ABOUT CONFINED SPACE ENTRY

LENGTH: 12 MINUTES

PROGRAM SYNOPSIS:
Our workplace is full of hazards, hazards than can hurt us, or kill us. Controlling these hazards and preventing injuries is the point of our safety and health program. One such hazard is the conditions that exist inside confined spaces such as manholes, tanks, vessels, pits and similar areas. Controlling access to confined spaces and the hazards they contain can prevent injuries and safe lives. That is the point of our facility's Confined Space Entry Program and that is the point of this program.

Topics include the confined space entry permit, atmospheric hazards, atmospheric testing and monitoring, other confined space hazards and how they are controlled and the duties of the entry supervisor, the attendant and the entrants.

PROGRAM OBJECTIVES:
After watching the program, the participant will be able to explain the following:
- Which atmospheric hazards can be found in a combined space;
- How the atmospheres of confined spaces are tested and monitored;
- What other hazards can exist in a confined space and how they are controlled:
- What the duties are of the entry supervisor, the attendant and the entrants.

INSTRUCTIONAL CONTENT:

DEFINITION OF A CONFINED SPACE
- A space can be considered a confined space if it meets the following criteria: the space is not designed for continuous occupancy by an employee, is large enough for an employee to enter and perform work and the space has limited means of entry and exit.
- Confined spaces can be classified as permit-required and non-permit required.
- Spaces that do not have the potential to contain serious hazards are classified as non-permit required spaces. Non-permit spaces have no special requirements for entry.
- Spaces that are likely to contain serious health or safety hazards will be classified as permit required confined spaces. Entry into permit required spaces is prohibited unless a written entry permit is issued.

THE CONFINED SPACE ENTRY PERMIT
- The confined space entry permit will document the methods used to control a confined space's hazards and ensure a worker is safe while entering, working in and exiting the space.
- Some of the information included on the permit are the identity of the space to be entered, a list of personnel involved in the entry process and their responsibilities, the acceptable conditions for entry, the results of testing used to certify the space safe to enter and a list of specific personal protective equipment, specialized tools or rescue devices required for the operation.

ATMOSPHERIC HAZARDS
- Unfortunately, many fatalities have occurred in confined spaces due to various types of atmospheric hazards. To enter a confined space safely, workers must make a point of testing for and controlling any type of atmospheric hazard.
- According to OSHA, an atmospheric hazard exists when something in the air may expose workers to the risk of death, incapacitation, impairment of the ability to self- rescue, injury or acute illness.
- One atmospheric hazard that exists in many confined spaces involves the concentration of oxygen.
- An oxygen-deficient atmosphere exists when a space's oxygen level in the air is below 19.5 percent. This means there is not enough oxygen for sufficient breathing by workers
- When oxygen levels exceed 23.5 percent, an explosive atmosphere exists in which any source of ignition could cause a fire or explosion. This is known as an oxygen-rich atmosphere.
- Explosive atmospheres are also created when any flammable gas exceeds 10 percent of its lower explosive limit and when airborne combustible dust is present that meets or exceeds its lower flammable limit.
- Another type of hazardous atmosphere that can exist in a confined space is a toxic atmosphere.
- A toxic atmosphere exists when a confined space contain levels of a toxic substance that exceed its permissible exposure limit.
- Sometimes the atmospheric conditions inside a space are so hazardous that they pose an immediate danger to life or health; would cause irreversible adverse health effects; or would interfere with a person's ability to escape without help from a confined space.

- OSHA refers to this type of condition as an IDLH condition. IDLH stands for “immediately dangerous to life and health.”
- Toxic gases and vapors in confined spaces come from a wide variety of sources. Carbon monoxide, hydrogen sulfide and methane are three of the most common naturally-produced gases that can be fatal for confined space occupants

ATMOSPHERIC TESTING & MONITORING

- Our facility’s Confined Space Entry Program requires that all atmospheric hazards be controlled or eliminated before anyone is allowed to enter the space.
- The first step is to test the atmosphere of the space with a calibrated direct-reading instrument.
- This atmospheric testing must check for oxygen content, combustible gases and vapors and toxic air contaminants, in that order.
- The entry permit will list the atmospheric conditions acceptable for entry, but at a minimum, your test should ensure that oxygen levels are between 19.5 and 23.5 percent, that combustible gases do not exceed 10 percent of their lower flammable limit and that any toxic gases do not exceed their permissible exposure limits.
- When testing the atmosphere of a confined space, you must take readings at the top, middle and bottom of the space to locate varying concentrations of gas and vapors.
- Gases can accumulate at the top or bottom of a space depending on if they are more or less dense than air.
- If atmospheric testing indicates a hazardous atmosphere exists, forced-air ventilation must be used to eliminate the hazard before the space may be entered.
- Monitoring of the atmosphere must continue during the entry to make sure the ventilation is maintaining a safe atmosphere. Ventilation must continue until all employees have exited the space.

OTHER HAZARDS & THEIR CONTROLS

- Besides hazardous atmospheres, there are often other hazards inside a confined space that must be controlled to ensure a safe entry.
- Mechanical hazards such as rotating shafts and cutting blades often pose a risk of injury to entrants of confined spaces.
- Engulfment hazards exist when workers can stand or fall into certain materials that can trap and engulf them.
- Workers can also be engulfed when materials are released into the space resulting in crushing injuries and suffocation.
- There are a variety of procedures that are used to control these types of hazards inside a confined space.
- Line-breaking and blanking may be required to isolate a space and prevent the inflow of materials.
- Lockout/Tagout procedures will be required to safely de-energize any type of moving equipment or machinery.
- An important part of the permitting process includes certifying that all hazards have been properly controlled before the entry permit is issued.

THE ENTRY SUPERVISOR

- The entry supervisor oversees the entry and uses the written permit as a checklist to verify that all precautions to make a safe entry have been followed.
- The supervisor also makes sure all testing has been completed, all procedures and equipment listed on the permit are in place and that the confined space rescue service is available if needed.
- To approve entry into the space, the supervisor must sign the entry permit.
- During the entry, the supervisor must periodically check to see that conditions remain consistent with the terms of the entry permit.
- If the entry supervisor discovers any condition that violates the terms of the permit, the permit must be canceled and the space must be vacated.

THE ATTENDANT

- The attendant monitors the conditions inside and outside the space as well as the condition of the entrants inside the space.
- The attendant must be familiar with any potential hazards of the space and be able to recognize the signs and symptoms of exposure to those hazards.
- Attendants must be able to identify the personnel inside the space at all times and maintain contact with them through hand signals, radio or some other means.
- If the attendant discovers conditions prohibited by the permit or an entrant displays behavior that could indicate hazardous conditions, he or she must call for all entrants to exit the space.
- In the event that an entrant in injured, overcome or is otherwise unable to exit the space under his own power, the attendant must contact the rescue service immediately.
- Although the attendant must also be trained as an entrant, he must not enter the space and must prevent unauthorized employees from entering while waiting for rescue personnel arrive.

THE ENTRANTS

- The entrants are the employees who actually enter the space to perform work. They are the only members of the entry team permitted to enter the space.
- Entrants must understand the specific hazards of every space they enter and be aware of any symptoms of exposure and warning signs that indicate the onset of dangerous conditions.
- Entrants must be allowed to review the results of any atmospheric testing used to verify the space safe for entry.
- While inside the space, the entrants must maintain communications with the attendant so the attendant can monitor the condition of the entrant and the operation’s status.
- Entrants can also call for an evacuation of the space and must do so when they discover any sign or symptom of exposure to a dangerous situation or any conditions that violate the entry permit.