

<b>Midland Engineering Co., Inc.</b> Safety Management System			Doc No:	CONFSPA
			Initial Issue Date	12/14/15
<b>Chapter 08-Confined Space</b>			Revision Date:	Initial Version
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## PURPOSE

This procedure establishes safe practices for entering and/or working in confined spaces that may be hazardous to employees.

## SCOPE

This procedure applies to all operations involving Midland Engineering Co., Inc.

## REFERENCES

29 CFR 1926.21 and 352  
29 CFR 1910.134 and 146

## RESPONSIBILITY

When appropriate, Midland Engineering Co., Inc. will develop a written site-specific confined space procedure and complete training of all personnel required to work in confined space operations prior to the assignment start, change in assigned duties, when new hazards have been created or special deviations have occurred and monitor this procedure moving forward.

## INTRODUCTION

Confined spaces may contain many safety and health hazards. They may include, but are not limited to: asphyxiation (unconscious or lack of oxygen), falls, burns, engulfment, chemical exposure, job function.

Following confined space procedures and safe work practices are essential to protect your health and safety. The goal is to control confined space environments and prevent accidents that could lead to injury and death. If you have a question about a confined space, ask your supervisor.

Most fatalities and injuries occur because employees are unaware of the potential hazards in confined spaces. Confined space entry can present many health and safety hazards. Personnel must be properly equipped to handle these situations. Millions of workers enter confined spaces each year and some of those never make it out alive. More than half of confined space deaths and accidents result from situations when a person rushed in to rescue a fellow employee, and they were not prepared or protected.

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The objective of this program is to inform company employees to follow safe entry procedures and develop a respect for potential hazards in confined spaces. Serious consequences can result from the use of untrained personnel or failure to observe safe work practices. The goal is to eliminate accidents caused by confined space entry hazards.

## DEFINITIONS

Air Purifying Respirator is a device to protect the wearer from inhalation of harmful contaminants by cleansing the atmosphere through a mechanical and/or a chemical filtering media.

Chemical means any element, chemical compound or mixture of elements or compounds that include: Liquids, Solids, and Gases

Confined Space means any space having a limited entrance or egress that is subject to the accumulation of toxic or flammable contaminants or the development of an oxygen deficient atmosphere. Confined spaces include, but are not limited to, storage tanks, bins, boilers, ventilation or exhaust ducts, sewers, underground utility vaults, tunnels, pipelines, and open top spaces more than four feet in depth, such as pits, tubs, vaults, and vessels.

Hazardous Atmosphere means an atmosphere that exposes employees to a risk of death, incapacitation, injury or acute illness. One or more of the following conditions may contribute to a hazardous atmosphere:

- An atmospheric oxygen concentration below 19.5 percent (an oxygen deficient atmosphere) or above 22.0 percent (an oxygen enriched atmosphere), by volume.
- A flammable gas, vapor, or mist in excess of 10 percent of its Lower Explosive Limit (LEL).
- A hydrogen sulfide gas concentration above 2 parts per million.
- A carbon monoxide gas concentration above 25 parts per million.
- An airborne combustible dust at a concentration that obscures vision at a distance of five feet or less.
- Presence of any substance in an atmospheric concentration above the Permissible Exposure Limits (PEL) published in Subpart Z of 29 CFR 1910.1000. If a contaminant is not published in Subpart Z consult Material Safety Data Sheets or other authoritative sources.
- Any atmospheric condition recognized as Immediately Dangerous to Life or Health (IDLH).

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Health Hazard means a chemical, mixture of chemicals, or a pathogen for which there is statistically significant evidence based on at least one study conducted in accordance with established scientific principles that acute or chronic health effects may occur in exposed employees.

Immediately Dangerous to Life and Health (IDLH) is an atmospheric concentration of any substance that poses an immediate threat to life or would cause irreversible or delayed adverse health effects or would interfere with an individual's ability to escape from a dangerous atmosphere.

Label means any written, printed or graphic sign or symbol displayed on or affixed to containers of hazardous chemicals. A label identifies the hazardous chemical, appropriate hazard warnings, and name and address of the manufacturer, importer, or other responsible party, and information about possible organ effects.

Material Safety Data Sheet (MSDS) means written/printed information concerning a hazardous chemical that is prepared in the format required by the OSHA standard.

Oxygen Deficiency - An atmosphere having less than the percentage of oxygen found in normal air. Normally air contains 21% oxygen.

Permissible Exposure Limit (PEL) means the dermal or inhalation exposure limit.

Physical Hazard means a physical hazard that includes fire or explosion, sudden release of pressure, or reactivity.

Threshold Limit Value (TLV) - An airborne concentration of a substance to which nearly all personnel can be repeatedly exposed, day after day, without adverse health effects.

Time Weighted Average (TWA) - The average concentration for a normal 8 hour workday and 40 hour workweek to which nearly all personnel may be repeatedly exposed, day after day, without adverse health effects.

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## CONFINED SPACES

A confined space is an enclosed area which:

- Is not designated for continuous occupancy.
- Is large enough and shaped so that a person can enter and perform assigned work.
- Has limited openings for entry or exit (storage tanks, silos, boilers, tanks, vessels, tunnels, vault, pipelines).
- Lacks natural ventilation.
- May contain one or more of the following: atmospheric hazards (lack of oxygen or presence of toxic vapors) potential for engulfment (silo), and chemical residue.
- All confined spaces should be marked with a sign, placard or permit. *If you have a question about a potential confined space ask your supervisor or manager.*

## NON-PERMIT REQUIRED CONFINED SPACE

- Non-permit confined spaces may exist where there is little potential for generation of hazards.
- Ensure air ventilation from clean source.
- Determine if work activities will produce hazards.
- The space must be monitored/atmospheric testing.
- If a space is deemed non-permit, entry may occur.

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## PERMIT REQUIRED CONFINED SPACE

- Permit required confined spaces might have a hazardous atmosphere.
- Potential for engulfment.
- Internal configuration leading to entrapment or asphyxiation
- Any other serious safety or health hazard.

## CONFINED SPACE ATMOSPHERIC HAZARDS

One of the leading causes of injuries and deaths in confined spaces is an atmospheric hazard. Atmospheric hazards are caused by poor ventilation and can lead to asphyxiation. Workers rushing into confined spaces to rescue employees without proper protection leads to multiple deaths. That is why knowing the atmosphere hazard of a confined space is so important in preventing injuries and deaths. Atmospheric hazards include the following:

### FLAMMABLE GAS-VAPORS-MISTS LEVELS

The inhalation of toxic vapors is a leading cause of injury and death in confined spaces. Toxic vapors immediately enter the blood stream when inhaled. Never stick your head in a confined space to check things out. Many gases and vapors are heavier than air and higher concentrations may be greatest at ground level. In addition, some gases and vapors can travel long distances across the ground ending up in low-lying areas.

*The Permissible Exposure Limit (PEL)* of any substance in the atmosphere must be within the limit set by the federal regulations. The PEL of a substance is the permitted dermal or inhalation level of that substance. This information can be obtained from the material safety data sheet (MSDS).

*The Lower Flammable Limit (LFL)* of any substance cannot be greater than 10% of the limit set by federal regulations. The LFL means the minimum concentration of the flammable material that ignites if an ignition source (spark) is present. Under some conditions it might be necessary to use explosion proof lighting or spark resistant tools in a confined space. This information can be obtained from the MSDS.

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There are many potential causes of fires and explosions with hazardous chemicals. They include chemical reactions, ignition of explosive or flammable chemicals, ignition of materials due to oxygen enrichment, agitation of shock or friction sensitive compounds, and sudden release of materials under pressure. Fires and explosions may happen spontaneously when moving drums, accidentally mixing incompatible chemicals, introducing an ignition source. Fires and explosions of hazardous chemicals pose hazards of intense heat, open flames, smoke inhalation, flying objects, release of toxic chemicals, and threatening both on-site personnel and the public. Protecting against fires and explosions includes careful monitoring of explosive atmospheres, controlling of ignition sources, use of non-sparking tools, and following of safe work practice procedures.

#### AIRBORNE COMBUSTIBLE DUST LEVELS

Potentially hazardous dust exposure can occur in certain operations. Employee overexposure to airborne dust could present possible health problems. As a rule of thumb, if a material in the air capable of igniting and burning that is at concentrations where vision is limited to five foot or less, the area is not safe. Consult the MSDS for information pertaining to dust characteristics.

#### OXYGEN LEVELS

The normal content of oxygen in the atmosphere is 21%. Physiological effects of oxygen deficiency in humans begin to appear when it reaches 16%. Impaired attention, judgment, loss of coordination, and increased breathing and heart rates are signs of oxygen deficiency. Concentrations of oxygen lower than 16% can result in nausea and vomiting, brain damage, heart damage, and death. Oxygen Deficiency means concentrations of oxygen are 19.5% or lower. Oxygen deficiency results from displacement from another chemical (ex. chlorine, CO2) or consumption of oxygen by a chemical reaction (ex. fire, hot work). Confined spaces or low-lying areas are particularly vulnerable to oxygen deficiencies and should always be monitored before and continuously during entry. Oxygen Enriched means the oxygen level reaches above 22%. This atmosphere could cause combustible materials present to explode if an ignition source is present. An ignition source could include sparks from welding.

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## CONFINED SPACE ENTRY PERMITS

If an employee is entering a confined space to perform maintenance work, inspections, repairs, or new construction an entry permit is required. The entry permit is designed to communicate all potential hazards to personnel involved in the entry. It also serves as a valuable checklist to make sure necessary safety precautions and procedures are followed. The following information is contained on a confined space entry permit:

An entry permit authorizes entry:

- Only by authorized employees.
- Into a specific confined space.
- For a specific purpose stating work activities.
- By a specific shift or work crew for a certain amount of time.

Other information included on the entry permit:

- Any known hazards or those that could reasonably be expected to be present in the space.
- Measures that may be needed (ex. lockout/tagout).
- Measures needed to remove or control potential atmospheric hazards (ex. purging, ventilating, flushing).
- Any testing and monitoring equipment and procedures used to verify that acceptable conditions are maintained before and during entry.
- Rescue and other services to be used or summoned if needed and the means of communicating with those services.
- Rescue equipment provided if necessary (ex. life line, escape pod).
- Communication procedures and equipment used by entrants and attendants to maintain contact.
- Personal protective equipment necessary for the entry or rescue of workers in spaces.
- Hot work should be noted on the permit and/or on a separate hot work permit that is attached to the entry permit.

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## MULTI-EMPLOYER JOB SITES

A pre-job briefing shall be conducted with the contractor prior to the initiation of work on the site. During this pre-job briefing, contractors shall notify Midland Engineering Co., Inc. of intention to enter the designated confined space area and if needed present current entry permits and Midland Engineering Co., Inc. shall reciprocate this action. The briefing should address any precautionary measures to be taken during normal conditions and during emergencies. By providing such information to other employers, Midland Engineering Co., Inc. does not assume any obligations that other employers have for the safety of their employees. In this regard, other employers working on Midland Engineering Co., Inc. property or for Midland Engineering Co., Inc. on client's property remain fully responsible for developing and implementing their own confined space programs. The on-site supervisor shall determine scheduled entries between employers and so they occur at separate times.

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## CONFINED SPACE ENTRY TEAM

When appropriate, Midland Engineering Co., Inc. will develop a written site-specific confined space procedure and complete training of all personnel required to work in confined space operations prior to the assignment start, change in assigned duties, when new hazards have been created or special deviations have occurred and monitor this procedure moving forward. Constant contact between the attendant and entrant must be maintained. Voice communication will be used for small spaces where the work being performed is not too noisy to hear. Portable radio or walkie-talkie communications will be used for larger spaces or when there is excessive noise. Any member of the confined space entry team can request additional monitoring and/or re-evaluation of the space.

Attendant Responsibilities - The attendant (Hole Watch) is the person stationed outside the confined space that monitors the authorized personnel inside. The attendant can monitor only one confined space area at any given point in time. The attendant must:

- Remain outside the confined space at all times during entry.
- Know how to summon rescue and other emergency services.
- Maintain continuous contact with personnel in the space.
- Maintain an account of personnel in the space and prevent unauthorized entry.
- Monitor activities inside/outside the space to determine if personnel are safe.
- Monitor air quality conditions remain at acceptable levels.
- Ensure necessary barriers are in place to protect space from external hazards.
- Know and be able to recognize potential hazards in the space.
- Never enter a space for rescue by yourself unprotected!
- Order a space evacuation if: Unsafe conditions exist inside/outside the space, toxic symptoms are exhibited by personnel in the confined space, and if the watchman leaves the work attendant position.

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Entry Supervisor Responsibilities - The entry supervisor is the person authorizing or in charge of confined space activities. The entry supervisor is responsible for:

- Determining if conditions are acceptable for an entry.
- Withholding authorization for entry if unacceptable conditions exist.
- Terminating entry if aware of potential hazards.
- Make sure the entry permit is prepared correctly.
- Removing unauthorized individuals from entry permit area.
- Signing permit.
- Entry Supervisor may also assume the duties of either the attendant or entrant after training.

Entrant Responsibilities - The entrant is the person entering the confined space to complete job tasks. The entrant responsibilities are:

- Know how to use personal protective equipment required.
- Understand symptoms of overexposure to potential toxic hazards in the space.
- Stay in constant contact with the attendant.
- Be on the lookout for new potential hazards & communicate or evacuate the space.
- Evacuate the space if told to do so.

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## PERMIT REQUIRED CONFINED SPACE ENTRY PROCEDURE

### Training

- Affected employees must be trained in all aspects of the purpose and use of the Confined Space Entry Procedures.
- Each employee must be trained in the use and purpose of all personal protective equipment. The training must include simulated emergencies during which respirators will be donned and rescue procedures practiced. A written training program based on this procedure shall be written by the Safety Manager and used as the training document.

### Sequence of Confined Space Entry

- Before any employee is allowed to enter a tank or other confined spaces, supervisory authorization must be obtained and a CONFINED SPACES ENTRY PERMIT must be initiated. The project supervisor in charge of the work must initiate this action.
- Prior to issuance of the permit, appropriate tests of the atmosphere must be made by authorized personnel from outside of the confined space to determine if established air contaminant limits are exceeded, or if the oxygen concentration is less than or greater than permissible concentrations. Tests must be made with the appropriate monitoring equipment. The person authorized to monitor the atmosphere must be trained in the proper use, calibration, and care of the monitoring instruments and must remain at the site when work is being performed in a confined space.
- Tests may indicate the atmosphere is initially safe, but the work may produce a hazardous atmosphere from such processes as cutting and welding, distributing of accumulated sludge, or use of solvents. Entry without continuous air monitoring, safety harness and lifeline will not be permitted.
- If tests indicate that the atmosphere is unsafe, the confined space must be ventilated until the hazardous atmosphere is removed, prior to employee entry.
- If after ventilating the space, tests indicate the atmosphere is less than 19.5 percent oxygen or levels of toxic contaminants hazardous to health, no person will be allowed to enter unless equipped with an approved airline respirator or a self-contained breathing apparatus.

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- Employees entering contaminated confined spaces shall be kept to a minimum and only for emergency maintenance.
- The employee entering the space must wear protective clothing if the contaminant can cause dermatitis, chemical burns, or can be absorbed through the skin.
- The CONFINED SPACE ENTRY PERMIT will not be issued unless provisions have been made for: (1) constant communication and/or observation with an employee in the immediate area who is not in the confined space: (2) an adequate rescue procedure: (3) someone to be readily available who has been trained in cardiopulmonary resuscitation (CPR). (4) If at any time any of these provisions are not being followed the confined space permit will immediately become invalid and the entry will be cancelled.
- In all cases, the company procedure will be followed. Before entering a confined space, the contents must be drained and clean-out doors opened where provided. Further, all lines/pipes serving the confined space must be isolated by positive means which may include, but is not limited to, blanking, miss-aligning, and securing valves in a closed position. Closure of double valves with lock and tag out is preferred over single valve closure.
- A hole watch shall be stationed outside the entrance to each confined space when employees are inside the confined space. The hole watch shall be trained in his/her duties regarding maintaining communication with employees and initiating rescue services if required. Hole watches shall not leave an entrance while employees are still in the confined space.

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### Special Considerations

- In potentially explosive or flammable atmosphere, non-sparking tools and portable vapor-proof electric lighting not exceeding 12 volts must be used. Smoking, open flames, and cutting or welding will be prohibited.
- Personal protective equipment, such as coveralls, impervious gloves, boots, face and eye protection, must be used as required by the nature of the operation to be performed.
- In the event of a sudden life-threatening or otherwise potentially dangerous situation requiring immediate action which involves entry into a confined space as defined in this procedure, and in the absence of time to complete testing and ventilation procedures, the atmosphere will be considered as unsafe to enter. Anyone entering into such a confined space for rescue or to monitor shall be properly trained in the use of and wear a SCBA.

### Equipment

- A combination combustible gas/oxygen meter, which samples for combustible vapors and oxygen deficiency simultaneously, is required. However, individual meters to sample for combustible atmospheres and oxygen deficiency may also be used. Other atmospheric monitoring equipment must be purchased and used for evaluation for other known gases such as hydrogen sulfide, sulfur dioxide, etc., which may be present in an enclosed space (tanks, vessels, etc.) at a client's process facility.
- Supplied-air breathing apparatus, such as self-contained respirator with full face piece operated in pressure demand mode (SCBA), or TYPE-C supplied-air respirator with full face piece operated in pressure demand mode with an emergency backup SCBA or escape bottle operated in a pressure demand mode must be used in atmospheres Immediately Dangerous to Life and Health (IDLH) and from which the user can readily escape.
- A supplied-air TYPE-C respirator may be used but is not mandatory. Either continuous flow or pressure demand mode may be used in areas that are not Immediately Dangerous to Life and Health (IDLH) and from which the user can readily escape.

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- **Harness and Lifelines:** A harness should be capable of retrieving an inert body in an upright position. A full body harness with a single lifting ring attached to the upper back, or with dual lifting rings attached to the shoulder straps, is recommended for work in open areas. Where egress through narrow openings is necessary, wristlets with attached lifting rings are required in addition to a body harness. Sufficient lifelines of at least one-half inch manila must be provided to insure constant connection between the employee in the confined space and the attendant outside.
- **When using hose line supplied-air units,** breathing air must be delivered through a filter board. The air quality of compressor-supplied air must meet the requirement as specified in 29 CFR 1910.134.
- **Ventilation:** A portable blower with a minimum capacity of 600 dfm at 1.5 inches static pressure should be used to supply air and ventilate the enclosed space prior to and during occupancy. If the space is large enough, additional air volume may be required.

#### Maintenance of Equipment

- A competent person must maintain and issue all self-contained and/or supplied-air breathing apparatus required by this procedure.
- The safety designee shall be responsible for issuing all entry permits.
- The safety designee shall maintain and ensure calibration of all combustible gas/oxygen meters that must be readily available for use as required.

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### Communicating with other Contractors

- When conducting confined space hazard assessments, other contractors work will be evaluated to identify potential hazards.
- Confined space permits will reflect communications between all contractors in the confined space.

### Rescue Services

Rescue procedures must be identified on the entry permit and communicated with the Confined Space Entry Team. The rescue services must be clearly defined as provided by either: the host facility, an outside service, or by Midland Engineering Co., Inc. If an outside service is chosen they will be given an opportunity to examine the entry site, practice rescue, and decline as appropriate. If Midland Engineering Co., Inc. is responsible for rescue services we will select a rescue team that is equipped and trained to perform the needed rescue services. Rescue services must be on-site for immediately dangerous to life and health (IDLH) conditions while work is being performed.

### Annual Internal Audit/Review

- Using the canceled permits retained from the Confined Space Permit Program, an annual review or internal audit should occur within 1 year after each entry, and revisions should be made to the program as necessary, to ensure that employees are protected.
- If multiple confined space entries occur during the year then a single annual review covering all entries performed during the specific 12-month period may be performed.
- If no entry is performed during a 12-month period, no review is necessary.

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## RECORDS

A confined space permit indicating the expiration time and date of the permit must remain posted at the entrance to the confined space for the duration. A copy of this permit will remain in the project files for one year, or the duration of the project (which ever is longer) along with the completed copy and test results of the atmospheric testing for the confined space.

Confined Space training records or acknowledgments will be maintained at the company's corporate office and will include the following information:

- Employee Name
- Trainer signature/initials
- Dates of training

Please make a written request to your supervisor for a copy of this record or if you are an authorized representative you may make a written request to the safety manager at the company's corporate office.

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## PERMIT REQUIRED CONFINED SPACE DECISION REPORT

INSTRUCTIONS: COMPLETE THE FOLLOWING QUESTIONNAIRE WITH SPECIFIC INFORMATION REGARDING CONFINED SPACE WORK TO DETERMINE IF THE SPACE IS PERMIT OR NON-PERMIT REQUIRED. THIS ANALYSIS AND PLAN IS SPECIFIC FOR THE FOLLOWING PROJECT:

Job Address & Phone Number: \_\_\_\_\_

Space ID & Description: \_\_\_\_\_

Work Description: \_\_\_\_\_

Person Filling out this Form: \_\_\_\_\_ Date: \_\_\_\_\_

### CONFINED SPACE ANALYSIS:

1. Does the site/client/owner classify all confined spaces, as permit required?  Yes  No  
If yes a permit is required. Please continue the analysis.
  
2. Is the space designed for continuous human occupancy?  Yes  No  
If no a permit may be required. Please continue the analysis.
  
3. Does the space have limited openings for entry or exit (for example storage tanks, silos, boilers, tanks, vessels, tunnels, vault, pipelines)?  Yes  No If yes a permit may be required. Please continue the analysis.
  
4. Is there adequate ventilation?  Yes  No If no a permit is required. Please continue the analysis.
  
5. Are there any hazards in the space? (They may include, but are not limited to: lack of oxygen, falls, burns, engulfment, chemical exposure, excessive noise, live electrical parts, and explosive atmospheres)  Yes  No If yes a permit is required. If the hazards can be eliminated the space may be reclassified to non-permit. Please continue the analysis and list the hazards:  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_
  
6. Will your work bring or create (for example cutting, welding, or gas-powered equipment) any hazards in the space?  Yes  No If yes a permit is required. If the hazards can be eliminated the space may be reclassified to non-permit. Please continue the analysis and list the hazards:  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**NOTE: If a permit is required all personnel that enter the space must receive information and training with documentation on file. All permit required confined spaces must have an attendant (hole watch) and continuous air monitoring must be completed. Attach this analysis to the confined space entry permit.**

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### Confined Space Entry Permit

Date: \_\_\_\_\_ Expiration Date \_\_\_\_\_ Expiration Time \_\_\_\_\_

Site Address/Phone #: \_\_\_\_\_

Space ID & Description: \_\_\_\_\_

Purpose of Entry: \_\_\_\_\_ Person Completing Form: \_\_\_\_\_

Name(s) of Entry Team & Position: \_\_\_\_\_

Entry Team Communication Procedures: \_\_\_\_\_

Rescue Procedures: \_\_\_\_\_

Emergency Response Personnel Phone Number: \_\_\_\_\_

Client Emergency Phone Number & Contact: \_\_\_\_\_

Air Monitoring Instrument Used \_\_\_\_\_ Model \_\_\_\_\_ Serial or Unit \_\_\_\_\_

**Answer the following:**

REQUIREMENT	YES	NO	N/A	REMARKS
Energy Isolation	___	___	___	_____
Purge/Flush/Vent	___	___	___	_____
Ventilation Equipment	___	___	___	_____
Secure Area	___	___	___	_____
Breathing Apparatus	___	___	___	_____
Full Body Harness	___	___	___	_____
Emer. Escape Equip.	___	___	___	_____
Lifelines	___	___	___	_____
Fire Extinguisher	___	___	___	_____
Lighting (explosive proof)	___	___	___	_____
Protective Clothing	___	___	___	_____
Hot Work Permit	___	___	___	_____
Non-Sparking Tools	___	___	___	_____
Hoisting Equipment	___	___	___	_____
Other	___	___	___	_____



<b>Midland Engineering Co., Inc.</b> Safety Management System			Doc No:	CONFSPA
			Initial Issue Date	12/14/15
<b>Chapter 08-Confined Space</b>			Revision Date:	Initial Version
			Revision No.	0
			Next Review Date:	
Preparation: Safety Mgr	Authority: President	Issuing Dept: Safety	Page:	Page 20 of 20

## Confined Space Entry Test & Training Acknowledgment

Name: \_\_\_\_\_ Date: \_\_\_\_\_

1. A confined Space is not designated for continuous occupancy. True False
2. Accidents and injuries in confined spaces result from.
  - a. Lack of Monitoring
  - b. Not using proper protection
  - c. Not de-energizing equipment
  - d. All of the above
3. An attendant must be present during entry activities. True False
4. The atmosphere of a confined space is hazardous if the concentration of flammable gas, vapor or mist is:
  - a. Not detected
  - b. So thick you can't see five yards in front of you.
  - c. Greater than 10% of its lower flammable limit.
5. Placing your face through the opening of a confined space is considered an entry. True False
6. Protective Equipment required in a confined space depends on the hazards present. True False
7. In case of an emergency, the attendant should rush in to rescue the employee inside. True False
8. The MSDS contains valuable information pertaining to a chemicals characteristics. True False
9. Residue left in confined spaces can cause:
  - a. Fire Hazards
  - b. Respiratory Hazards
  - c. Explosion Hazards
  - d. All of the above
10. Precautions to take before confined space entry include:
  - a. Atmosphere Monitoring
  - b. Lockout/Tagout
  - c. Permitting
  - d. All of the above
11. The atmosphere in a confined space is oxygen deficient if the level of oxygen falls below what percent:
  - a. 8
  - b. 37
  - c. 19.5
12. The entry permit authorizes anyone to enter a confined space. True False
13. The atmosphere of a confined space is unacceptable if the oxygen level is below \_\_\_\_\_percent or above \_\_\_\_\_ percent.
14. The attendant may leave only if it's for a few minutes. True False
15. Hot work activities can change the atmosphere in a confined space. True False

**I acknowledge that I have received information and training on potential hazards and proper procedures for confined spaces. This training has given me an understanding of the importance of atmospheric monitoring, confined space permits, attendant, entry supervisor, and entrant responsibilities. If I do not understand any information presented to me, I will ask questions.**

\_\_\_\_\_  
Participant Signature

\_\_\_\_\_  
Instructor Signature