



## CONFINED SPACE ENTRY FOR THE LANDFILL INDUSTRY

### Summary

The federal Occupational Safety and Health Administration (OSHA) has enacted and implemented a final rule regarding confined spaces, the entry of and the permits required to enter such spaces. This standard specifically protects the entrants from the serious atmospheric hazards that pose special dangers. These atmospheric dangers can include but are not limited to:

- Toxic Vapors
- Explosive Gases
- Asphyxiating Atmospheres

This standard gives employers an implementation guideline to eliminate or reduce injuries and fatalities to employee's who perform work assignments in confined spaces. This Technical Tip provides highlights from the Federal register Volume 58, No.9, 29 CFR Part 1910 Final Rule, Permit-Required Confined Spaces effective April 15, 1993. It is not inclusive and the original document should be thoroughly read and understood before implementing any portion of this document.

### Background

In today's workplace, people who work within confined spaces expose themselves to an increased risk and the possibility of accidents. Complacency of confined space safety has been the common practice within many industries. As a result of this complacency and the lack of education, training, equipment, preparation and enforcement, many confined space accidents have needlessly occurred. OSHA reports the leading cause of injury and fatality to be the result of asphyxiation due to oxygen deficient atmospheres or exposure to toxic atmospheres. Other fatalities due to explosive or flammable atmospheres, engulfment, mechanical hazards and untrained rescuers have been documented. In the landfill, confined spaces do exist and are usually not identified or recognized. Such confined spaces can include well sampling vaults, sewer line and manholes, storage tanks, balers and compactors. Through legislation, OSHA is attempting to minimize the hazards associated with entering into confined space entry each year.

### Defining a Confined Space

A confined space is defined as a space that:

- Is large enough and so configured that an employee can bodily enter and perform assigned work, and
- 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 a limited means of entry), and
- Is not designed for continuous employee occupancy.

## Recognizing the Two Types of Confined Spaces

1910.146 Permit-Required Confined Spaces are those types of spaces that may expose employees to the risk of death, incapacitation, impairment of self rescue, injury or acute illness from one or more of the following hazardous atmospheres: flammable gas, vapor or mist in excess of 10 percent of the LFL (lower flammable limit), atmospheric oxygen concentration below 19.5% or above 23.5% or atmospheric concentrations of any substance for which a dose of a permissible exposure limit is published in Subpart G, Occupational Health and Environmental Control, or Subpart Z, Toxic and Hazardous Substances. Immediately Dangerous to Life and Health (IDLH) means any condition that poses an immediate or delayed threat to life, health or would interfere with an individual's ability to escape or self rescue unaided from a space is also covered in the permit-required section.

1910.16 Non-Permit Confined Space means a confined space that does not contain or, with respect to atmospheric hazards, have the potential to contain any hazard capable of causing death or serious physical harm.

## Permits for Entry

A written permit procedure must be established and implemented prior to any permit required entry. The information on this permit shall identify:

1. Permit space to be entered
2. Purpose of entry
3. Date and authorized duration of entry
4. Authorized entrants by name
5. Authorized attendants by name
6. Name and signature of entry supervisor
7. Hazards within the permit space
8. Measures used to isolate permit hazards in space and eliminate or control hazards prior to entry
9. Acceptable entry conditions
10. Results of initial and periodic testing performed
11. Rescue and emergency services plan
12. Communication procedures
13. Other equipment used, such as personal protective equipment (alarms, rescue, etc.)
14. Other information inclusive to space to secure safety
15. Any additional permits used

## Requirements and Responsibilities

It is the responsibility of the employer to recognize, identify and inform employees of confined spaces and post danger signs stating the location and the dangers that exist within those spaces. If the employer has employees enter into confined spaces, the employer shall develop and implement a written program that specifically complies with 1910.146. This program shall be available for inspection by employees and their authorized representatives. The employer must also have in place the required equipment to do such entries and provide the training for the safe operation of the equipment to its employees who will be using such equipment. This equipment can include: testing and monitoring instruments, ventilating equipment, communications equipment, personal protective equipment, lighting equipment, barriers and shields, ladders and other equipment used for ingress and egress, rescue and emergency equipment.

## Atmospheric Monitoring

Verification of the atmosphere and its conditions must be determined acceptable prior to authorization of entry. This atmosphere must be checked with a calibrated direct readout monitor. The following conditions must be properly monitored for in the follow order.

1. Oxygen content
2. Flammable gases and vapors
3. Potential Toxic air contaminant

Additional requirements, such as forced air ventilation shall be used prior and during occupancy of the space. Periodic atmosphere testing shall continue as necessary to ensure the ventilation procedure is preventing the accumulation of hazardous atmospheres. Should a hazardous atmosphere be detected during entry, the employee shall immediately leave the space and not return until the atmosphere has been deemed safe through the same previously mentioned procedures.

### **Topside Monitoring Attendant**

At least one trained attendant shall be outside the confined space monitoring the entry during the entire operation. Persons should be designated to have an active role during and throughout the operations. The development and implementation of proper procedures is vital to a successful operation. Procedures should be developed for the rescue and retrieval of entry personnel.

### **Emergency Rescue Personnel**

Employees who enter into a confined space for rescue activities must be provided with the proper equipment to perform such rescues. Each rescuer shall have a designated duty in the rescue and be trained in first aid and cardiopulmonary resuscitation (CPR). Each rescue team must train and practice a simulated rescue in an actual confined space at least once every twelve months. Other procedures for a non-entry rescue, such as a retrieval system, shall also be used and prepared for accordingly.

### **Continuing Safety Training**

Constant evaluation and assessment of current safety practices and procedures should be reviewed, updated and changed as necessary. The implementation of a hands-on approach and practice of such safety procedures will ensure the effectiveness and success. This will also enhance and heighten employee awareness, ensure compliance and protect the overall health and safety of all personnel. On the following page is a confined space decision flow chart taken directly from the Federal Register to assist the user in assessing, entering and safety performing confined space entries. Further questions and assistance should be forwarded to your local, state and Federal OSHA agencies.

### **Additional Information**

LANDTEC's technical tips and products are based on over a decade of operating and regulatory experience at multiple landfill gas to energy sites by LANDTEC's parent, Pacific Energy.

Information is available on LANDTEC's family of integrated landfill products including: automatic landfill gas monitoring systems, wellheads, wellbore seals, knock-outs, instrumentation, condensate/leachate treatment systems, integrated flare stations and landfill gas management software.

For product information and our complete series of landfill gas technical tips, please call the West Coast Sales Office at (800) 821-0496 or the East Coast Sales Office at (800) 844-4538.

Copyright © 2005 CES-LANDTEC  
<http://www.ces-landtec.com>  
(909) 783-3636  
(800) 821-0496

CES-LANDTEC  
850 South Via Lata  
Suite 112  
Colton, CA 92324

Permit-Required Confined Space Decision Flow Chart

