PRESENTER'S GUIDE

"CONFINED SPACE ENTRY"

Training for THE OSHA
PERMIT-REQUIRED CONFINED SPACES STANDARDS

"Quality Safety and Health Products, for Today... and Tomorrow"

OUTLINE OF MAJOR PROGRAM POINTS

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The following outline summarizes the major points of information presented in the program. The outline can be used to review the program before conducting a classroom session, as well as in preparing to lead a class discussion about the program.

- **Most of the time, you routinely take your skills to wherever a job needs to be done and do it.**
  - — But it's different when the work has to be done in a confined space, because those jobs are never routine.

- **Confined spaces are dangerous.**
  - — Several hundred workers are killed every year while working inside them.

- **That's why OSHA (the Occupational Safety and Health Administration) created its General Industry and Construction Permit-Required Confined Space regulations.**
  - — Whenever you're in a confined space these regulations apply to you.
  - — And if you're doing "construction"- type work, building, altering or repairing the space, even if you're not a "construction worker" you have to comply with the construction version of the regulation.

- **Whatever you're doing, you need to pay attention, because the principles and practices contained in these regulations can help you avoid becoming a statistic.**

- **What are "confined spaces"?**
  - — They're large enough for you to get into and out of, but entry and exit are physically limited or restricted.
  - — They're also large enough for you to work in, but they're not designed for continuous use.

- **Confined spaces can take many forms, including:**
  - Tanks.
  - Vessels.
  - HVAC ducts.
  - Storage bins.
  - Water mains.
  - Vaults.
  - Pits.

- **The hazards you can find in them fall into four general categories.**

- **The first is "hazardous atmospheres". These may contain:**
  - Too little or too much oxygen.
  - Flammable gases, vapors or dusts.
  - Toxic contaminants.

- **Hazardous atmospheres are the cause of many confined space fatalities.**

- **The next source of risk is something you would expect to find in confined spaces… that is, layouts that create tight areas where you could be trapped or asphyxiated.**

- **Some spaces may contain liquids or finely-grained solid materials that can engulf, crush or suffocate you, the third type of risk associated with confined spaces.**

- **The fourth risk category is a "catch-all" that includes any other serious safety or health risks that may be present in a confined space, such as:**
  - Unguarded machinery.
  - Exposed live wires.
  - Even heat stress.

- **The best way to avoid these hazards is to bring your work outside of the confined space, but often that's not possible.**

- **The confined space regulations have established a set of standard "safe work practices" to help keep employees safe while working in these spaces.**

- **These procedures are used by a facility to develop its own "Permit-Required Confined Space Program", also known as a "Permit Space Program". This program is intended to:**
  - Control the access to confined spaces.
  - Control the hazards inside them.
  - Protect workers from these hazards.

- **An employer starts out by identifying all of the confined spaces within the workplace that have one or more of the four types of hazardous conditions.**

- **The next step is to inform employees about the spaces by posting "warning signs" by them.**
  - Some of these signs may say that the space is simply "off limits".

- **Other signs will say that a written "Entry Permit" is required to enter the space.**
  - This is known as a "Permit-Required Confined Space", or "Permit Space" for short.

- **When work needs to be done inside one of these Permit Spaces, a careful step-by-step process must be followed to prevent accidents and injuries.**
  - The "Permit Space Program" also ensures that all employees who might enter a Permit Space will receive the safety training they need to do it safely.

- **One of the things that a Confined Space Entry Program will discuss is the "Entry Team". This team consists of:**
  - "Entrants".
  - "Attendants".
  - An "Entry Supervisor".

- **While these are distinct roles, at times an employee will perform more than one of them in the course of an entry.**
  - This means that all team members need to know the hazards that are involved with a space, as well as the signs, symptoms and consequences of exposure to those hazards.

- **The document that prepares the team to enter a confined space safely is called an "Entry Permit".**
    - The permit that is required to enter a confined space is more than just a "permission slip".
    - It also helps guide the Entry Team in getting the job done safely.
    - It's an important source of information before, during and after the entry takes place.

- **The information on an Entry Permit includes:**
    - The location and nature of the confined space to be entered.
    - The reason for the entry.
    - The date and authorized duration of the entry.

- **The Permit must also identify the Entry Supervisor, Entrants and Attendants who have been okayed to work on the job.**
    - It will identify each of the hazards associated with the confined space, and the measures that will be taken to isolate, control or eliminate them.
    - It will specify what conditions have to exist inside the space before it can be entered.

- **When additional documents, such as "Hot Work Permits", are required for the work to proceed, the Entry Permit will list them too.**
    - It also lists the personal protective equipment that should be worn, and includes details on any communications gear, atmospheric monitors and alarm systems that will be used.

- **The Permit will contain the contact information for local rescue squads, police and fire stations, as well as a list of any emergency equipment that must be on hand for the entry as well.**

- **Before the entry can begin, the Entry Permit has to be signed by the Entry Supervisor. It will then remain valid only until:**
  - The project is completed.
  - A condition arises which is prohibited by the Permit.

- **If work is stopped and the space is evacuated the Permit must be cancelled if the work that is being performed falls under the General Industry version of the Standard.**

- **If "construction" work is being done, then depending on the nature of the problem the Permit may be suspended rather than cancelled while the prohibited condition is investigated.**
  - If the problem can be fixed, the Permit can be reinstated, and work can resume in the space.
  - If the problem can't be resolved, the Permit must be cancelled.

- **Details of any problems that occur during the entry will be recorded on the Permit so they can be studied later.**

- **Entry Permits from completed jobs will be kept on file for at least one year.**
  - In addition to documenting the entry, they can also be used to help determine where the facility's Permit Plan can be improved.

- **Hazardous atmospheres in confined spaces can be lethal.**
  - Not only can they kill Entrants, but they can also be fatal to people who rush in to assist Entrants who have been overcome.

- **Hazardous atmospheres can be invisible to the naked eye.**
  - So testing for them is essential in determining what safeguards must be put in place before entering a confined space.

- **The first atmospheric test that is required by OSHA measures oxygen levels.**
    - Having too much or too little oxygen can both make an atmosphere hazardous.
    - When levels measure below 19.5 percent, a person can't breathe in enough oxygen to do physical work safely.
    - Oxygen levels above 23.5 percent significantly increase the risk of a spark or other ignition source causing a fire or explosion.

- **The next tests that must be conducted are for flammable gases and vapors, from substances such as methane, acetylene, carbon disulfide and gasoline.**
    - These can become flammable or explosive if enough of them build up in a space.
    - When tests show that a gas or vapor has reached a concentration greater than ten percent of its "lower flammable limit" ("LFL") then the space must be ventilated.

- **"Combustible dusts" can present a similar hazard when their concentrations reach or exceed their LFLs.**
    - As a rule of thumb, if dust obscures your vision at a distance of five feet or less, it has probably reached a dangerous concentration.
    - But actual testing must be performed to accurately judge whether a dust concentration is unsafe.

- **The last atmospheric tests look for toxic contaminants in the atmosphere of a space.**
    - Carbon monoxide and hydrogen sulfide are the two most commonly encountered contaminants, but a number of others must be tested for as well.
    - Breathing in these substances can cause confusion, illness, loss of consciousness, even death.

- **To ensure the ongoing safety of the people who are entering a space, this atmospheric testing must continue throughout the entry.**
    - The results and times of the initial and subsequent tests are recorded on a space's Entry Permit.

- **There are a number of things that can be done to make entering a confined space as safe as possible.**

- **A Permit Space Program will require that specific safety procedures be followed to reduce risks before anyone goes inside a space.**
    - If testing reveals that there is a hazardous atmosphere in the space, continuous forced-air ventilation will be used to clear the air.
    - Unfortunately, forced-air ventilation alone won't always protect Entrants from toxic gases and vapors.
    - In these cases, the Entry Permit may require that Entrants wear respirators or self-contained breathing apparatus.

- **Even if tests show that the atmosphere in a space isn't hazardous to begin with, when tasks like welding, riveting, cutting, burning, and heating are performed in a confined space, they can cause caked-on residues to boil off and release toxic or flammable gases into the air.**
    - Written authorization for any of these activities must be provided by the employer in the form of a "Hot Work Permit".
    - Before signing off on the Entry Permit the Entry Supervisor must verify that the Hot Work Permit has been issued and appropriate respiratory precautions have been taken.

- **Some confined spaces contain equipment and heavy moving parts that could trap or crush an Entrant, or energized components that could cause electrocution, burns or other injuries.**
    - In these cases all sources of energy should be shut off, and all mechanical linkages should be blocked before anyone enters the space.

- **Lock-out/tag-out procedures must be strictly followed to reduce the potential for someone restoring the power while the entry is in progress.**
    - In some instances, it may be impossible to lock-out certain types of essential equipment.
    - When this is the case, other safety measures must be taken.
    - If you have questions about electrical safety in a space you're working with, ask your supervisor.

- **As we've seen, a Permit Space Entry Program requires careful preparation before anyone sets foot inside a hazardous confined space.**
    - The Program takes a similarly cautious approach to the entry itself.

- **To start, the space's Entry Supervisor will make certain that rescue services are standing by, and that the systems that are used to contact them are working, too.**
    - Rescue personnel will have previously been informed about all potential rescue scenarios, and given access to the facility's confined spaces to plan and practice in them ahead of time.

- **The Supervisor will then check the notations that have been made on the Permit to verify that:**
    - All of the required safety tests have been made.
    - All required procedures and equipment are in place.

- **When the Supervisor is satisfied, they will sign off on the Permit.**
    - Now the entry may begin.

- **As the operation proceeds, the Entry Supervisor will also warn off any unauthorized individuals who attempt to enter the Permit Space.**
    - This prevents untrained workers from interfering with the entry or being exposed to hazards they aren't prepared for.

- **The Entry Supervisor will also monitor the progress of the work in the space, to ensure that it proceeds within the guidelines established by the Permit.**
    - If hazards develop at any time, he will stop the work, evacuate the space and suspend or cancel the Permit.

- **"Entrants" are the personnel who actually enter a space to perform the work.**

- **If you are called upon to work as an Entrant, you will be trained in all the safe work procedures that are required for confined spaces, including:**
    - How to put up barriers and shields around entry points.
    - How to install forced-air ventilation systems.
    - How to use ladders and other gear for entering and exiting a space.
    - How to work with lighting equipment, including explosion-proof varieties that are used in potentially flammable atmospheres.

- **You will also be trained in:**
    - The proper use of personal protective equipment.
    - How to monitor the air quality while you're inside a confined space.
    - The evacuation alarms on automatic monitoring devices (so you'll know when to get out).

- **In most cases, Entrants wear a chest or full-body harness with a retrieval line attached at the center of the back near shoulder level.**
    - The line may also be attached to wristlets or anklets, but only if conditions inside the confined space make wearing a harness impractical or dangerous.
- **If the space is over five feet deep, the other end of the retrieval line should be attached to either a fixed point**

outside the entrance or a retrieval device such as a tripod and winch.
    - These "non-entry" retrieval systems enable the Attendant or other personnel to pull you out if you are incapacitated, without putting themselves at risk.
    - These systems must be in place unless they would actually increase the Entrants' risk during operations, or fail to help in a rescue attempt.

- **Because communication is so important between Entry Team members, as an Entrant you'll also be trained to use communication equipment such as walkie-talkies to stay in touch with your Attendant.**
    - In addition to updating them on the status of the entry, you may need to inform them of any hazards that may be developing.
    - You also have to be able to receive an evacuation order from the Attendant or the Entry Supervisor, in case of an emergency.

- **If you are assigned to be a confined space "Attendant" you will have very different duties from Entrants.**
    - For one thing, normally Attendants don't enter a confined space themselves.
    - As an Attendant your job is to stay by the entrance and monitor what goes on both inside and outside the space.
    - This allows you to make quick, informed decisions about whether it's safe for the entry to continue, or the work should be stopped and the Entrants evacuated.

- **Situations where you should immediately order an evacuation of a space include:**
    - When you see that a new hazard is developing.
    - When an Entrant tells you that a hazard is developing.
    - When an Entrant is showing symptoms of oxygen deprivation or exposure to toxic substances.

- **It's critical for you to be able to recognize the signs of elevated toxicity or lack of oxygen in an Entrant.**

- **You'll also need to thoroughly familiar with the Entry Permit, because if a "prohibited condition" arises, that will require an evacuation, too.**
    - — You must keep track of the number of Entrants in a space as well, so they all can be accounted for if something happens.

- **As an Attendant you can be a very busy person. You may need to monitor more than one entry space at a time, and also perform other tasks, such as handing tools to Entrants or warning unauthorized personnel away from the operation.**
    - — These activities must never interfere with your ability to monitor entry personnel and keep an eye out for problems.

- **If at any time you feel you cannot safely and effectively perform all of your assigned duties, you should stop the work and get the Entrants out.**

- **If an emergency does occur when there are Entrants in a space and they need help to escape, you should call for rescue services immediately.**

- **It's also important to remember that whenever a Permit Space is evacuated, an evaluation must be conducted afterward to find out what went wrong.**
    - — Only after steps have been taken to prevent the situation that caused the evacuation from occurring again can the space be re-entered.
    - — A new Permit must be filled out and signed by the Entry Supervisor before anyone goes into the space again.

- **Special situations can sometimes come up in confined space entries as well.**
    - — You need to understand how they should be handled.

- **For example, some confined spaces may only require a few safety precautions.**

  - When the only hazards that are found in a space have to do with its atmosphere, forced-air ventilation alone may be enough to control them, so additional precautions simply aren't needed.

- **Not all confined spaces require an Entry Permit.**
  - If it can be proven without entering a space that it is completely free of hazards, then it can be designated a "Non-Permit Space".
  - Since it will no longer be regulated by the Permit-Required Confined Spaces Standards, work can proceed without following Permit-Space Program guidelines.
  - This could mean that an Entrant would not need an Attendant, and could work alone.

- **Some "Permit-Required" Spaces can also be re-classified as "Non-Permit" once their hazards or potential hazards have been removed.**
  - In these cases, written certification showing that all hazards have been eliminated is required to reclassify the Permit Space.

- **"Contractors" create other special situations, much of them involving "responsibilities" and "communication", things that all involved employees need to be aware of.**

- **If a contractor is being brought in to perform industrial work in a Permit Space, the host employer must inform the contractor of:**
  - The location of the space.
  - The hazards that will be found in the space.
  - The precautions that have been previously used to enter the space safely.

- **For their part, the contractor must actively seek out this information before beginning their work.**

- **If both the host employer and the contractor will be working in or around the space at the same time, they must coordinate the activities of their personnel according to the Permit Space Program of the host employer.**

- **To ensure safety on "Multiple Employer Sites", where a number of sub-contractors may be involved, the construction version of the confined space entry regulation addresses the use of contractors differently.**

- **In the construction regulation:**
  - The "Host Employer" is defined as the owner or manager of the property where the work is being done.
  - The "Controlling Contractor" (often known as a "general contractor") has overall responsibility for the construction activity on the site.
  - "Entry Employers" (typically, "sub-contractors") are the companies that actually send their workers into the Permit Space.

- **The construction regulation requires a comprehensive communication of safety information among them all, before, during and after the confined space entry.**
  - After the entry has been completed, the "Controlling Contractor" must inform the "Host Employer" of the Permit Space Program that was used to comply with the Permit-Required Confined Space regulation, as well as report any hazards that were encountered during the entry.

*** * * SUMMARY * * ***

- **OSHA's Permit Required Confined Spaces regulations are designed to create the safest possible conditions for anyone working in or around a confined space, but you have safety responsibilities as well.**

- **You should always use extra precautions when working in or around a confined space.**

- **Take your confined space entry training seriously.**
  - What you know, and what you do, can save lives.

- **Be familiar with the safety information contained in the Entry Permit as well as that provided by the Controlling Contractor on multiple employer worksites.**

- **Always follow all of the procedures specified in your Permit-Space Entry Program.**

- **Be sure to wear the proper personal protective equipment when entering a confined space.**

- **Most of all, take the time to become familiar with the confined space regulation and your facility's Entry Permit System.**
  - Your life and the lives of your coworkers could depend on it!