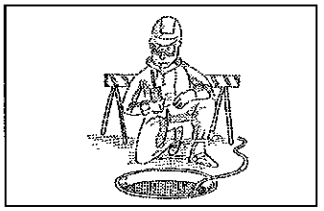


# Confined Space Entry—An Overview

## Overview of Topic

Most construction work is done in well-ventilated areas. Under normal circumstances, even trenches are not considered confined or enclosed spaces. There is enough natural ventilation. But a trench, as well as other enclosed areas at construction sites, can be deadly. Such areas are subject to the accumulation of toxic or flammable contaminants or can develop an oxygen deficiency. To ensure employee safety in confined spaces you must:

- Be aware of areas where hazardous atmospheres exist or could reasonably be expected to exist (hazard recognition).
- Comply with any specific regulations that apply to work in dangerous or potentially dangerous areas.

A confined space in the construction industry, as defined by OSHA, is any space having a limited means of getting out, and which is subject to the accumulation of toxic or flammable contaminants or has an oxygen deficient atmosphere.

Confined or enclosed spaces include, but are not limited to, such spaces as storage tanks, process vessels, bins, boilers, ventilation or exhaust ducts, sewers, underground utility vaults, tunnels, pipelines, and open top spaces more than four feet deep such as pits, tubs, vaults, and vessels.

### Hazardous atmospheres

Some construction rules use the term "hazardous atmospheres" to describe confined space situations. In 1926.57—Ventilation, tanks must be tested and, if necessary, ventilated, before employees are allowed to enter them.

In the excavation rule (1926.651), it says that where oxygen deficient atmospheres (containing less than 19.5 percent oxygen) or hazardous atmospheres exists or could reasonably be expected to exist, such as excavations in landfill or other areas where hazardous substances are stored nearby, the atmospheres in the excavation must be tested before employees enter excavations greater than four feet deep.

**Requirements for construction work**

A comprehensive requirement for confined spaces, such as is required by the general industry rules (Permit-required confined space entry), does not exist in the construction regulations. However, if you combine all of the individual requirements in the construction regulations, you see that a somewhat comprehensive set of rules exists. It is easier, and to your company's advantage, to combine all the pieces into one plan that fits all situations.

That plan should include:

- Training and instruction—1926.21(b)(6)(i).
- Testing—1926.651(g)(1)(i) & (iv).
- Attendants—1926.353(b)(2) & (3).
- Ventilation—1926.154(a)(2).
- Respiratory protection—1926.353(b)(2) & (c)(2).
- Emergency procedures—1926.353(b)(3).

## Employee Training

The construction OSHA rules at §1926.21(b)(6)(i) call for specific training for those employees required to enter into confined or enclosed spaces. Employees must be instructed as to the: (1) nature of the hazards involved, (2) the necessary precautions to be taken, and (3) the use of required protective and emergency equipment.

## Training Tips

Training for confined space entry should be geared toward your involvement or likelihood of involvement with confined spaces and hazardous atmospheres. The training could range from how to use space heating devices and carbon monoxide buildup, to full blown entry/exit preparation and execution, air monitoring, respirator use, and rescue.

**Where To Go For More Information**

29 CFR 1926.21(b)(6)(i)-(ii).

References under "Requirements for construction work (above).

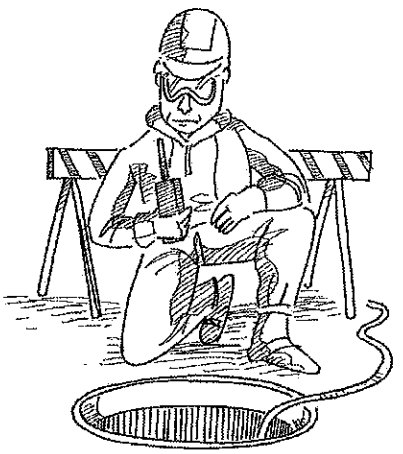
# KELLER'S CONSTRUCTION TOOLBOX TALKS

## Confined Space Entry—Always err on the safe side

The old cliche "it is better to be safe than sorry," was made for confined spaces. Yet workers continue to make the mistake of entering deadly spaces without proper preparation. It is pretty much a given that you can go to your local library any day of the week and find a newspaper reporting on the latest victim of a confined space accident.

### What is a confined or enclosed space?

The OSHA regulations for construction define a confined or enclosed space as any space having a limited means of getting out, and which can gather toxic or flammable gases, vapors, or has oxygen-deficient air. Examples of confined or enclosed spaces include storage tanks, process vessels, bins, boilers, ventilation and exhaust ducts, sewers, underground utility vaults, excavations, manholes, tunnels, pipelines, and open top spaces more than four feet in depth, such as pits, tubs, vaults, and vessels.



### Confined or enclosed space hazards

What makes a confined or enclosed space hazardous? Many situations and hazards can cause a confined space to become deadly. Materials being used such as cleaning or bonding liquids, work being done such as welding, or the effects of the environment can cause dangerous vapors, gases, and mists to accumulate in these spaces. The result can be fires, explosions, and physical hazards.

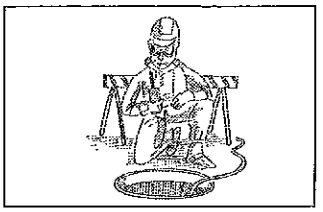
### Entering confined spaces

If you are required to enter and work in a confined or enclosed space you must first receive instructions on what you might encounter. Your company will train you on:

- What kinds of hazards you might encounter and why those hazards are dangerous.
- The necessary precautions to take for each type of hazard.
- The use of any protective and/or emergency equipment and instruments required.

Often, the confined space you are entering will not appear to be hazardous. It may have been entered on the last shift with no problems, and may not give signs of being dangerous. At other times there may be indications of danger—the distinct odor of toxic atmospheres, arcing of electrical equipment, or the presence of loose material.

You should always follow your company's confined space program and use protective equipment made available to you. If you follow the safety rules carefully, you will be able to work safely even in confined spaces.



## Confined Space Entry—An Overview, Sign-Off Sheet

This sign-off sheet documents the names of employees who attended this training session on Confined Space Entry—An Overview at_____.
(company name)

The session covered:

- An overview of the topic and the OSHA rules for confined spaces.
- Hazardous atmospheres.
- General requirements for construction.

The space below is for employees to "sign-off" that they were in attendance.

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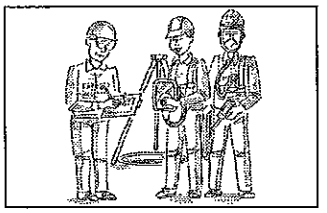


# Confined Space Entry—Entry/Exit Preparation

## Overview of Topic

Proper preparation can make the most difficult confined space entry safe, while not being prepared can make even the easiest entry a nightmare. It usually comes down to training and preparation.

### Construction regulations

The construction regulations don't give specific details about entry and exit preparation. The general statement is: All employees required to enter into confined or enclosed spaces shall be instructed as to the nature of the hazards involved, the necessary precautions to be taken, and in the use of protective and emergency equipment required. Companies must also comply with any specifics of the job being done, i.e. welding, excavation work, etc., that apply to work in dangerous or potentially dangerous areas.

This Toolbox Talk provides guidelines from the general industry confined spaces rule (§1910.146) to help you prepare an entry/exit checklist. That will cover the construction requirements and more. The following is an example of what might be considered before entering a confined space.

### Pre-entry checklist

*Train*—Are all employees involved in the confined space entry must be trained as to: (1) the nature of the hazards involved, (2) in the necessary precautions to be taken, and (3) in the use of protective and emergency equipment.

*Identify potential hazards*—What hazards can be identified about a particular space and what can be done to control or eliminate them? Some hazard examples include engulfment, presence of toxic gases and/or flammable gases, and oxygen deficiency.

*Control atmospheric and engulfment hazards*—What methods will be used to control or eliminate hazards? Some examples are lockout/tagout and ventilation.

*Survey surrounding area*—Survey and secure the surrounding area.

*Test the atmosphere*—Evaluate the hazards of the space and verify that acceptable entry conditions for entry exist. You should use a

direct-reading instrument to read oxygen content, flammable gases and vapors, and potential toxic air contaminants, in that order.

*Entry*—If there are no physical hazards, and if the pre-entry tests show there is no dangerous air contamination and/or oxygen deficiency, and there is no reason to believe that any is likely to develop, entry into the space and work within it may proceed. Continuous air monitoring should be done and workers must immediately leave the space when any of the monitor alarms sound.

*Rescue*—You must have procedures for: summoning rescue and emergency services, rescuing entrants from confined spaces, providing necessary emergency services to rescued employees, and preventing unauthorized personnel from attempting a rescue.

**Exit procedures**

*Emergency exit*—is accomplished when an order to evacuate is given by the attendant or the entry supervisor, the entrant recognizes any warning sign or symptom of exposure to a dangerous situation, the entrant detects a prohibited condition, or an evacuation alarm is sounded.

*Normal end of job exit*—includes securing and putting up signs prohibiting unauthorized entry.

## Employee Training

The construction OSHA rules at §1926.21(b)(6)(i) call for specific training for those employees required to enter into confined or enclosed spaces. They must be instructed as to the: (1) nature of the hazards involved, (2) the necessary precautions to be taken, and (3) the use of required protective and emergency equipment.

## Training Tips

When training employees on entry/exit preparation, show them examples of entry/exit checklists, and how to use them.

**Where To Go For More Information**

Construction regulatory text: §1926.21(b)(6)(i)-(ii)—Safety training and education

General industry regulatory text: §1910.146—Permit-required confined spaces

American National Standard ANSI Z117.1-1989, *Safety Requirements for Confined Spaces*

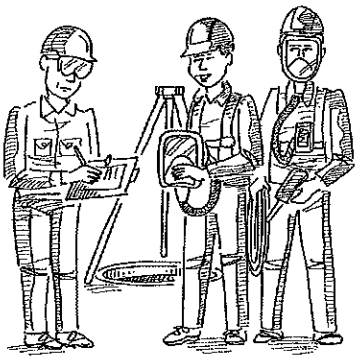
# KELLER'S CONSTRUCTION TOOLBOX TALKS

## Confined Space Entry—Entry/Exit Preparation

It takes hours of practice to perform an entry/exit procedure properly, but the hours are worth it if it saves even one person.

The construction regulations say that before you are required to enter into confined or enclosed spaces you must be instructed: (1) as to the nature of the hazards you might run into, (2) what you have to do to protect yourself from those hazards, and (3) how to use the protective and emergency equipment required.

You must also comply with any specifics of the job you are doing, i.e. welding, excavation work, etc., that apply to work in dangerous or potentially dangerous areas.



Prepare and use company entry/exit checklists with the following information. Checklists should be tailored to each entry situation.

**Pre-entry Checklists**

*Training*—Are all employees involved in entry trained?

*Potential hazards*—What hazards can be identified about a particular space and what can you do to control or eliminate them? Examples are engulfment, toxic gases and oxygen deficiency.

*Control of atmospheric and engulfment hazards*—What methods will be used to control or eliminate actual or potential hazards. Some examples are lockout/tagout and ventilation.

*Surrounding area surveillance*—The surrounding area must be surveyed and secured.

*Atmospheric testing*—What will be done to evaluate the hazards of the space and verify that acceptable entry conditions for entry exist.

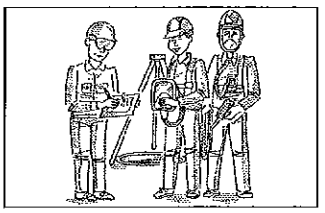
*Entry*—If there are no physical hazards, and if the pre-entry tests show there is no dangerous air contamination and/or oxygen deficiency, and there is no reason to believe that any is likely to develop, entry into and work within may proceed. Continuous air monitoring should be done and workers must immediately leave the space when any of the monitor alarms sound.

*Rescue*—Your company must have procedures for summoning rescue and emergency services, for rescuing entrants from confined spaces, for providing necessary emergency services to rescued employees, and for preventing unauthorized personnel from attempting a rescue.

**Exit procedures**

*Emergency exit*—is accomplished when: an order to evacuate is given by the attendant or the entry supervisor, the entrant recognizes any warning sign of exposure to a dangerous situation, the entrant detects a prohibited condition, or an evacuation alarm is sounded.

*Normal end of job exit*—includes securing and putting up signs prohibiting unauthorized entry.



## Confined Space Entry—Entry/Exit Preparation Sign-Off Sheet

This sign-off sheet documents the names of employees who attended this training session on Confined Space Entry—Entry/Exit Preparation at _____.
(company name)

The session covered:

- Construction regulation requirements.
- Construction regulation training requirements.
- Addition of the general industry requirements.
- Typical entry/exit checklist.

The space below is for employees to "sign-off" that they were in attendance.

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Supervisor's Signature

# Confined Space Entry—Air Monitoring

## Overview of Topic

OSHA regulations say that all employees entering a confined space must be instructed as to the nature of the hazards involved (§1926.21(b)(6)).

Atmospheric testing is required to evaluate the air in the confined space, verify that conditions for entry are acceptable, and continuously monitor to ensure conditions remain acceptable.

In §1926.57—Ventilation, the rules say that appropriate atmospheric tests [in open surface tanks] must be made to: (1) determine if the [permissible exposure] limits are exceeded, and (2) ensure the oxygen level is above 19.5 percent.

In §1926.651—Excavations, OSHA says that where oxygen deficiency, or a hazardous atmosphere exists or could reasonably be expected to exist, the atmospheres in the excavation must be tested before employees go to work.

### When to monitor the air?

The §1926.57—Ventilation rule, requires monitoring the air after draining an open surface tank previously filled with hazardous materials, e.g., cleaning fluids. Monitoring must be done before a worker enters the tank.

The §1926.651—Excavations rule requires you to monitor the air when a hazardous atmosphere exists or could reasonably be expected to exist.

In addition, many construction site situations may pose a "confined space" hazard, but no specific regulation covers it. You still need to monitor the air, not only because you must, but because you don't want to lose an employee.

The general industry rule (§1910.146) provides guidelines for monitoring confined spaces. You should use these guidelines to evaluate confined space conditions: (1) before entry is authorized, and (2) as necessary to ensure they are acceptable during work. If the space is too large to isolate, testing should be done to the extent feasible before entry, and continuous where (and when) entrants are working.

The rule also says you should: (1) test for oxygen first because most combustible gas meters are oxygen dependent and will not

provide reliable readings in oxygen deficient atmospheres; then (2) test for flammable gases and vapors because the threat of fire or explosion is both more immediate and life threatening (in most cases), and (3) then test for toxic air contaminants.

**Who monitors the air?**

In the general industry §1910.146—Permit required confined spaces rule, the: (1) *person in charge* must know the proper use and calibration of monitoring equipment and supervise its use, (2) *authorized entrants* must know how to use the testing and monitoring equipment.

Recently, the permit-required confined space rule was modified to permit employees entering the space to observe the initial monitoring of the space.

**Testing the air**

You should use equipment of sufficient sensitivity and specificity to identify and evaluate any hazardous atmosphere that may exist or arise, so that appropriate procedures can be developed and acceptable entry conditions established.

The atmosphere within a confined space must be periodically tested, as necessary, to ensure that hazardous atmospheres do not return or accumulate.

## Employee Training

The construction OSHA rules at §1926.21(b)(6)(i) calls for specific training for those employees required to enter into confined or enclosed spaces. They must be instructed as to the: (1) nature of the hazards involved, (2) the necessary precautions to be taken, and (3) the use of required protective and emergency equipment.

## Training Tips

For confined space training on air monitoring, introduce monitoring equipment and ensure each person authorized to use the equipment masters the procedure.

**Where To Go For More Information**

Construction regulatory text: §1926.21(b)(6)(i)-(ii)—Safety training and education

Construction regulatory text: §1910.146—Permit-required confined spaces

American National Standard ANSI Z117.1-1989, *Safety Requirements for Confined Spaces.*

# KELLER'S CONSTRUCTION TOOLBOX TALKS

## Monitoring the Air in Confined Spaces

Air monitoring is a critical part of any confined space work environment. A confined space is an enclosed space with limited access, such as a storage tank, manhole, tunnel, or ditches more than four feet deep. Air monitoring is required to evaluate the hazards of the space and verify that conditions for entry are acceptable and remain acceptable during entry.

### When do you monitor the air?

OSHA says you must monitor the air after draining an open surface tank previously filled with hazardous materials, e.g., cleaning fluids. The air must be tested before a worker enters it. During excavation operations, you must test the air when a hazardous atmosphere exists or could reasonably be expected to exist.

Many construction site situations may pose a "confined space" hazard for which you must monitor the air.

You should: (1) evaluate confined space conditions before entry is authorized, and (2) as necessary to ensure they are acceptable during work.

You should monitor the air using the following guidelines:

- Test for oxygen first because most gas meters are oxygen dependent and will not provide reliable readings in oxygen deficient atmospheres.
- Test for flammable gases and vapors second because the threat of fire or explosion is both more immediate and life threatening (in most cases).
- Finally, test for toxic air contaminants.

### Who monitors the air?

The *person in charge* must know the proper use and calibration of monitoring equipment, and supervise its use. Recently, the permit-required confined space rule was modified to permit employees entering the space to observe the initial monitoring of the space. Authorized entrants, those who will go in and do the work, must know how to use the testing and monitoring equipment.

### Testing the air

You should use equipment that is sensitive and specific enough to identify and evaluate any hazardous atmosphere that may exist or arise, so that proper procedures can be developed and acceptable entry conditions be established. When monitoring the air, you should follow the instrument manufacturer's instructions.

Confined spaces can be life threatening but can be rendered harmless by correct procedures. Air testing and monitoring is one of the tools by which we obtain information to render confined spaces safe to enter.

## Confined Space Entry—Air Monitoring Sign-Off Sheet

This sign-off sheet documents the names of employees who attended this training session on Confined Space Entry—Air Monitoring at _____.
(company name)

The session covered:

- Why air testing and monitoring is required.
- When air testing and monitoring is required.
- Who is responsible for testing and monitoring the confined space.
- The procedure for testing and monitoring confined spaces.

The space below is for employees to "sign-off" that they were in attendance.

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Supervisor's Signature

# Confined Space Entry—Hazardous Atmospheres

## Overview Of Topic

When dealing with confined spaces, the construction rules use the words hazardous atmospheres to describe a dangerous confined space situation. Hazardous atmospheres are capable of causing injury, illness, or death, because of being explosive, flammable, poisonous, corrosive, oxidizing, irritating, oxygen deficient, toxic, or otherwise harmful.

### Hazardous atmospheres

The OSHA rules say hazardous atmospheres are:

- Air containing less than 19.5 percent oxygen.
- A concentration of a flammable gas in excess of 20 percent of the lower flammable limit of the gas.
- Any other toxic hazardous air.

Before entering a confined space you must deal with possible hazardous atmospheres.

### Testing the air

Before an employee enters a confined space, you should test the air with a calibrated direct-reading instrument for: (1) oxygen content, (2) flammable gases and vapors, and (3) potential toxic air contaminants.

You should test all levels of air in a confined space. Gases and vapors are different and find their own level in the air.

### Ventilation

Ventilation is the primary method for making a hazardous atmosphere safe. Planning the operation and selecting the proper ventilation equipment is critical. Ensure every nook and cranny is continuously ventilated. It may take a little math to figure out how long it takes to ventilate a certain sized confined space with the equipment you have.

An example of the ventilation process for construction can be found in 1926.57—Ventilation. It says:

- Tanks which have been drained to permit employee entry to clean, inspect, or do maintenance may contain atmospheres hazardous to life or health.

- Before employees can enter the tank, appropriate atmospheric tests must be made to ensure permissible exposure limits are not exceeded and the oxygen concentration is not less than 19.5 nor more than 23.5 percent.
- If the tank is unsafe, it must be ventilated until the hazardous atmosphere is removed. Ventilation must continue as long as an employee is in the tank.

The atmosphere within the space should be periodically tested as necessary to ensure that the continuous forced air ventilation is preventing the accumulation of a hazardous atmosphere.

**Respiratory protection**

Respiratory protection is the alternative to ventilation. When testing: (1) shows the existence of hazardous atmospheres and additional ventilation cannot reduce concentrations to safe levels, or (2) the tests are safe but unsafe conditions can reasonably be expected to develop, respiratory protection must be used. Respiratory protection must always be used during a rescue.

## Employee Training

The construction OSHA rules at §1926.21(b)(6)(i) call for specific training for those employees required to enter into confined or enclosed spaces. They must be instructed as to the: (1) nature of the hazards involved, (2) the necessary precautions to be taken, and (3) the use of required protective and emergency equipment.

## Training Tips

Go over specific testing procedures for common hazardous atmospheres such as oxygen deficiency or oxygen rich, carbon monoxide, sulfur dioxide, or any specific atmospheres you might find at your jobsites. Show employees the actual testing equipment that is used and demonstrate its use.

### Where To Go For More Information

29 CFR 1926.21(b)(6)(i)-(ii)—Safety training and education.

29 CFR 1910.146—Permit-required confined spaces.

American National Standard ANSI Z117.1-1989, *Safety Requirements for Confined Spaces.*

# KELLER'S CONSTRUCTION TOOLBOX TALKS

## Confined Space Entry — Hazardous Atmospheres

When dealing with confined spaces, the construction rules use the words "hazardous atmospheres" to describe a dangerous confined space situation. Hazardous atmospheres are capable of causing injury, illness, and death. They can be explosive, flammable, poisonous, corrosive, oxidizing, irritating, oxygen deficient, toxic, or otherwise harmful.

### Hazardous atmosphere

What is considered hazardous atmosphere? OSHA says it is:

- Air containing less than 19.5 nor more than 23.5 percent oxygen.
- A concentration of a flammable gas in excess of 20 percent of the lower flammable limit of the gas.
- Any other toxic hazardous air.

Before entering a confined space, you must check for possible hazardous atmospheres. The first step is to find out what kind of air you have.

### Testing the air

Before you enter the space, the air must be tested with a calibrated direct-reading instrument for:

- Oxygen content.
- Flammable gases and vapors.
- Potential toxic air contaminants.

You must test all levels of air in the confined space, because all gases and vapors are different and find their own level in the air. If testing reveals that the air is unsafe, you must deal with the hazardous atmosphere through ventilation or respirator protection.

### Ventilation

Ventilation is the best method for making a hazardous atmosphere safe. Planning the operation and selecting the proper ventilation equipment is critical. It is almost an art form to ensure every nook and cranny is continuously ventilated. It also takes a little math to figure out how long it takes to ventilate a certain sized confined space with the equipment you have. The atmosphere within the space should be periodically tested as necessary to ensure that the continuous forced air ventilation is preventing the accumulation of a hazardous atmosphere.

### Respiratory protection

Respiratory protection is the alternative to ventilation. When testing: (1) shows the existence of hazardous atmospheres and additional ventilation cannot reduce concentrations to safe levels, or (2) the tests are safe but unsafe conditions can reasonably be expected to develop, respiratory protection must be used. Respiratory protection must always be used during a rescue.

## Confined Space Entry—Hazardous Atmospheres Sign-Off Sheet

This sign-off sheet documents the names of employees who attended this training session on Confined Space Entry—Hazardous Atmospheres at _____.
(company name)

The session covered:

- The hazards and results of exposure of hazardous atmospheres.
- The importance of testing the air.
- Ventilation as the preferred and most effective method of ridding a confined space of its hazardous atmospheres.
- Respiratory protection as a secondary choice of protection from confined space hazards.

The space below is for employees to "sign-off" that they were in attendance.

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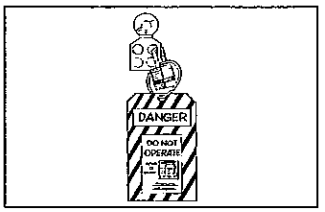



# Confined Space Entry — Lockout/Tagout

## Overview Of Topic

The construction regulations do not discuss lockout/tagout for confined spaces except in an implied way. In 1926.21(a)—Safety training and education, it does say that all employees required to enter into confined or enclosed spaces shall be instructed as to the nature of the hazards involved, the necessary precautions to be taken, etc. In many confined space situations, lockout/tagout is a necessary precaution.

The general industry rule, 1910.146—Permit-required confined spaces offers more specific information on this subject.

Lockouts and tags should be used to prevent accidental start-up of equipment while workers are in confined spaces. Steam, water, gas, or power lines, and mechanical equipment must all be locked out and tagged before workers enter. The entire space should be removed from service and completely protected against the release of energy and material into the space.

### Lockout/tagout procedures

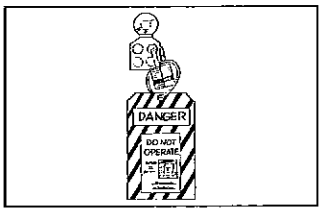
Employers must evaluate the confined space to determine if any equipment or lines need to be locked out and tagged.

All pumps and lines which may reasonably cause contaminants to flow into the space must be disconnected, and locked out, or effectively isolated by other means, to prevent development of dangerous air contamination or engulfment. Main power switches to equipment must be locked out at the main power panel. Tags must be tagged to inform others that a confined space entry is in process. If blocking and/or isolation requires entry into the space, the provisions for entry into a confined space must be implemented.

### Lockout/tagout methods

**Lockout** is the process of turning off and locking out the flow of energy from a power source to a piece of equipment or circuit, and keeping it locked out.

Lockout is accomplished by installing a lockout device at the power source so that equipment powered by that source cannot be operated. A lockout device is a lock, block, or chain that keeps a switch, valve, or lever in the off position. Locks must be provided by the employer and used for lockout purposes only.




## Confined Space Entry — Lockout/Tagout

**Tagout** is accomplished by placing a tag on the power source. The tag acts as a warning not to restore energy—it is not a physical restraint. Tags must clearly state: **Do not operate or remove this tag** or the like, and must be applied by hand.

The employer's primary tool for providing protection is the energy-isolating device. This mechanism prevents the transmission or release of energy and to which all locks or tags are attached. This device guards against accidental machine or equipment start-up or the unexpected reenergization of equipment.

To avoid confusion and an accidental removal of a lock or tag when a confined space entry is in progress your company must have a lockout/tagout plan. Every employee must know the plan and never violate it for any reason.

### Employee Training

The construction OSHA rules at §1926.21(b)(6)(i) call for specific training for those employees required to enter into confined or enclosed spaces. They must be instructed as to the: (1) nature of the hazards involved, (2) the necessary precautions to be taken, and (3) the use of required protective and emergency equipment.

### Training Tips

When training on lockout/tagout procedures for confined space entry, show employees the locks and tags that are actually used in the process. In addition, do a dry-test run-through of a lockout/tagout situation.

**Where To Go For More Information**

29 CFR 1926.21(b)(6)(i)-(ii)—Safety training and education

29 CFR 1910.146—Permit-required confined spaces

American National Standard ANSI Z117.1-1989, S*afety Requirements for Confined Spaces*

# KELLER'S CONSTRUCTION TOOLBOX TALKS

## Confined Space Entry — Lockout/Tagout

Lockout/tagout is an important part of confined space entry. Locks and tags are used to prevent accidental start-up of equipment while you are in a confined space. Steam, water, gas, or power lines that enter the confined space, and mechanical equipment must all be locked out and tagged before you enter the space.

Before entry into such spaces, the entire space should be removed from service and completely protected against the release of energy and material into the space.

### Lockout/tagout Procedures

Employers must evaluate the confined space to determine if any equipment or lines need to be locked out and tagged. A pre-entry permit or checklist, a part of the confined space entry plan, must be completed before workers enter the confined space.


All pumps and lines which may reasonably cause contaminants to flow into the space must be disconnected, blinded and locked out, or effectively isolated by other means, to prevent development of dangerous air contamination or engulfment. Main power switches to equipment must be locked out at main power panel. Locks must be tagged to inform others that a confined space entry is in process.

If blocking and/or isolation requires entry into the space, the provisions for entry into a confined space must be implemented.

### Lockout/tagout Methods

**Lockout** is the process of turning off and locking out the flow of energy from a power source to a piece of equipment or circuit, and keeping it locked out.

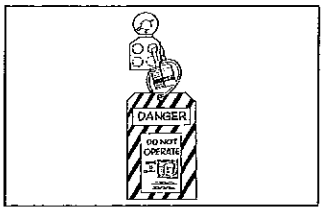
Lockout is accomplished by installing a lockout device at the power source so that equipment powered by that source cannot be operated. A lockout device is a lock, block, or chain that keeps a switch, valve, or lever in the off position.

Locks are provided by your employer and cannot be used for other purposes.

**Tagout** is accomplished by placing a tag on the power source. The tag acts as a warning not to restore energy—it is not a physical restraint. Tags must clearly state: **Do not operate or remove this tag** or the like, and must be applied by hand.

The employer's primary tool for providing protection is the energy-isolating device. This is the mechanism that prevents the transmission or release of energy and to which all locks or tags are attached. This device guards against accidental machine or equipment start-up or the unexpected reenergization of equipment during servicing or maintenance.

To avoid confusion and an accidental removal of a lock or tag when a confined space entry is in progress your company must have a lockout/tagout plan. Know the plan and never violate it for any reason.




# Confined Space Entry — Lockout/Tagout Sign-Off Sheet

This sign-off sheet documents the employees who have taken part in a training session on Confined Space Entry — Lockout/Tagout at _____.
(company name)

The session covered the following:

- The purpose of lockout/tagout.
- Definitions of lockout and tagout.
- Lockout and tagout procedures.
- Lockout/tagout methods.

The space below is for each individual who has been trained on this topic to sign his/her names.

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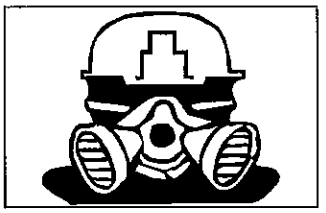


# Confined Space Entry — Nature Of The Hazards

## Overview Of Topic

Construction workers who enter confined spaces can be exposed to multiple hazards, any of which may cause bodily injury, illness, or death. Supervisors and workers required to enter confined spaces must: (1) understand the nature of confined space hazards, (2) be able to recognize signs or symptoms of exposure, and (3) understand the consequences of exposure to hazards. Hazard assessments and control are a critical part of confined space entry requirements.

### Nature of the hazards

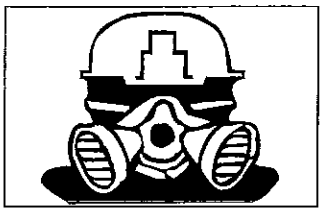
Confined space hazards are categorized as physical or atmospheric.

Physical hazards include trench cave ins; mechanical, electrical, and hydraulic energy; communication problems; noise; entry and exit difficulties, activated electrical or mechanical equipment, water entering the confined space, underground utilities, and temperature extremes. Many of these hazards can be eliminated or "locked-out" before entry into a confined space.

Atmospheric hazards include oxygen deficiency, flammable air, and toxic air contaminants. The largest number of confined space deaths are a result of atmospheric problems.

*Oxygen deficient air*—An oxygen-deficient atmosphere has less than 19.5% available oxygen. Oxygen levels in a confined space can decrease because of: (1) work being done such as welding or cutting, (2) chemical reactions (rusting), (3) bacterial action (fermentation), and (4) displacement by another gas such as sulfur dioxide. Any atmosphere with less than 19.5% oxygen must not be entered without an approved self-contained breathing apparatus (SCBA).

*Flammable atmospheres*—Two things make an atmosphere flammable: 1) the oxygen in air, and 2) a flammable gas, vapor, or dust in the proper mixture. Different gases have different flammable ranges. If a source of ignition (e.g., a sparking or electrical tool) is introduced into a space containing a flammable atmosphere, an explosion will result.



## Confined Space Entry — Nature Of The Hazards

An oxygen-enriched atmosphere (above 23.5%) will cause flammable materials, such as clothing and hair, to burn violently when ignited. Never use pure oxygen to ventilate a confined space. Ventilate with normal air.

*Toxic atmospheres*—Most substances (liquids, vapors, gases, mists, solid materials, and dusts) should be considered hazardous in a confined space. Toxic substances can come from products stored in the space, work being performed in the space (welding, painting, cleaning, etc., or areas adjacent to the confined space.

**Hazard assessment and control**

Before entry into a confined space is allowed, hazard assessment and hazard control must be performed. A hazard assessment is looking for all known or potential hazards. One example of hazard assessment would be testing an atmosphere. Hazard control is systematically addressing each hazard discovered in your assessment and either eliminating or controlling the hazard. Continuous ventilation of a confined space would be eliminating a hazard, locking out or tagging out a mechanical device would be controlling a hazard.

### Employee Training

The construction OSHA rules at §1926.21(b)(6)(i) call for specific training for those employees required to enter into confined or enclosed spaces. They must be instructed as to the: (1) nature of the hazards involved, (2) the necessary precautions to be taken, and (3) the use of required protective and emergency equipment.

### Training Tips

Describe the potential hazards that employees at your worksites might encounter and instruct them as to how they might recognize these hazards.

**Where To Go For More Information**

29 CFR 1926.21(b)(6)(i)-(ii)

# KELLER'S CONSTRUCTION TOOLBOX TALKS

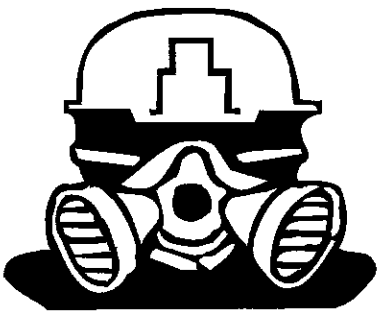
## Confined Space Entry — Nature Of The Hazards

The old cliche "it is better to be safe than sorry," was made for confined spaces. Yet workers continue to make the mistake of entering deadly confined spaces. It is pretty much a given that you can go to your local library any day of the week and find a newspaper reporting on the latest victim of a confined space accident.

What makes a confined or enclosed space hazardous? Hazards in confined spaces can be separated into two categories: physical hazards and atmospheric hazards.

***Physical Hazards***—are hazards that deal with mechanical, electrical, and hydraulic energy; being buried by some material; communication problems; noise; and entry and exit problems of the confined space.

Activated electrical or mechanical equipment can cause injury in a confined space and must be deenergized and locked-out before you enter the space. Dangers may also be present from cave-ins or water entering the space from construction operations or heavy rain.



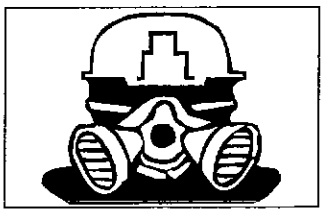
Underground utilities also can present problems in confined spaces. All lines containing hazardous materials such as steam, gases, or coolants should be shut off.

***Atmospheric Hazards***—most confined space accidents are related to atmospheric conditions inside the space and the failure to continuously monitor the air and ventilate as necessary. Atmospheric hazards are usually broken down into three categories.

*Oxygen deficiency*—The primary risk associated with confined spaces is oxygen deficiency. Other atmospheric hazards are flammable and toxic air. Normal air contains 20.8 percent oxygen. The minimum safe level as indicated by OSHA is 19.5 percent. At 16 percent you will feel disoriented and between eight percent and 12 percent, you will generally become unconscious. If the air has too much oxygen (over 23.5 percent) it is considered oxygen rich and becomes an explosion or fire hazard.

*Flammable Air*—Fire and explosion are serious dangers in a confined space. Fumes and vapors will ignite more quickly in the trapped air. Flammable and combustible gases or vapors may be present from previous contents, tank coatings and preservatives, and welding gases. In locations where flammable vapors may be present, precautions must be taken to prevent ignition by eliminating or controlling the source of ignition or eliminating the flammable air before working. Sources of ignition may include smoking, cutting and welding, hot surfaces, and frictional heat.

*Toxic Air Contaminants*—Toxic air contaminants come from material previously stored in the confined space or as a result of the use of coatings, cleaning solvents, or preservatives. The work being performed in a confined space could also give off a toxic gas. An example of this would be a welding operation that gives off carbon monoxide and oxides of nitrogen and ozone. Unfortunately, you will not see or smell most toxics, but they present two types of risk in a confined space: they can irritate your respiratory or nervous system; or some toxic chemicals can cut off your oxygen supply, get into your lungs and asphyxiate you.



## Confined Space Entry — Nature Of The Hazards Sign-Off Sheet

This sign-off sheet documents the employees who have taken part in a training session on Confined Space Entry — Nature of the Hazards at _____.
(company name)

The session covered the following:

- Confined space hazards are categorized as physical or atmospheric.
- The nature of physical and atmospheric hazards.
- Introduction to hazard assessment and control.

The space below is for each individual who has been trained on this topic to sign his/her names.

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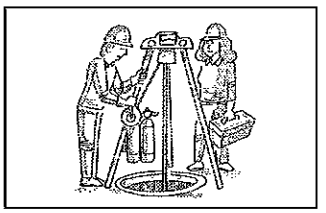


## Confined Space Entry—Rescue

### Overview of Topic

The OSHA rule at 1926.21(b)(6)(i) says that you must instruct your employees as to the: (1) nature of confined space hazards, (2) precautions to be taken, and (3) the use of protective and emergency equipment required [for rescue]. This toolbox talk concentrates on the rescue aspect of confined space entry.

A confined space rescue program is required when you have employees working in the following situations:

**Open surface tanks**—If in emergencies, such as rescue work, it is necessary to enter a tank which may contain a hazardous atmosphere, suitable respirators must be used (1926.57(i)(11)(v)).

**Welding**—When a welder enters a confined space...means must be provided for quick removal in case of an emergency. When safety belts and lifelines are used for this purpose they shall be so attached...that a welder cannot be jammed in a small opening. An attendant with a pre-planned rescue procedure must be stationed outside to observe the welder at all times and be capable of implementing rescue operations (1926.353(b)(3)).

**Excavations**—Rescue equipment, such as breathing apparatus, a safety harness and line, or a basket stretcher, must be readily available where hazardous atmospheric conditions exist or may reasonably be expected to develop during excavation work. The equipment must be attended when in use (1926.651(g)(2)).

With regard to excavations, OSHA has stipulated that emergency rescue equipment is only required to be readily available where a competent person determines, based on the jobsite conditions, that hazardous atmospheric conditions exist or may reasonably be expected to develop during work in a particular excavation.

**Work in manholes**—While work is being done in manholes, an employee must be available nearby to give emergency assistance as may be required (1926.956(b)(1)).

OSHA says that you need to have a rescue program, but only in a few places in the regulations do they give you specifics. However, according to a 1992 letter of interpretation, OSHA has said that

the minimum requirements for a written emergency rescue procedure is that:

- Trained personnel must be available and stationed outside the confined space with proper equipment to provide for the rescue of persons entering the space.
- The equipment must include a safety harness and lifelines with provisions for hoisting employees from the confined space.
- If entry is required for rescue, the rescue person must be equipped with approved air supplied respiratory equipment and other appropriate personal protective equipment.

The rest is up to you. From the references above you can put together a rescue program for confined space rescue operations. Another help is the general industry rules at 1910.146(k)-Permit required confined spaces. The following points are an overview of rescue from this documents perspective and should be integrated into your company plan. Each member of the rescue team must be:

- Provided with, and is trained to use properly, the PPE and rescue equipment necessary for making rescues from confined spaces.
- Trained to perform: (1) assigned rescue duties, and (2) duties of an authorized entrant.
- Trained in basic first-aid and CPR.

## Employee Training

The OSHA regulations at 29 CFR 1926.21(b)(6)(i) says that you must instruct employees required to enter into confined or enclosed spaces as to the nature of the hazards involved, the necessary precautions to be taken, and in the use of protective and **emergency** equipment required.

## Training Tips

Confined space entrants and rescue people need extensive training, far more than is possible at a toolbox talk. For this talk you may want to concentrate on the: (1) recognition of confined spaces, and (2) company procedures for entering a confined space. Dwell on those things that will prevent the need for a real life rescue.

### Where To Go For More Information

The regulatory references in this toolbox talk point you in the direction needed for further information.

# KELLER'S CONSTRUCTION TOOLBOX TALKS

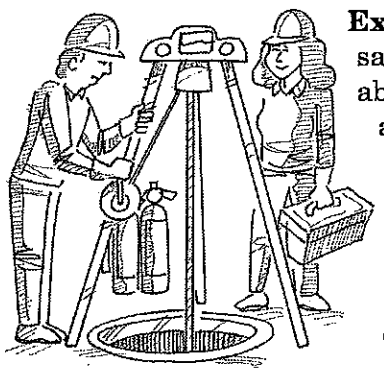
## Confined Space Entry-Rescue

The OSHA rule at 1926.21(b)(6)(i) says that your employer must instruct you as to the: (1) nature of confined space hazards, (2) precautions to be taken, and (3) the use of protective and emergency equipment required [for rescue]. This toolbox talk concentrates on the rescue aspect of confined space entry.

Some examples of situations where a confined space rescue program is required are:

**Open surface tanks**—If in emergencies, such as rescue work, it is necessary to enter a tank which may contain a hazardous atmosphere, suitable respirators must be used.

**Welding**—When a welder enters a confined space...means must be provided for quick removal in case of an emergency. When safety belts and lifelines are used for this purpose they shall be so attached...that a welder cannot be jammed in a small opening. An attendant with a preplanned rescue procedure must be stationed outside to observe the welder at all times and be capable of implementing rescue operations.



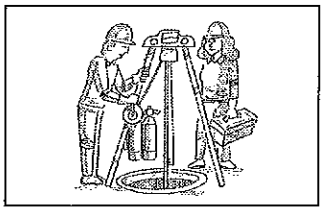
**Excavations**—Rescue equipment, such as breathing apparatus, a safety harness and line, or a basket stretcher, must be readily available where hazardous atmospheric conditions exist or may reasonably be expected to develop during excavation work. The equipment must be attended when in use. With regard to excavations, OSHA has stipulated that emergency rescue equipment is only required to be readily available where a competent person determines, based on the jobsite conditions, that hazardous atmospheric conditions exist or may reasonably be expected to develop during work in a particular excavation.

**Work in manholes**—While work is being done in manholes, an employee must be available nearby to give emergency assistance as may be required.

The minimum requirements you should look for in your company's written emergency rescue procedure is that:

- Trained personnel must be available and stationed outside the confined space with proper equipment to provide for the rescue of persons entering the space.
- The equipment must include a safety harness and lifelines with provisions for hoisting employees from the confined space.
- If entry is required for rescue, the rescue person must be equipped with approved air supplied respiratory equipment and other appropriate personal protective equipment.

Of the approximately 54 workers who die each year in confined space accidents, almost two-thirds result from people attempting a rescue. Never attempt a rescue in a confined space if you are: (1) not trained, (2) do not have the proper equipment.



## Confined Space Entry—Rescue, Sign-Off Sheet

This sign-off sheet documents the names of employees who attended this training session on Confined Space Entry-Rescue at _____ .
(company name)

The session covered:

- Confined space hazard situations such as welding and excavations.
- Minimum rescue requirements.
- General industry permit required confined space entry procedures.

The space below is for employees to "sign-off" that they were in attendance.

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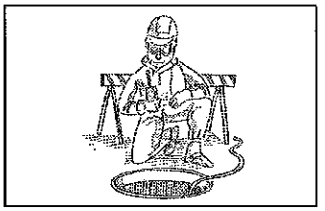


# Confined Space Entry—Site Safety

## Overview of Topic

Construction projects that have, or could have, confined spaces, should be identified long before anyone might have to enter them. They should be a part of a contractor's project process.

A site safety plan and checkoff list (hazard assessment) can be used to identify and post confined spaces to minimize the possibility of: (1) unauthorized workers entering the space, (2) personnel, who are a part of the entry team, being injured by equipment, trip hazards, poor lockout/tagout procedures, and numerous other things that can go wrong.

Specific hazards of the current or potential confined space should be identified. This could include physical characteristics of the confined space and the surrounding area, and possible atmospheric contaminants.

Once this is done, these areas should be posted. Employees must be informed of confined spaces, real or potential, and unauthorized entry must be prevented. Although the construction industry regulations do not require permits to enter confined spaces, it would be to your advantage to put together a simple, comprehensive plan using the general industry permit required confined space entry rule (1910.146) as a guide.

***Controlling nonparticipants***—All workers in the vicinity of a confined space must be warned of the dangers. Educate your employees on procedures for marking areas as dangerous. Danger signs should read: Danger Confined Space—No Entry Without Permit (if it is a permit required space), or you could say: Danger Confined Space—No entry without permission.

***Attendant/supervisor***—An attendant must remain outside the confined space during entry operations. The attendant's duties are: (1) first and foremost to monitor activities inside and outside the space, (2) order exit if required, (3) summon rescuers if necessary, and (4) prevent unauthorized entry. However, the attendant, or the site supervisor, should monitor and promote site safety. This could include ensuring: (1) trip hazards are secured, (2) the immediate area is barricaded and unauthorized workers remain outside the barricades, (3) installed lockout/tagout devices remain in place and are not tampered with until the operation is over.

***Lockout/tagout***—Before employees are allowed to enter a confined space the lockout and tagout of utilities and mechanical equipment entering the space must be secured and locked out. This could include steam or hydraulic lines, electrical service, belt drives, pulleys, gears, mixer blades, and pumps. All must be blocked, locked out with padlocks, disconnected, and tagged to warn workers of the status of the equipment.

***Ventilation***—When ventilation is the selected method to "engineer out" hazardous atmospheres, the ventilation equipment must be set up and maintained outside the confined space. The space must be ventilated until it is within acceptable levels of contaminants and oxygen levels.

## Employee Training

The construction OSHA rules at §1926.21(b)(6)(i) call for specific training for those employees required to enter into confined or enclosed spaces. They must be instructed as to the: (1) nature of the hazards involved, (2) the necessary precautions to be taken, and (3) the use of required protective and emergency equipment.

## Training Tips

Training for confined space entry "site safety" could include going over your site safety checklist for confined spaces.

### Where To Go For More Information

29 CFR 1926.21(b)(6)(i)-(ii)—Training or instruction.

29 CFR 1926.651 (g)(i) & (iv)—Testing the air.

29 CFR 1926.353 (b)(2) & (3)—Attendants.

29 CFR 1926.154 (a)(2)—Ventilation.

29 CFR 1926.353 (b)(2) & (c)(2)—Respiratory protection.

29 CFR 1926.353 (b)(3)—Emergency procedures.

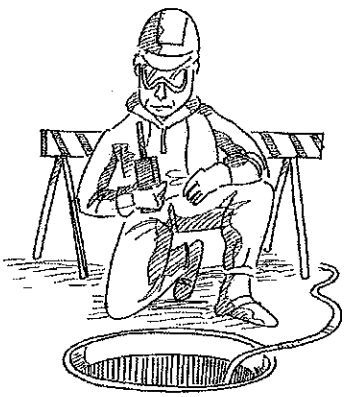
1910.146—Permit required confined space entry.

# KELLER'S CONSTRUCTION TOOLBOX TALKS

## Confined Space Entry—Site Safety

Long before you might have to enter a confined space on your construction site, the spaces should have been identified and posted as confined or potential confined spaces. They should be a part of a contractor's project process.

A site safety plan and checkoff list can be used to identify and post confined spaces to minimize the possibility of: (1) unauthorized workers entering the space, (2) personnel who are a part of the entry team being injured by equipment, trip hazards, poor lockout/tagout procedures, and numerous other things that can, but don't need to go wrong. The site safety plan and checkoff list can be used to identify the specific hazards of a current or potential confined space. This could include physical characteristics of the confined space and the surrounding area, and possible atmospheric contaminations. You must be informed of confined spaces, real or potential, and unauthorized entry must be prevented.



### Controlling nonparticipants

When you are working in the vicinity of a confined space you must be warned of the dangers. You should be trained to the company procedures and methods for marking areas as dangerous. Danger signs should read: Danger Confined Space—No Entry Without Permit (if it is a permit required space), or possibly: Danger Confined Space—No entry without permission.

### Attendant/supervisor

The attendant must remain outside the confined space during entry into the space. The attendant's duties are: (1) first and foremost to monitor activities inside and outside the space, (2) order exit if required, (3) summon rescuers if necessary, and (4) prevent unauthorized entry. However, the attendant, or the site supervisor, should also monitor and promote site safety. This could include ensuring: (1) trip hazards are secured, (2) the immediate area is barricaded and unauthorized workers remain outside the barricades, (3) installed lockout/tagout devices remain in place and are not tampered with until the operation is over.

### Lockout/tagout

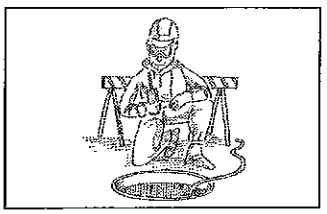
Before you are allowed to enter a confined space, the lockout and tagout of utilities and mechanical equipment entering the space must be secured and locked out. This could include steam or hydraulic lines, electrical service, belt drives, pulleys, gears, mixer blades, and pumps. All must be blocked, locked out with padlocks, disconnected, and tagged to warn workers of the status of the equipment.

### Ventilation

When ventilation is the selected method to "engineer out" hazardous atmospheres, the ventilation equipment must be set up and maintained outside the confined space. The space must be ventilated until the space is within acceptable levels of contaminants and oxygen levels.

These are just a few of the many requirements for maintaining order, security, and performing housekeeping chores at construction site confined spaces.

# KELLER'S CONSTRUCTION TOOLBOX TALKS



## Confined Space Entry—Site Safety, Sign-Off Sheet

This sign-off sheet documents the names of employees who attended this training session on Confined Space Entry—Site Safety at _____.
(company name)

The session covered:

- Company responsibility to secure all confined or potential confined spaces by training and informing workers.
- Identifying and eliminating the hazards surrounding a confined space (site safety).
- Specific requirements for maintaining order and security at a confined space site.

The space below is for employees to "sign-off" that they were in attendance.

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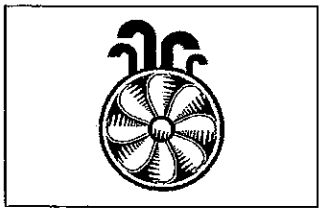
Supervisor's Signature



## Confined Space Entry — Ventilation

**Overview Of Topic**

Ventilation is the primary method for making a confined space safe and free from hazardous atmospheres. Planning the confined space operation, and selecting the proper ventilation equipment is critical. Every nook and cranny of the confined space must be continuously ventilated.

### Types of ventilation

Some confined spaces can be ventilated **naturally.** This is the case with most excavations. However, any time a naturally ventilated confined space is occupied, adequate precautions must be taken to prevent employee exposure to atmospheres containing less than 19.5 percent oxygen or to other hazardous atmospheres. Confined spaces that cannot be ventilated naturally must be ventilated with **mechanical equipment.**

Ventilation is important to:

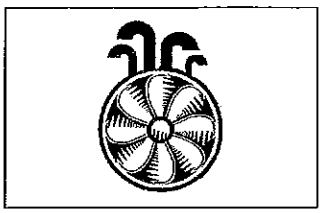
- Clear the confined space of hazardous atmospheres before an employee is permitted to enter.
- Keep the confined space clear of hazardous atmospheres while the employee is working in the space.
- Keep the confined space comfortable to work in by lowering temperatures and providing fresh air.

### Types of equipment

Blowers provide a continuous supply of outside air. Ventilation blowers can work two ways. They can either force fresh air into the confined space or suck the contaminated air out and pull fresh air in. The most popular (and efficient) method of the two is forced air. Ducting is also important. The positioning can mean proper circulation and venting of the whole confined space or leaving pockets of contaminated air in corners.

If you are using blower equipment in a potentially explosive hazardous atmosphere you must use equipment designed to be spark-proof and have the ability to dissipate static electricity.

Because of the complications of selecting the right equipment, your site's competent person must know how to evaluate the confined space and select equipment powerful enough to exchange air



## Confined Space Entry — Ventilation

in the space. The size and configuration of the space and the output of the blower must be evaluated.

**A sample process**

An example of the ventilation process for construction can be found in 1926.57-Ventilation. It says:

- Tanks which have been drained to permit employee entry to clean, inspect or do maintenance may contain atmospheres hazardous to life or health.
- Before employees can enter the tank, appropriate atmospheric tests must be made to ensure permissible exposure limits are not exceeded and, the oxygen concentration is less than 19.5 percent.
- If the tank is unsafe, it must be ventilated until the hazardous atmosphere is removed. Ventilation must continue as long as an employee is in the tank.
- The atmosphere within the space should be periodically tested as necessary to ensure that the continuous forced air ventilation is preventing the accumulation of a hazardous atmosphere.

### Employee Training

The construction OSHA rules at §1926.21(b)(6)(i) call for specific training for those employees required to enter into confined or enclosed spaces. They must be instructed as to the: (1) nature of the hazards involved, (2) the necessary precautions to be taken, and (3) the use of required protective and emergency equipment.

### Training Tips

Show employees how to do a confined space problem to figure the size of blower needed, and correct configuration of the ducting.

**Where To Go For More Information**

29 CFR 1926.21(b)(6)(i)-(ii)—Safety training and education

29 CFR 1910.146—Permit-required confined spaces

American National Standard ANSI Z117.1-1989, *Safety Requirements for Confined Spaces*

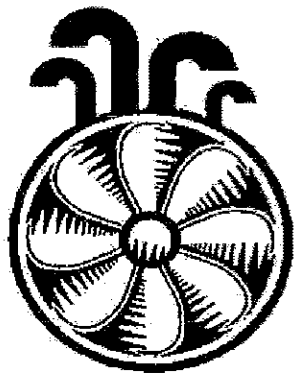
# KELLER'S CONSTRUCTION TOOLBOX TALKS

## Confined Space Entry — Ventilation

Ventilation is the best method for making a confined space atmosphere safe and free of hazardous air. Planning the confined space entry operation, and selecting the proper ventilation equipment is critical. It is almost an art form to ensure every nook and cranny of the confined space is continuously ventilated. It also takes a little math to figure out how long it takes to ventilate a certain sized confined space with the equipment you have.

### Types of ventilation

Some confined spaces can be ventilated **naturally**. This is the case with most excavations. However, any time a naturally ventilated confined space is occupied, adequate precautions must be taken to prevent employee exposure to air containing less than 19.5 percent oxygen and other hazardous atmospheres.



Other confined spaces must be ventilated with **mechanical equipment**.

Ventilation is important to:

- Clear the confined space of hazardous air before you are permitted to enter.
- Keep the confined space clear of hazardous air while you are working in the space.
- Keep the confined space comfortable by lowering temperatures and providing fresh air.

### Types of equipment

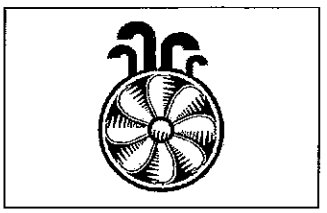
Blowers provide a continuous supply of outside air. Ventilation blowers can work two ways. They can either force fresh air into the confined space or suck the contaminated air out and pull fresh air in. The most popular (and efficient) method of the two is forced air.

Ducting is also important. The positioning can mean proper circulation and venting of the whole confined space or leaving pockets of contaminated air in corners.

If you are using blower equipment in a potentially explosive hazardous atmosphere you must use equipment designed to be spark-proof and have the ability to dissipate static electricity.

Because of the complications of selecting the right equipment, your site's competent person must know how to evaluate the confined space and select equipment powerful enough to exchange air in the space. The size and configuration of the space and the output of the blower must be evaluated.

Confined space work can be safe. Proper and continuous ventilation is one of the best and easier methods to accomplish a hazard free confined space.



## Confined Space Entry — Ventilation Sign-Off Sheet

This sign-off sheet documents the employees who have taken part in a training session on Confined Space Entry — Ventilation at _____.
(company name)

The session covered the following:

- Types of ventilation, natural or mechanical.
- Types of equipment forced air or sucking out.
- Ventilation process.

The space below is for each individual who has been trained on this topic to sign his/her names.

**Date of Training:** **Job Location:**

| **Employee Signature** | **Print Name Here** |
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