

When Seconds Count: How to Select Your Confined Space Entry Rescue Team

Hazards are ever-present in the steel plant environment, and a heightened awareness and emphasis on safety is a necessary priority for our industry. This monthly column, coordinated by members of the AIST Safety & Health Technology Committee, focuses on procedures and practices to promote a safe working environment for everyone.

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Comments are welcome. If you have questions about this topic or other safety issues, please contact safetyfirst@aist.org. Please include your full name, company name, mailing address and email in all correspondence.

Confined space entries occur in the workplace every day, and part of the requirements for safe entry is the need for rescue capabilities for entrants. It is up to the host employer to evaluate the benefits of training on-site employees or relying on an outside rescue service. That evaluation process can make the difference in the outcome of a confined space emergency event.

As stated in the General Industry Standards, 29 CFR 1910.146 Permit Required Confined Space, the Occupational Safety and Health Administration (OSHA) has set forth the requirements that must be met for an employer to perform confined space entries. One specific area of the standard is seldom emphasized, and that is the section requiring employers to have confined space rescue procedures. Unless the employer has a trained and equipped rescue team on-site, this section rarely gets the proper attention. The choice of using on-site versus outside emergency responders must be weighed carefully. Many employer sites rely on calling their local emergency service to summon emergency responders as part of their program. However, employers seldom evaluate the emergency responders that are expected to come into their facility and perform critical rescue functions.

An unfortunate example of this lack of attention occurred on 7 May 2010 in Ohio when emergency responders were summoned to perform a confined space rescue for a man trapped in a sewer. The responders were not utilizing any breathing air apparatus and

were unaware that the sewer was located next to a manufacturer of compressed gases and the hazards associated with this location. The atmosphere contained less than 2% oxygen and affected personnel outside of the confined space. Two of the rescuers that entered into the confined space without any breathing air apparatus were hospitalized.

Examples like the previously mentioned emergency response highlight the need to apply appropriate evaluation mechanisms to minimize potential negative outcomes. This article addresses the requirements for summoning rescue and emergency services.

The specific wording from the OSHA General Industry Standard is as follows:

1910.146(d)(9)

Develop and implement procedures for summoning rescue and emergency services, for rescuing entrants from permit spaces, for providing necessary emergency services to rescued employees, and for preventing unauthorized personnel from attempting a rescue.

As described in 29 CFR 1910.146(d)(9), the site employer is required to develop a procedure for the proper handling of confined space emergencies. Employers need to determine if the responders have the technical competency and equipment to perform in a confined space rescue event. Confined space rescue is a technical competency that requires continued training and specialty equipment that may not be available to local emergency responders. Another requirement

Figure 1



Examples of specialized confined space rescue equipment: supplied air respirators with airline, communication system with throat microphones, rescue harness and atmosphere monitoring meters.

for confined space rescue is having backup responders prepared to enter at any time (Two In/Two Out Rule), so a sufficient number of support personnel are needed in the event of a response.

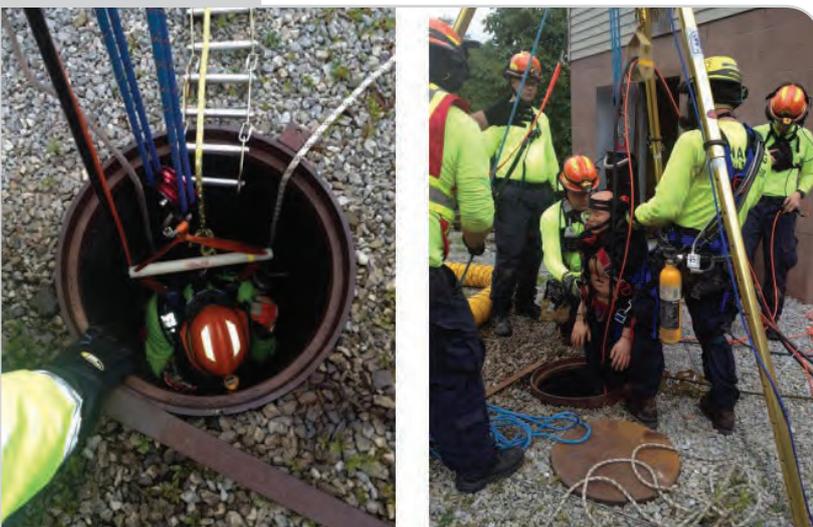
Part of the OSHA standard, specifically 29 CFR 1910.146(k)(1)(i), states that a company must “respond to a rescue summons in a timely manner.” This again requires site management to evaluate responders on their abilities and the equipment required for a confined

space emergency prior to an event and to practice a response. Additionally, the emergency responders need to be familiar with the facility to ensure a timely response to the proper location. Responders need to be aware of the hazards associated with the confined spaces and the methods that are typically put into place to create a safe working environment as part of the OSHA standard. Examples of these methods are energy control procedures (ECPs), ventilation, line blanking, inerting/purging and cleaning procedures.

The use of outside emergency responders requires that the host employer evaluate the responders’ capabilities, similar to the manner in which they currently evaluate outside contractors. This assessment is usually performed by another outside contractor. The evaluation criteria are significantly different than typical outside contractors. Measurement tools, such as employee modification rates (EMR) and a review of program elements, are not fully applicable to emergency response providers; the evaluation process requires the employer to review capabilities and equipment as well. The non-mandatory Appendix F of the OSHA standard provides details to be applied to the selection of a rescue provider. This appendix describes observation and demonstration as part of the selection process. Additional criteria to be evaluated are the availability and ability to apply the specialty rescue equipment required for a confined space rescue. These items, such as supplied air respirators, communications devices, atmospheric monitoring, technical rescue (retrieval) equipment and other special equipment (see Figure 1), need to be maintained in a state of readiness. Another measurement

tool to be applied is the documentation of training and accreditation. A professional certification in confined space rescue is offered by the National Pro Board certification program. The competencies required for both confined Space Rescue Technician Levels I and II are based on the National Fire Protection Association (NFPA) 1006 Standard for Technical Professional Rescuer. Obtaining these certification levels requires successful completion of a written examination and a practical evaluation utilizing the specialty rescue equipment previously identified. As part of this practical evaluation, the evaluators are able to measure the performance of the candidates utilizing a standardized set of job performance requirements.

Figure 2



Confined space rescue skills include rope/rigging, use of speciality rescue equipment and patient management. Patient handling is performed in confined spaces with restrictive movements and may involve application of patient stabilization devices (right).

The specific sections of NFPA 1006 that are applicable are as follows:

- Chapter 4 Technical Rescuer.
 - 4.1 General Requirements.
 - 4.2 Entrance Requirements.
 - 4.3 Minimum Requirements.
- Chapter 5 Job Performance Requirements.
 - 5.1 General Requirements.
 - 5.2 Site Operations.
 - 5.3 Victim Management.
 - 5.4 Maintenance.
 - 5.5 Ropes/Rigging.
- Chapter 6 Rope Rescue.
 - 6.1 Level I General Requirements.
 - 6.2 Level II General Requirements.
- Chapter 7 Confined Space Rescue.
 - 7.1 Level I General Requirements.
 - 7.2 Level II General Requirements.

Each section in the NFPA standard identifies critical skill sets and measurement mechanisms to assist companies in evaluating those emergency providers that can comply with the requirements set forth in NFPA 1006.

When applying the requirements of NFPA 1006, an employer must evaluate the capabilities of the responding provider. As previously stated, professional certifications are the preferred measurement tool. The employer should also evaluate the equipment that may be required to perform on their site. This includes vertical as well as horizontal entrances into confined spaces. Each scenario has limitations and risks. The key to success is to minimize the risks and provide annual training opportunities for the selected responding provider to test their capabilities and equipment.

Unfortunately, the specialty equipment needed for confined space rescue is expensive and not used every day, and monthly inspection is required. Much of the equipment needed is not carried by every rescue provider. Thus, a thorough evaluation process is necessary to ensure that the chosen provider is adequately equipped for confined space emergencies.

A sample of specialty equipment required to perform confined space rescue is as follows:

- Energy control equipment — lockout/tagout (LOTO) specific.
- Personal protective equipment (PPE).
- Respiratory protection equipment — supplied air respirators (SAR).
- Airline hose — maximum of 300 feet of hose per rescuer is required.
- Rescue-rated ropes (NFPA 1983 Standard on Life Safety Rope and Equipment for Emergency Services).
- Rescue harnesses.
- Rescue tripod.
- Patient packaging equipment/first aid equipment.
- Atmosphere monitoring equipment (oxygen, combustible gas, carbon monoxide, and hydrogen sulfide).
- Specialty communications equipment that may be used in explosive atmospheres.
- Specialty lighting equipment that may be used in explosive atmospheres.

In conclusion, the need to evaluate emergency response providers is a requirement under the OSHA standard and a good practice to minimize potential deficiencies for confined space rescue events. Applying typical and developing innovative evaluation techniques should be a priority for the employer and reviewed with responding providers before there is an actual confined space emergency. When the alarm sounds, it is not the time to evaluate the competencies and equipment needed to effect a confined space rescue. Aggressive preparation and evaluation will help secure an understanding of the required elements that each partner — facility and responders — brings to the table when seconds count.

