos etc.

### **Non-Permit Confined Space:** This space meets the definition above and isa confined space that does not contain or have the potential to contain any hazard capable of causing death or serious physical harm.

### **Permit-Required Confined Space:** a confined space that contains or has the potential to contain one or more of the following:

• An atmospheric hazard.

• An engulfment hazard.

• A configuration hazard.

• Any other recognized serious safety or health hazard.

**Confined Space Hazard Evaluation**

All confined spaces will be initially evaluated by a competent person to determine the extent of the hazards present. Each confined space shall be evaluated for atmospheric hazards, engulfment hazards, configuration hazards and any other serious hazard capable of causing death or serious physical harm. If it is determined that no hazards are present, the space will be re-evaluated as circumstances change that might affect the classification of the space.

When evaluating confined spaces for hazards, three different concerns should be addressed:

• Hazards inherent to the space itself.

•Hazards that will be brought to the space by the job performed inside it.

• Hazards that may exist on the outside of the space that could potentially affect the inside.

Conditions that create hazardous atmospheres in confined spaces include, oxygen-deficient atmosphere, flammable atmosphere, and toxic atmosphere.

• An oxygen-deficient atmosphere has less than 19.5% available oxygen. Any atmosphere with less than 19.5% oxygen should not be entered without an approved self-

contained breathing apparatus (SCBA). Training required. Last resort.

• Oxygen-enriched atmosphere (above 23.5%) will cause flammable materials, such as clothing and hair to burn violently when ignited. Never use pure oxygen to ventilate a confined space, ventilate with normal air.

• Engulfment hazards occur when any material may be introduced to the space harming the entrant. Engulfment means the surrounding and effective capture of a person by a liquid or finely divided (flowable) solid substance. The substance can be aspirated to cause death by filling or plugging the respiratory system. The substance may also exert enough force on the body to cause death by strangulation, constriction, or crushing.

• A configuration hazard is any space that has a configuration, which could potentially trap or asphyxiate a worker. Examples of configuration hazards include inwardly converging walls or a floor that slopes downward and tapers to a smaller cross-section.

Other serious hazards include any hazard capable of causing death or serious physical harm. Examples of these hazards include but are not limited to high-pressure steam lines, natural gas lines, and mechanical hazards.

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**Responsibilities**

**Entry Supervisor**

#### **•** Know the hazards that may be faced during entry.

• Verify that acceptable entry conditions are present at the time of entry.

• Check the permit to verify that appropriate tests have been conducted.

• Verify that all procedures and equipment specified by the permit are in place before endorsing the permit and allowing entry to begin.

• Verify that rescue services are available and that the means for summoning them are operable.

• Inform all authorized entrants and attendants of the hazards that may be faced during entry and of the acceptable entry conditions.

• Terminate the entry and cancel the permit when operations are completed, when prohibited conditions occurs, or at the end of the shift.

**Authorized Entrant**

• Be responsible for self-monitoring, using both test equipment and a knowledge of personal physical limitations.

• Be aware of any unusual physical reactions, signs, or symptoms that could be caused by the environment.

• Alert the attendant to changing conditions within the space.

• Maintain constant communication with the attendant.

• Signal the attendant and exit the space immediately if any reaction to the environment is sensed or a prohibited condition is detected.

• Exit the space if ordered by the attendant or entry supervisor, a sign or symptom of exposure is observed, or an evacuation alarm is activated.

• Use all equipment properly.

• Participate and/or review calibrated air monitoring data before entry. Continuous air monitoring where possible.

**Attendant**

• No Attendant shall be allowed to monitor more than one (1) entry operation.

• Know the hazards associated with the space entered.

• Be able to identify signs and symptoms of any unusual developments within the space.

• Know who is in the space by name and count.

• Record entrant’s entry and exit times.

• Record the air sampling data every 30 minutes.

• Maintain constant communication with the authorized entrants.

• Monitor activities within and around the space.

• Keep unauthorized personnel away from the space.

• Order authorized entrants to exit the space if conditions require.

• Summon help if an emergency situation arises.

• Never leave the space or attempt rescue until relieved by another attendant.

• Perform a non-entry rescue, if necessary.

**Confined Space Entry Procedures**

The following safe operating procedures shall be followed before entering any confined space:

• Identify the hazards associated with the confined space and plan for the entry and work to be performed.

• If multiple trades are required to perform work activities in the same confined space, then a safety meeting shall be held between the trades working in the confined space so that employees of one employer do not endanger employees of any other employer. The safety meeting shall determine communication procedures; identify potential hazards associated with all trade’s work tasks and rescue procedures.

• Identify the confined space team and provide the proper training.

• Identify the equipment necessary for confined space entry.

• Complete the confined space permit.

• Construct barricades and signs around the confined space to prevent unauthorized entry of other employees, pedestrians, and vehicular traffic.

• Perform atmospheric testing before entry and continuously while occupied to ensure acceptable atmospheric conditions are being maintained.

•Maintain constant communication with the entrant, communication equipment may be necessary.

• Use continuous forced air ventilation when there is the possibility of an atmospheric hazard.

• Isolate potentially hazardous energy by using Lockout/Tagout procedures.

• Identify and use necessary PPE.

• Respirators shall be used in all hazardous atmospheres.

• Provide early warning systems, such as sensors or an observer posted upstream, that continuously monitors for non-isolated engulfment hazards, such as flash flooding in storm water systems. The system must alert entrants and attendants in sufficient time for entrants to safely exit the space.

• Emergency rescue procedures and retrieval systems are in place in the case of emergency.

**Confined Space Permit**

A *Confined Space Entry Permit*, signed by the Entry Supervisor and verifying that pre-entry preparations have been completed and that the space is safe to enter, must be posted at entrances or otherwise made available to entrants before they enter a permitted space. The information gathered in completing the hazard evaluation can be used to complete the permit.

A permit shall not be authorized until all conditions of the permit have been met. The duration of the permit may not exceed the time required to complete the assigned task or job identified on the permit. Following completion of the permit space entry job, the Supervisor shall cancel the permit and send a copy to the Safety Director.

**Training**

Before participating as a member of an entry team, each employee shall be given confined space training. The training must provide employees with the necessary knowledge and skills needed to perform their duties safely. This training shall include:

• Identification of Permit Required Confined Spaces.

• Hazards Associated with Permit Required Confined Spaces.

• Roles and Responsibilities of each Confined Space Team Member.

• Procedures & Equipment of Confined Space Entry.

• Confined Space Emergency Rescue.

• First Aid / CPR for the Attendant/Entry Supervisor.

Training that has been successfully completed shall be documented by listing the names of the employees, the trainer and the dates of training.This training certification shall be kept on file with the Safety Director.

Refresher training shall be conducted every 24 months, when the employee’s duties have changed, when the hazards of the space have changed and when inadequacies in the entry operation have been identified.

**Unauthorized Entry**

Supervisors shall prevent unauthorized entry in permit confined spaces by posting warning signs, barricading the confined space, locking entry point covers or requiring special tools to open them and providing awareness training to employees and subcontractors.

**Atmospheric Testing**

It is important to understand that some gases or vapors are heavier than air and will settle to the bottom of a confined space. Also, some gases are lighter than air and will be found around the top of the confined space. If testing reveals that a hazardous atmosphere is present, the space must be ventilated and re-tested before workers enter.

The following procedures shall be followed for proper Atmospheric Testing:

• All testing equipment shall be calibrated as instructed by the manufacturer.

• The test equipment should be tested in a known atmosphere to ensure its accuracy.

• Ventilation equipment must be shut off before conducting any atmospheric tests.

• The atmosphere must be tested at the bottom, top, and middle of all confined spaces.

• The atmosphere must be continuously monitored to determine if acceptable conditions are being maintained. Employees, or their representatives, are entitled to request additional air monitoring of a confined space.

• If the permit space is left for any reason, the atmosphere must be tested before re-entering the space.

**Communication Equipment**

Attendants shall be provided with the necessary communication equipment to assure that they are able to maintain contact with entrants as well as rescue services. This may include such devices as radios, telephones, beepers or distinctive alarms.

**Ventilation**

In confined space work, ventilating equipment is used to supply fresh air to the confined space. It replaces hazardous, toxic, or explosive conditions with an atmosphere safe for breathing. Proper ventilation is vital to a safe confined space. Forced-air ventilation method is preferred. The method and equipment chosen to ventilate the space are dependent upon the size of the confined space openings, the gases to be exhausted, and the source of makeup air.

**Isolation (Lockout/ Tag-out)**

Isolation is the process by which a permitted space is removed from service and completely protected against the release of energy and material into the space. This includes all mechanical, electrical, or heat producing equipment. This process may include locking out, tagging out, blanking, blinding, blocking or disconnecting the mechanical linkages or energy sources.

**Personal Protective Equipment**

The purpose of Personal Protective Equipment (PPE) is to shield or isolate individuals from the chemical, physical, and biological hazards that may be encountered during confined space operations, as it is not always apparent when exposure occurs. It is important the PPE users realize that no single combination of protective equipment and clothing is capable of protecting a worker against all hazards. PPE can itself create significant hazards to the wearer such as heat stress and physical and psychological stress in addition to impaired vision, mobility, and communication. PPE should be selected on a case-by-case basis because overprotection as well as under protection can be hazardous and should be avoided.

The minimum personal protective equipment requirements in a confined space include:

• Hard Hat: to be worn at all times.

• Safety Glasses/Goggles: to be worn at all times, unless entrant is using a full face Respirator.

• Work Gloves: standard work gloves - to be worn in dry conditions; nitrile or butyl rubber gloves to be worn in wet conditions.

• Work Boots: to be worn at all times.

• Hearing Protection: to be worn when there is excessive noise 90 DBA or more.

•Respirator: to be worn as determined by the confined space supervisor based on known hazard, atmospheric testing and work operations. (This requires following our respirator program.)

**Retrieval System**

A retrieval system refers to equipment that is used to help remove an entrant from a permit-required confined space in an emergency.

A retrieval system should consist of a chest or full body harness with a retrieval line attached at the center of the entrant's back near shoulder level, or above the entrant's head. The other end of the retrieval line shall be attached to a mechanical device or fixed point outside the permit space in such a manner that rescue can begin as soon as the attendant becomes aware that a rescue is necessary.

For vertical spaces that are more than five (5) feet deep, a mechanical device, (tripod with a hoist), shall be available to retrieve personnel. In spaces where the entrant is not able to have a retrieval line attached, a full body harness should still be worn.

**Rescue Procedures**

Emergency Rescue Plans & Procedures should be developed prior to confined space entry. There are two types of rescue procedures:

**Non-entry rescue**: In this type of rescue, rescue personnel remain outside the space. They pull the victim out of the space with the retrieval system.

**Rescue by entry:** In this procedure, one or more rescue personnel enter the space. They remove the victim with the assistance of other rescue personnel who are stationed outside the space. This type of rescue must only be considered when supply-air respirators are available or when emergency services with this capability are in close proximity and on standby.

When relying on local emergency services for rescue, arrangements must be made with the emergency services to give the entry team advanced notice if they will be unable to respond for a period of time due to responding to another emergency or attending department wide training. If there is the possibility of a hazardous atmosphere, the rescue team must be on site.

Under no circumstances shall unauthorized personnel enter a confined space to attempt a rescue. At the present time there are no PSG employees authorized to perform confined space rescues by entry into the space. The attendant must be capable of using all rescue equipment provided for their use to perform a “non-entry” rescue by using the retrieval systems provided.

In the event that rescue by entry is needed, PSG will coordinate before entry is made with such services with either:

The owner (host) rescue team or;

Outside rescue team (local fire/rescue department)

It is PSG’s policy not to allow employees to work in areas, including confined spaces that have conditions Immediate Danger to Life and Health (IDLH).

**Records**

The corporate office must retain all canceled permits for at leastone year. Permits will be used to facilitate review of the permit system.

Any problems encountered during an entry operation shall be noted on the permit and the Safety Director will be notified so that appropriate revisions can be made to the written Confined Space Entry Program on an annual basis.

The Safety Director will keep a list of all employees who have received confined space training.