CONFINED SPACE ENTRY PROGRAM

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Confined Space Entry Flowchart

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Southern Oregon University

I. PURPOSE

The purpose of this written program is to protect the health and safety of employees who enter confined spaces and/or are assigned to serve as attendants or rescue personnel. This program is also intended to insure compliance with CFR 1910.146.

II. AUTHORITY & REFERENCE

Occupational Safety and Health Administration (OSHA) Permit-Required Confined Spaces 29

CFR 1910.146.

III. APPLICATION

This program applies to 1) all employees, who are authorized to enter a confined space,

2) all employees assigned to serve as attendants and/or provide assistance during a CS

emergency rescue and 3) to employees who serve as CS Entry Supervisors and/or CS Entry Pro gram Administrators.

IV. DEFINITIONS

A.

ACCEPTABLE ENTRY CONDITIONS - conditions that must exist in a permit space to allow entry and to ensure that employees involved with a permit-required confined space can safely enter and perform work.

ATTENDANT - an individual stationed outside the permit-required confined space who had specific training and monitors the authorized entrants inside the space.

AUTHORIZED ENTRANT - employee who is authorized to enter a permit-required space.

BLANKING OR BLINDING - absolute closure of a pipe, line, or duct by fastening across its bore a solid plate that completely covers the bore and can withstand the maximum

upstream pressure.

E. CONFINED SPACE - a space that meets all the following criteria:

l) is large enough and so configured that an employee can bodily enter and perform assigned work;

2) has limited means of entry and egress;

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3) is not designed for continuous employee occupancy; and

Examples may include tanks, silos, boilers, pits, bins, manholes electrical vaults,

degreasers, and hoppers.

F. ENGULFMENT - surrounding and effective capture of a person by a liquid or finely

divided solid substance (i.e sand, corn. grain, sawdust etc).

G. ENTRY - any part of the body breaking the plane of the entry.

H. ENTRY PERMITS - a written or printed document that allows and controls entry into a

permtt space.

I. ENTRY SUPERVISOR - person responsible for:

1) determining if acceptable conditions are present before entering a permit space;

2) for authorizing entry;

3) coordinating and supervising all entry operations; and

4) terminating entry.

J.

HAZARDOUS ATMOSPHERE - an atmosphere that may expose employees to the risk of death, incapacitation, impairment of ability to self-rescue, injury, or acute illness from one or more of the following causes

Flammable gas, vapor or mist in excess of I0% of its Lower Flammable Limit (LFL).

2. Airbome combustible dust at a concentration that meets or exceeds its LFL.

4.

Atmospheric oxygen concentration below 19.5 % or above 23.3 %

Atmosphere concentration of any substance for which a dose or a permissible exposure limit is published in Subpart G, Occupational Health and Environment Control, or in Subpart Z,Toxic andHazardous Substances, of 29 CFR 1910 and which could result in employee exposure in excess of its dose or PEL

Any other atmospheric condition that is immediately dangerous to life or health.

K.

HOT WORK PERMIT - employer's written authorization to perform operations (for

riveting, welding, cutting, burning, and heating) capable ofproviding a source of ignition.

L. IMMEDIATELY DANGEROUS TO LIFE OR HEALTH (IDLH) - any condition that

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O. LINE BREAKING - intentional opening of a pipe, line, or duct that is or has been carrying

flammable, corrosive, or toxic material, an inert gas or any fluid at a volume, pressure, or

temperature capable of causing death or serious physical harm.

P. NON PERMIT CONFINED SPACE- A confined space that does not contain or have the

potential to contain an atmospherichazard or any other serious safety or health hazard.

Q. OXYGEN DEFICIENT ATMOSPHERE - an atmosphere containing less thanl9.5o/o

oxygen.

R. OXYGEN ENRICHED ATMOSPHERE - an atmosphere containing more than23.5Yo

oxygen.

PERMISSIBLE EXPOSURE LIMIT (PEL) - the airborne concentration of a hazardous material that must not be exceeded over a specified time or instantaneously. This value is established by the Occupational Safety and Health Administration (OSHA).

PERMIT-REQUIRED CONFINED SPACE - a confined space that has one or more of the fo llo wing characterist ics :

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poses an immediate threat to life, or a delayed threat to life, or that would cause irreversible adverse health effects, or interfere with an individual's ability to escape unaided from a

permrt space.

ISOLATION - process by which a permit space is removed from service and completely protects against the release of hazardous energy or material into the space.

LOWER FLAMMABILITY LIMIT (LFL) - the lowest concentration of gas or vapor,

expressed in percent by volume in air, that bums or explodes if an ignition source is present at room temperature.

1) Contains or has a reasonable potential for hazardous atmospheres.

2) Contains a material that has the potential for engulfment'

3) Is internally configured so an employee could become trapped or asphyxiated by

inwardly converging walls or a floor that slopes downward into a smaller

cross-section.

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4) Contains any other recognized serious safety or health hazard.

PROHIBITED CONDITION - any condition in a permit space that is not allowed by the permit during the period when entry is authorized.

RESCUE SERVICE - personnel designated to rescue employees from permit spaces.

RETRIEVAL SYSTEM - equipment used for a non-entry rescue of persons from permit

spaces (i,e., tripod).

TESTING - process by which hazards that may affect entrants of a permit space are identified and evaluated.

THRESHOLD LIMIT VALUE (TLV) - the airborne concentration of a hazardous material that should not be exceeded over a specified time or instantaneously. This value is

established by the American Conference of Governmental Industrial Hygienists (ACGIH).

Z. WELDING/CUTTING PERMIT - written authorization to perform operations that can

provide a source of ignition (e.g., welding, cutting, burning, or heating) or a hazardous atmosphere.

V. RESP

A.

The CONFINED SPACE ENTRY (CSE) PROGRAM ADMINISTRATOR for Southern Oregon University is the Manager of EHS.

The responsibilities of this individual shall include:

1 Conducting/coordinating hazard assessments.

2. Determining the classification (permit required/non permit space and location of each

uonlined space.

3. Coordinating the posting of appropriate danger/caution signs by each confined space.

4. Supervising the selection and use of respirators in conjunction with the Respiratory

Protection Program Administrator.

5. Supervising the medical screening of respirator users.

6. Conducting/coordinating supervisory and employee training (including attendants)

and maintaining all training records.

7. Conducting an annual evaluation of the overall program to determine its continued effectiveness.

Consulting employees and their authorized union representatives on the development and implementation of the CSE Program.

B.

MANAGERS AND SUPERVISORS are res

Actively supporting the CSE Program and providing funding to purchase equipment

when needed.

2. Ensuring all assigned personnel are knowledgeable of all aspects of the CSE Program.

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ponsible for:

ONSIBILITIES FOR COMPLIANCE

3. Ensuring their employees comply with all elements of CSE Program.

4. Ensuring appropriate PPE and equipment is properly utilized and maintained.

C

The Confined Space Entry (CSE) Supervisor Southern Oregon University is the Utilities Supervisor or his/her properly trained designee.

The Confined Space Entry (CSE) Supervisor is responsible for:

Providing confined space entry personnel with a copy ofthe most current CSE Program and any future changes.

Knowing the hazards that may be encountered during entry and informing the entrants about the hazards, including information on the mode, signs, or symptoms and

consequences of exposure.

Verifying that the proper atmospheric tests have been conducted and that all

procedures and equipment, mentioned in the permit, are in place before signing the CSE Permit.

Assuring that the CSE Permit is completed prior to each entry.

Terminating the entry and canceling the permit when needed.

Verifying that rescue or other emergency personnel are available and that the means for summoning them are operable in the event that an emergency occurs'

Removing unauthorized individuals who have entered or who attempt to enter the confined space.

Determining whenever responsibility for a permit space entry operation is transferred and at intervals dictated by the hazards and operations performed within the space, and that entry operations remain consistent with terms of the entry permit.

9. Maintaining completed entry permits, and equipment calibration records.

10. Providing employees and their authorized union representative(s) an opportunity to

observe the atmospheric testing of the CS.

NOTE: The CSE Supervisor may also serve as an attendant or as an authorized entrant providing that person is properly trained and equipped. The duties of the CSE supervisor may also be passed from one individual to another during the course of an entry operation.

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SUPERVISOR

CSE

CONFINED SPACE ENTRY

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D. AUTHORIZED ENTRANTS

All authorized entrants are responsible for:

1. Knowing and recognizing the hazards that may be faced during entry including

information on the mode, signs, or symptoms and consequences of exposure.

2. Using and maintaining the proper PPE and other equipment.

3. Communicating with the attendant as necessary.

4. Alerting the attendant when hazardous conditions are detected, identified, or

suspected.

5. Exiting the confined space immediately whenever:

a. ordered to do so by other entrants, the attendant or the CSE Supervisor.

b. warning signs/symptoms are identified,

c. prohibited conditions are identified,

d. an evacuation alarm is activated.

All authorized attendants are responsible for:

1. Knowing the hazards that may be faced during entry, including information on the

mode, signs or symptoms, and consequences ofthe exposure.

2. Knowing the possible behavioral effects of the hazard exposure in the authorized entrants.

Maintaining an accurate count of authorized entrants in the confined space and

ensures that the means used to identiff the authorized entrants accurately identif,res who is in the space.

Remaining outside the confined space during entry operations until relieved by another attendant.

**Note**: Attendants may not enter a confined space to rescue an entrant. If rescue is needed, immediately call 9l I (911 from a University land-line).

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E. ATTENDANTS (Standby person)

Communicating with authorized entrants as necessary to monitor entrant status and to alert entrants of the need to evacuate the confined space.

Monitoring activities inside and outside the confined space to determine if it is safe for authorized entrants to remain in the space and order the authorized entrants to evacuate the space immediately under any of the following conditions:

a) If the attendant detects a prohibited condition.

b)

If the attendant detebts a behavioral effect of the hazard exposure in an authorized entrant.

c)

If the attendant detects a situation outside the confined space that could endanger the authorized entrants; or

d) If the attendant cannot effectively and safely perform all the duties required.

Summoning rescue and other emergency services as soon as the attendant determines that entrants need assistance to escape from the confined space hazards.

Taking the following actions when an unauthorized person(s) approach or enter a confined space while entry is underway:

a) Warn the unauthorized person(s) that they must stay away from the confined space.

b) Advise the unauthorized person(s) that they must exit immediately if they have entered the confined space.

c) Inform the authorized entrants and the entry supervisor if an unauthorized person(s) have entered the confined space.

9. Performing non-entry rescues as specified in Section VII - H.

10. Performing no duties that might interfere with the attendant's primary duty to monitor and protect the authorized entrants.

A. Permit:

Before entry is authorized, entry permit shall be prepared in order to document the completion of safety measures required ( as discussed in section VII of this program).

The completed permit shall be made available to all authorized entrants or their

authorized representatives, at the time of entry, by posting it at the entry portal or by any other equally effective means.

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VI. PERMIT SYSTEM:

1.

A fully completed CS Entry Permit shall he signed by the CSE Supervisor or in

his/her absence the immediate supervisor (if properly trained) to authorize entry into a permit-required confined space (See Form 3).

The CSE Supervisor shall ensure that the permit specifies the location, type of work, personal protective measures, authorized entrants, monitoring equipment, hazards of the permit space, hazard control measures and any required rescue equipment. The procedure for contacting rescue services will also be included on the permit.

The permit shall be dated and carry an expiration time limiting the work to one shift.

The permit must be updated for each shift, and may be extended to each shift if entry conditions are still acceptable.

The duration of the permit may not exceed the time required to complete the assigned task or job identified on the permit.

Supervisor shall terminate if a potential hazardous situation occurs which exceeds the conditions authorized on the permit or the entry operations, documented in the permit, have been completed.

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Cancelled entry permits shall be retained for at least 1 year.

The permit must be available at the work site outside the confined space.

All confined space entry permits must be given to the CSE supervisor after the work is completed.

Hot work (potential ignition sources) must be authorized on a separate hot work permit and attached and noted on the entry permit.

10. Individuals authorizing entry into a permit required confined space may also serve as entrants or attendants if they received the proper training.

11. Entry permits will be reviewed and revised as necessary by the CSE Supervisor and maintained on file for a period of two years.

B. Entry Procedure:

Supervisors, attendants and authorized employees must complete the general requirements, discussed in the next section. Entry procedure to permit required CS be as follows:

1. The CSE Supervisor shall be notified prior to the time that an entrant enters a permit-required confined space.

2. A CS Entry Permit (Form 3) shall be properly completed and signed by the

CSE-Supervisor or in his/her absence the area supervisor (if properly trained) prior to entry

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into the permit-required confined space.

3. Only properly trained and authorized individuals will be allowed to enter a permit-required confined space. Authorized entrants will maintain contact with the attendant.

a) A permit space has obstructions or turns that would prevent pull on the retrieval line from being transmitted to the entrant, or

b) A permit space from which an employee being rescued with the retrieval

system has projections which would injure the employee if forcefully removed, or

c) A permit space when entered by an entrant using an air supplied respirator and retrieval lines could pose an entanglement hazard.

The atmosphere within the confined shall be tested for oxygen content, flammable gases, and potential toxic air contaminants prior and during entry by a properly

trained individual. Each entrant shall be required to wear an air-monitoring

instrument if the confined space is large enough and/or has a potentially hazardous atmosphere.

6.

During any confined space entry, all safety rules and procedures shall be followed.

7.

At least one attendant should be provided outside the permit space into which entry is authorized for the duration of entry operations.

Note: Supervisors may be assigned to monitor more than one permit space provided the duties can be effectively performed for each permit space that is monitored.

If multiple spaces are to be monitored by a single supervisor, means and procedures should be provided to enable the attendant to respond to an emergency affecting one or more of the permit spaces being monitored without distraction from the attendants responsibilities.

Personal protective equipment, including respirators, shall be provided to entrants as necessary for safe entry into the CS and used properly.

a) AIl PPE must be approved by the CSE Supervisor.

b) No entry may be made into an IDLH Confined Space.

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4. Each individual entering a permit-required confined s ace will, whenever practical, have a safety or retrieval line attached to a body harness or wristlets. The other end of the line must be secured to a secure anchor point or lifting device (i.e., tripod) outside the entry portal. Note: The anchor point shall not be secured to a motor vehicle in a manner that

would pull the line out of the space if the vehicle moved. A retrieval line is not required if:

Electrical equipment used in the confined space shall be appropriate for the hazard and meet the requirements of the National Electric Code if a hazardous atmosphere is present.

Any condition making removal of an entrance cover unsafe (i.e. pressured

differential, physical obstacles, etc.) shall be eliminated before the cover is removed.

a) When the cover has been removed, the opening(s) shall be promptly

guarded to prevent accidental fall into the opening and prevent objects from falling into the opening.

b) Appropriate vehicle and pedestrian barriers shall be used to protect workers.

10. Metal ladders shall not be used when working around electrical equipment.

Any use of chemicals or welding, soldering, or cutting operations must be approved by the CSE-Supervisor.

VII. GENERAL REQ

A. WORKPLACE EVALUATION

The CS Program Administrator will coordinate/conduct an evaluation of the workplace to determine if confined spaces are present. A detailed assessment will be made of each space in order to determine type and location of each space, its dimensions and number of exits, the reason(s) for entry, actual or potential health and safety hazards, and its classification (permit or non-permit). The assessment will also specify the equipment and personal

protective equipment (PPE) required for entry and any special precautions that must be

followed for safe entry and work in the confined space. The results of the assessment will be recorded on a Confined Space Hazard Assessment Form (See Form I - Part 1 and 2). It is required that all affected employees be trained for their respective duties, prior to their entry

Effective means of identiffing confined spaces (i.e. training, etc.) may be used to prevent unauthorized entry.

a) When using warning signs or placards for the identification of Confined Spaces, all

types shall be printed both in English and (if applicable) in the predominant language of any non-English reading employees.

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Warning and Posting

IDENTIFICATION OF CONFINED SPACES

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UIREMENTS

b) Where CSE symbols are established, they shall also be used in conjunction with a

warning sign.

c)

Signs shall include, but not necessarily be limited to, the following information:

DANGER: PERMIT REQUIRED CONFINED SPACE. DO NOT ENTER UNLESS AUTHORIZED

d). The following statements shall be added in large letters to the warning sign when a

specific work practice must be performed or when specific safety equipment is

necessary:

Respirator Required For Entry Lifeline Required For Entry Hot Work Permit-Required

e) Signs are not required at manholes, or any other entry located in public area.

C. ATMOSPHERIC REQUIREMENTS PRIOR TO ENTRY:

The atmosphere in the confined space within the entrant's immediate area shall be

continuously monitored for oxygen, hydrogen sulphide or carborn rntlruxicle, combustible gas and any other hazardous substance which the employer has reason to believe may be present in the confined space.

Before entering a CS, the following atmospheric conditions must be met:

a) The oxygen level is between 19.5% and 23.5%

b) The concentrations of flammable gas, vapors, or mists are below 10% of their Lower Flammable Limits (LFL).

c) The concentration of airborne combustible dust does not exceed 10% of the Lower

vision at a distance of 5 feet.

d) The level of airborne hydrogen sulfide (HzS) is below 10 parts per million (ppm).

e) Toxic air contaminates are less than the OSHA Permissible Exposure Limit (PEL).

Note: If the substance does not have a PEL, use the Threshold Limit Value (TLV)

established by the American Conference of Governmental Industrial Hygienists

(ACGIH).

f) Atmospheric concentrations of toxic substances are below what is considcred as IDLH.

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ndition is if the dust obscures

Flammable Limit (LFL). Note: An indication of this co

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g) The level of carbon monoxide (CO) is less than 35 ppm.

Entry into a confined space is not allowed if monitoring indicates deficiency in any of these categories. Respirators or a self-contained breathing apparatus (SCBA) shall not to be used to allow entry into deficient atmospheres.

In order to achieve and maintain a safe atmosphere, one or more actions may have to be taken to render the space safe for human occupancy. This could include:

a. Isolation -

precautions taken to prevent release of material and/or energy into the

space. This can be achieved through blinding, blanking, disconnecting, lockout/tagout, or removal of incoming pipes or related energy sources.

Ventilation - purging, inserting, flushing, or otherwise ventilating the space with fresh air. The replacement air will displace the contaminated air allowing for safe entry.

This can be accomplished by removing ports and openings or by mechanically

ventilating the vessel.

D. VENTILATION

If a CS being entered is found to contain a hazardous atmosphere, forced ventilation may be provided for a period of time in order to bring the air quality within the acceptable limits.

bnce the determined ventilation period expires, employees shall monitor the CS according to subsection entitled "Air Monitoring". If the sampling shows that ahazard still exists,

then additional ventilation and sampling may be required.

Note: Control of atmospherichazards through forced ventilation does not constitute elimination of hazards

If the hazard still exists after repeated ventilation steps, the CS shall then be considered a permit-required CS and the CSE team (entrant, attendant, and Confined Space Entry

Supervisor) must follow the proper procedures for permit-required CSE.

Note: Forced ventilation may not be used in lieu of monitoring. Consideration must also be given to the possibility of static discharge that could be a source of ignition.

Forced air ventilation should be so directed as to ventilate the immediate areas where an employee is or will be present within the space and shall continue until all employees leave.

Whenever ventilation is used, employees shall:

a) Keep the blower controls at least 10 feet from thc CS, and out of the wind or downwind from the entrance to the CS.

b.

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c.

Separation - where there is a possibility of external hazards, the space may require barricades to protect the entrants from falling objects or from unauthorized entry.

b) Use a ventilation blower that is designed to be intrinsioally safe if the possibility of an

explosive atmosphere could exit.

c) Ensure that the exhaust systems are designed and placed so that they protect

employees in the surrounding area from being contaminated.

d) Ensure that the ventilation system is fully operational and air is supplied from a clean source.

e) Ensure that contaminated air is not recirculated into the CS.

D Purge the ventilation hose outlet for at least one-minute (at street level if possible)

before inserting the hose into the confined space.

g) Maintain continuous local ventilation when toxic atmospheres are being produced as part of a work procedure (i.e., welding, painting or cleaning operations).

E. LOCKOUT/ISOLATION

Each CS (if applicable) shall have its own specific writtcn lockout/isolation procedures.

These procedures will be posted above and/or next to the entrance of the CS, where

feasible.

a)

Electrical Isolation: In order to

of moving parts, or from being exposed to energized objects, authorized entrants shall lockout circuit breakers andlor the disconnect in the open (off) position with a

key-type lock. If more than one authorized entrant is to be inside the CS, each

employee must place his/her own lock on the circuit breaker or disconnect.

b)

Mechanical Isolation: All e

unexpectedly rotate or move will be blocked in such a way that there can be no

accidental rotation or movement. Isolation of mechanical parts can be performed by disconnecting linkages or removing drive belts and/or chains.

c)

Isolation Lines: Lines can be isolated b

blocking two closed in-line valves or 3) blocking or bleeding open to the outside atmosphere the drawn or the bleed-in line between the two closed valves.

F. AIR MONITORING

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y 1) double blocking and bleeding the line or 2)by

Blanking: A solid plate or cup capable of withstanding the maximum pressure of the gas or liquid inside the pipe may be placed across a pipe or duct to prevent

unexpected release of the contents.

quipment with moving mechanical parts that could

prevent employees from being exposed to activation

Before any permit required CS may be entered by any employee, the authorized entrant must

monitor the atmosphere of the CS to determine that the characteristics of the air for all levels and all areas within the CS are safe. The atmosphere within the authorized entrant's immediate area should be continuously monitored for oxygen, hydrogen sulfide or carbon monoxide, combustible gases and any other hazardous substance.

**When testing for atmospheric hazards, test first for oxygen, then for combustible gases and vapors, and then for toxic gases and vapors.**

**Note:** Authorized entrants and/or their authorized representatives shall be provided an

opportunity to observe the atmospheric testing of the CS that is conducted prior to entry and subsequent testing. Reevaluation of the permit space shall be done in presence of the authorized entrant or employee's authorized representative who requests the reevaluation.

Samplings Devices

a) A direct readout sampling device which can simultaneously test for oxygen, hydrogen

sulfide and/or carbon monoxide and combustible gas without manual switching shall be used to sample the atmosphere of the confined space.

b) The sampling device shall be equipped with an audible and visible warning device that warns the entrant and/or attendant of the hazardous atmosphere in the permit space.

c) Sampling devices shall be calibrated relative to the oxygen content ofthe ambient air at the

time of sampling. Calibration of the sampling device relative to the oxygen content shall be

performed where the20.9%o natural content of oxygen in the air is most likely to occur.

Note: Oxygen calibration should not be performed near a confined space opening.

d) A sampling device, which has a zero set, shall be zeroed in a clean atmosphere before each

sampling. Calibration of a sampling device shall be conducted as often as recofilmended by the manufacturer, but at least once every six months.

e) Non-sparking Equipment: When sampling the atmosphere of a CS, the sampling device shall have an attached non-sparking probe.

f) Manhole Sampling: When a CSE is by means of a manhole, a probe shall be inserted

through the pick hole of the manhole cover, or the manhole cover shall be preyed open

(using a non-sparking pick) on the downwind side to allow just enough room for insertion of the probe or other sampling device.

employees shall be required to use an approved explosion-proof or intrinsically safe sampling

device.

G. ASSESSMENT OF ADDITIONAL HAZARDS

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expected to have combustible vapors present,

**Intrinsically Safe**: When the CS to be entered is ex

Before entering a confined space, the CS supervisor or in his/her absence. the area supervisor,

shall conduct an assessment of any additional hazards which the entrant may encounter during the CSE. This assessment shall include, but is not limited to, a review of the following additional

hazards:

a) Thermal Hazards due to extremes in hot and cold temperatures.

b) Engulfment Hazards due to loose, granular materials, such as sand, coal, or ash, stored in

bins or hoppers.

c) Noise Hazards can affect hearing and emergency communications.

d) Slick/Wet Surfaces can increase the risk to slips and falls. Wet surfaces also increase the

risk and effects of shocks from electrical tools, machinery, and circuitry.

e) Falling Objects from work being performed above an employee or by objects falling

through open CS entrances.

f) Mechanical equipment that is required to be operating during the entry.

g) Electrical Hazards from exposed wires, power lines, etc.

h) Fall Hazards.

i) Biological Hazards.

H. EMERGENCY RESCUE

Note: The OSHA CS Standard allows two options for rescue operations. The employer must select one of the following and delete the other from your program.

Prior to utilizing a rescue service/contractor, the CS Program Administrator shall:

a) Evaluate the prospective rescuer's ability to respond to a rescue summons in a timely

manner, considering the hazard(s) identified. Note: What is considered "timely" will vary according to the specific hazards involved in each entry;

b) Evaluate the prospective rescue service's ability, in terms of proficiency with

rescue-related tasks and equipment, to function appropriately while rescuing entrants from the particular permit space or types of permit spaces identified;

c) Select a rescue team or service that has the capability to reach the victim(s) within a

time frame that is appropriate for the permit space hazard(s) identified, and is

equipped for and proficient in performing the needed rescue services;

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Service (Fire Department) CS Rescue

Emergency

1.

d) Inform each rescue team or service of the hazards they may confront when called on

to perform rescue at the site; and

e) Provide the rescue team or service selected with access to all permit spaces from

which rescue may be necessary so that the rescue service can develop appropriate

rescue plans and practice rescue operations.

Note: Appendix F ofthe OSHA 29 CFR 1910.146 Standard contains examples of criteria which employers can use in evaluating prospective rescuers.

2. On-site CS Rescue

No attempt shall be made to rescue an entrant unless rescue can be accomplished from

outside the CS.

5. Substance Information. If an

Safety Data Sheet (SDS) or other written information is required to be kept at the work site, that SDS or written information shall be made available to the medical facility treating the exposed entrant.

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VII. EMPLOYEE TRAINING

All employees who are required to enter a Confined Space or serve as an attendant shall be

trained and properly equipped to recognize, understand, and control hazards that may be

encountered in the CS. All training must be documented on a CS Training Record (See Form 2).

This training record (certification) shall be available for inspection by employees and their

authorized representative .

Training shall be provided to each affected employee:

a) Before the employee is first assigned duties under this section.

b) Before there is a change in assigned duties.

c) When there is a change in the permit space operations that present a hazard about which an

affected employee has not previously been trained.

d) Whenever the employer has reason to believe either that there are deviations from the permit

space entry procedures or that there are inadequacies in the employee's knowledge or use of these procedures.

A.

All employees who are required to either enter a confined space or serve, as attendants shall receive training in the following areas:

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Confined Space Entry

injured entrant is exposed to a substance for which a

Associated safety and health hazards of the CSE Duties of entrants and attendants

Air monitoring and attendants

Respiratory protection

Emergency rescue procedures

Lockout isolation procedures

Training shall be provided to each affected employee:

1. Before the employee is first assigned CSE duties.

2. Before there is a change in assigned duties.

3. Whenever there is change in confined space operations that presents a hazard about which the employee has been previously trained.

B. CPR/First Aid - Each

trained and certified through an approved adult CPR course every two years.

C

All employees who are required to either enter a CS and/or serve as attendants, shall receive training on the proper use of any PPE needed to perform the job safely, such as, protective clothing and suits, gloves, respiratory protection; confined space rescue equipment, body harnesses, hearing protection, and eye/face, hand, foot and head protection.

An emergency rescue employee(s) who is designated to provide permit space rescue and emergency services shall be trained in the following measures with an adequate level of proficiency shown in:

1. The use of personal protective equipment (PPE) needed to conduct permit space rescues safely.

2. The assigned rescue duties (same as entrants).

3. Basic first aid and cardiopulmonary resuscitation (CPR)- At least one member of the

rescue team or emergency service shall hold a current certification in first aid and CPR.

2.

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Rescue Training

D. Emergency

Personal Protective Equipment PPE

employee required to enter a permit-required confined space shall be

4.

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1.

3.

Emergency rescue personnel shall perform a permit space rescue at least once every

persons are removed from the actual permit spaces or from representative permit spaces.

Representative permit spaces shall, with respect to opening size, configuration, and

accessibility, simulate the types of permit spaces from which rescue is to be performed.

IX.

WORK INVOLVING CONTRACT

When Southern Oregon University arranges to have employees of another employer

(contractor) perform work that involves confined space entry, the CSE Program

Administrator or the CSE Supervisor shall:

Inform the contractor that the workplace contains permit spaces and the permit e space entry is allowed only through compliance with a permit space program that complies with CFR 1910.146.

Inform the contractor of the hazards identified and the employer's experience with the CS that make the space in question a confined space

Coordinate entry operations with the contractor when personnel from both employers will be working in or near the confined space.

5.

Verify that the contractor has an appropriate CS Entry program.

Debrief the contractor at the conclusion of the CS entry operation(s) regarding the confined space entry procedures that were followed (if applicable) and the hazards that were

confronted or created during entry operations.

X. NON-PERMIT REO

No employee shall enter or work in a non- permit CS unless the following steps have been performed:

a. Obtains permission to enter the confined space from the CSE supervisor, or in his/her

absence, the area supervisor.

b. Obtains and uses the proper PPE, tools and other equipment.

c. Complies with all other applicable CSE procedures

Note: Atmospheric testing of a non-permit CS is not required by the OSHA Confined Space standard.

2.

4.

6.

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y means of simulated rescue operations in which dummies, manikins, or actual

12 months b

UIRED CONFINED SPACE ENTRY:

3.

1.

ORS OR MULTIPLE EMPLOYERS

However, testing the atmosphere for toxic gases and oxygen deficiency prior to entering the CS is

recommended if a suitable, and properly calibrated, sampling devise is available. The OSHA Standard also does not require an attendant for entry into a non-permit required CS, however having an attendant present (if practical) is again strongly recommended. Other OSHA standards (i.e. Personal Protective Equipment, Respiratory Protection, etc.) still apply to entry into all confined spaces.

RECLASSIFICATION OF A PERMIT

)

NON-PERMIT CS

Reclassification of a permit-required confined space to a non-permit space can be accomplished by:

A permit required CS may be entered as a non-permit confined space if the permit space contains no actual or potential atmospherichazard, and all other hazards within the space can be

eliminated without entry into the space. Hazards may be eliminated, for example, by:

Following all designated lockout/tagout procedures for the space in question; Emptying a vessel to remove an engulfment or other content hazard;

Draining chemical tanks of their contents, purging any residual chemicals with water, and ventilating the space after purging is complete;

Shutting boilers down, opening all access ports to allow for temperature reduction and natural ventilation, and by taking all appropriate safety measures (i.e. locking out machines, etc.) to render the space safe for entry.

If the hazard arise within a permit space that has been declassified to a non-permit space' each employee in the space shall exit the space immediately. The employer shall then

reevaluate the space and determine whether it must be reclassified as a permit space, in accordance with other applicable provisions.

XII. RECLASSIFICATION OF A NON

b.

d

A.

When there are changes in the use of a non-permit confined space that may increase the hazards, the space shall be reevaluated and classified as a permit-required space if

necessary. Reclassification would be required, for situations such as:

1. During application of solvents, paints chemicals or other materials that could

potentially create a hazardous atmosphere in a confined space.

2.

During welding, cutting, brazing, or soldering in some confined spaces with limited ventilation.

B.

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The CSE-Supervisor shall reevaluate and reclassiff confined spaces as necessary depending

PERMIT-REQUIRED CS

-PERMIT CONFINED SPACE TO A

c.

a.

-REQUIRED CONFINED SPACE TO

upon the work activities to be performed in these spaces.

XII. OTHER SAFETY RU

In order to protect the safety and health of all employees associated with the CSE, employees (and supervisors) shall comply with the following safety rules and work practices:

A. General Safety Rules

a)

b)

c)

d)

All employees within the CS and those employees assigned to serve, as attendants shall be in constant two-way communication.

A11 employees required to wear respiratory protection must properly use and maintain properly the respirator in accordance with CRF 1910.134 and the specific instructions provided to them by their supervisor and during training.

Smoking is not permitted within the CS or within a 10 feet radius of the entrance of a confined space.

All employees shall comply with the requirements and limitations on the CS entry permit, including the maximum number of employees permitted to work in the CS.

B. Boilers and Other Vessels\*

Before any employee enters a boiler or any other vessel type CS, the following safety precautions shall be implemented:

a)

Ensure that the interior temperature of the confined space closely equals the ambient temperature outside that vessel before an entry is made into any part of the boiler or other vessel-type CS subjected to extreme hot or cold temperatures.

b)

Ensure that all hazardous materials (solids and liquids) inside the work area are removed from the vessel as possible before any entry is allowed.

c)

Ensure that all lines leading into and away from the vessel are blanked, blinded, and/or double blocked and bled before an entry is allowed.

d) Ensure that all employees entering a boiler or other vessel-type CS are secured by a lifeline to a winch or other retrieval device outside the CS.

e) Treat all boilers and other vessel-type CS in a manner consistent with that of other confined spaces.

C. Traffic Safety

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LES AND WORK PRACTICES

Entrances to confined spaces that are located in streets shall be guarded in accordance with the following requirements:

Employees shall activate the following warning lights upon approach to an entrance to a CS:

Employees shall park the vehicle used to transport their CS equipment in such a way that the vehicle does not obstruct the normal traffic flow and shall, when possible, use the vehicle to provide protection for the employees.

Employees shall park the vehicle in such a manner that the vehicles exhaust fumes cannot accumulate in the CS. If this is not possible, the vehicle's exhaust pipe shall be extended away from the confined space.

Employees shall properly place traffic safety cones around the manhole and any

vehicle in accordance with state and federal traffic ordinances to adequately warn

oncoming traffic.

Traffic safety cones shall be visible to traffic in all directions and in such a manner as to protect the employees from the traffic flow. Traffic cones should also be placed far enough form the CS to give drives adequate notice.

When working on the street or an easement surface, all standby and flag person employees shall at all times wear a traffic safety vest or the equivalent. A flag

person(s) shall be added to the CSE team when the need arises. The flag person(s)

When a CSE is required for cleaning purposes, the CSE supervisor or in his/her absence, the area supervisor, shall review and authorize the procedures and processes to be used while cleaning the CS before entry can take place.

The following specific cleaning methods shall be used depending upon the product or products in the space:

Flammable/Combustible Atmosphere: The atmosphere within the confined space

shall be purged with an inert gas if the atmosphere is above the upper flammable limit to remove the flammable and/or combustible substance before forced ventilation of the space. Initial cleaning shall be done, if possible, from outside the tank

Cleaning Process Hazards: When additional hazards arc crcated by the cleaning

process, the CSE Supervisor shall develop additional safety procedures to address the

b.

d.

f.

b.

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quired attendant for a permit required CS.

shall not be considered as the re

(1). Vehicle's beacon light.

(ii). Four-way hazard flashers

a.

D. Cleaning purposes\*

e.

c.

a.

newly created hazards. These special procedures shall be developed before a CS cleaning process takes place.

E

a) When the CSE requires the use of equipment and tools inside the space, this equipment shall be inspected and must meet the following requirements:

b) Hand tools must be in good repair and be kept clean'

c) Portable electrical tools, equipment, and lighting shall be listed Class I, Division I,

Group D. All grounds must be checked before electrical equipment is used in a CS.

Note: Ground Fault Protectors should be used whenever possible to protect

employees from electrical shock when working in damp or wet locations.

d) All electrical cords, tools, and equipment must be constructed of a heavy-duty,

double-insulated cord and equipped with a 3-prong plug. Note: double insulated

tools with a2-prongpug may be appropriate in some cases.

e) All electrical cords, tools, and equipment must be visually inspected for defects

before being used in a CS. If found defective, they will be replaced, repaired, or destroyed before any employee enters the CS.

f) Cylinders of compressed gases must never be taken into a CS and will be turned off at

the cylinder valve when not in use. Exempt from this rule are cylinders that are part of SCBA or resuscitation equipment.

g) Ladders must be adequately secured or of a permanent type which provides the same

degree of safety. Note: Permanent ladders must be inspected for rust or corrosion and

repaired or replaced if necessary.

h) All equipment that may be used in a flammable atmosphere shall be approved as

either explosion proof or intrinsically safe for the atmosphere and shall be approved by a recognized testing laboratory (i.e., UI , FM).

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The following records will be maintained on file for at least one year:

A. Employee Training Records - including dates and the names of attendees.

B. CSE Equipment Inspections - including dates, results, and corrective action.

C. Monitoring Equipment Calibration/Servicing Reports - indicating calibration dates and any service conducted by the manufacturer.

XIII. RECORDKEEPING

Use of equipment and tools inside the confines space

ace Permits - for all Permit Re

quired confined space entries.

D. Confined Sp

XIV. ANNUAL REVIEW

The Confined Space Entry Program Administrator shall review the CS Program at least annually using cancelled CS Permits and other available information and records in order to determine if; A. Changes should be made to improve the program's overall effectiveness

B. Additional hazards have been identified within a given space;

C. Additional measures should be taken to protect the entrants;

D. Additional confined spaces should be included within the program; and

E. Some locations can be removed from the program.

Note: When an asterisk\* is placed in front of a guideline, this procedure is not required by the

standard.

This program was developed in accordance with CFR 1910.146.

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FORM 1

CONFINED SPACE HAZARD ASSESSMENT FORM (PART D

Southern Oregon University

Hazard Codes:

1. Atmosphere is within acceptable limits.

2. Contains or has a potential to contain a hazardous atmosphere.

3. Contains a material that has the potential for engulfing an enfant (i.e. grain, sand)

4. Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor

which slopes downward and tapers to a smaller cross-section.

5. Contains moving parts or machinery.

6. Contains any other recognized health or safety hazard.

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Classification (Permit Required/Non Permit)

Hazard Code(s)

Reason(s) for Entry

Location

Type of CS

(Tunnel, Pit etc.)

I I I I I I I I I I

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4.

5.

6.

7.

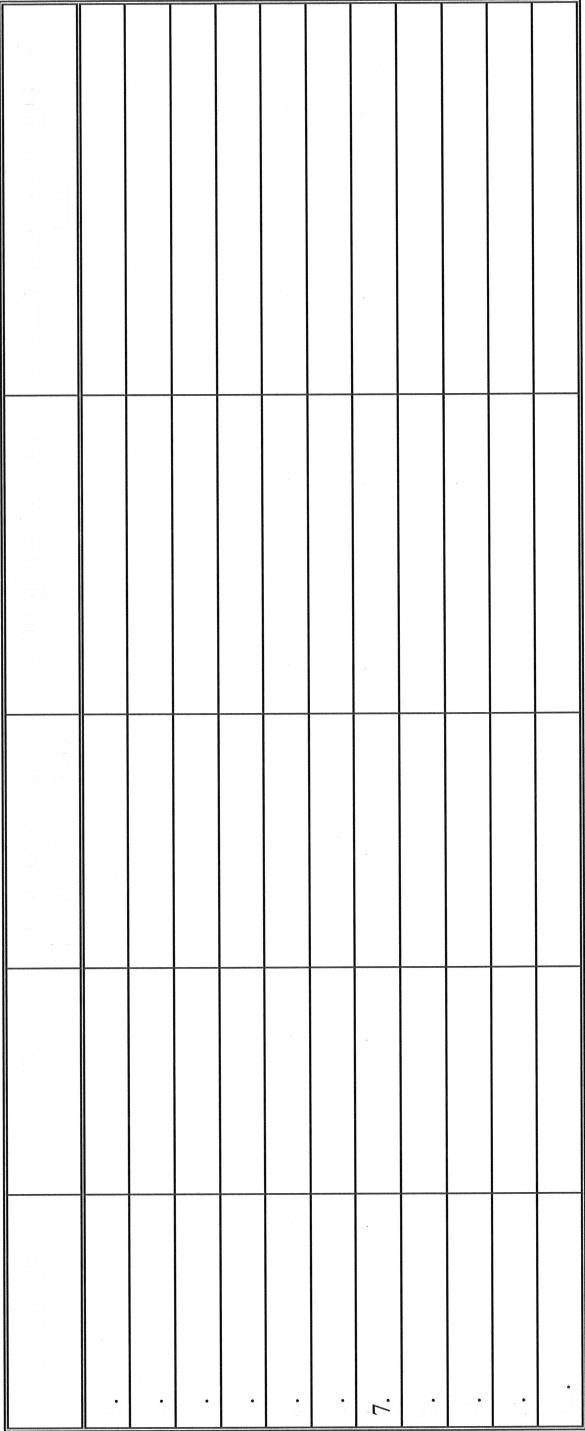
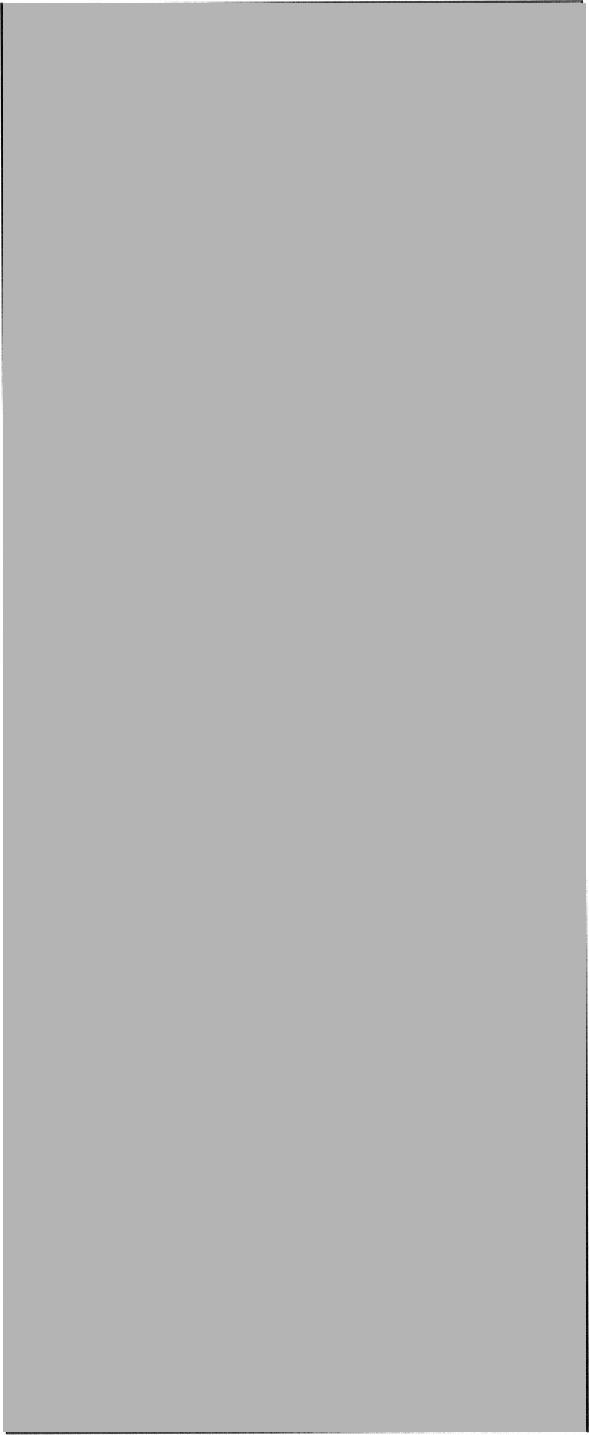
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9.

10.

3.

1.



Date:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Title\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Completed By:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

FORM 1

CONFINED SPACE HAZARD ASSESSMENT FORM (PART II)

Southern Oregon University

Type ofCS

Location

Tools/Equipment Required for Entr-v

PPE Required for Entry

Special Precautions Required for Entry

1

2

J

4

5

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FORM 2

CONFINED SPACE ENTRY TRAINING RECORD

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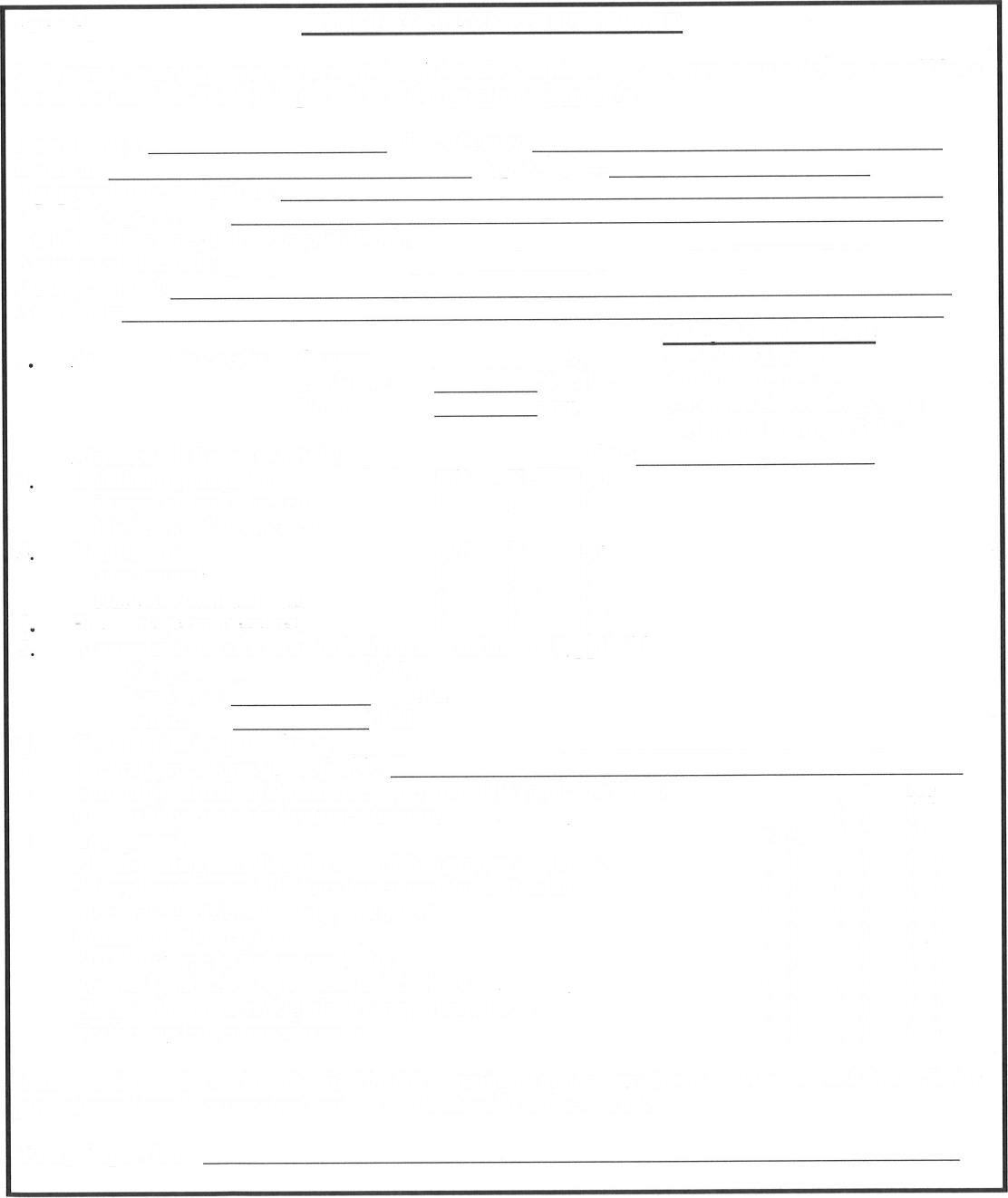
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| Employee Name | Classification | Department |
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Name of Instructor:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Organization:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Location:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date of Training:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_



Form 3

CONFINED SPACE ENTRY PERMIT

This permit must be completed prior to entry into the confined space. Entry cannot be perfotmed if any boxes are marked "No." This permit is valid@

Date of entry: Location:

Time of Entry:

Type ofspace:

Equipment to be worked on:

Work to be performed:

Anticipated time needed to complete work: Anticipated Harzards:

Entry personnel: Attendants:

Accep

table conditions

1

2

4

5

Atmosphericchecks: Oxygen

Explosive

Toxic

Isolation of pumps/lines: N/A

Pumps or lines blocked, ( )

blinked, or disconnected

Ventilation: N/A

Mechanical ( )

Natural ventilation only ( )

IIot work permit rcquircd ( )

Atmospheric checks after isolation and ventilat

o/o Oz

%L.F,L,

ppm

19.5 %to 23.5 %o

<100 L.E.L.|L.F.L.

0-35 ppm Carbon Monoxide 0-10 ppm Hydrogen Sulfide

Atmospheric Tester's Ittitials :-

Time: No

()

3

Yes () () () ion,

Oxygen: Explosive: Toxic:

Vo Oz

%L.E.L

PPM

6. Communication procedures:-

7. Lockout procedures, if applicable:

8

. Entrant(s), attendant(s), and rescue personnel (ifapplicable) have

successfully completed required training.

. Equipment:

Direct reading sampling device which is properly calibrated

Safety harnesses and lifelines for entrants and attendants

Mechanical retrievaVhosting equipment

Communicatio n equipment

SCBA or Type C air line respirator

Personal protective equipment and clothing

Electrical equipment/Light ingA{on sparking Too ls

Traffi c barriers/entrance covers

No

9

I have reviewed the work authorized by this permit and the information pertaining to each item. Safety procedures have been received and are understood by all personneL

Entry Supervisor:

Yes () Yes () () () () () () () ()

IA ) ) ) ) ) ) ) )

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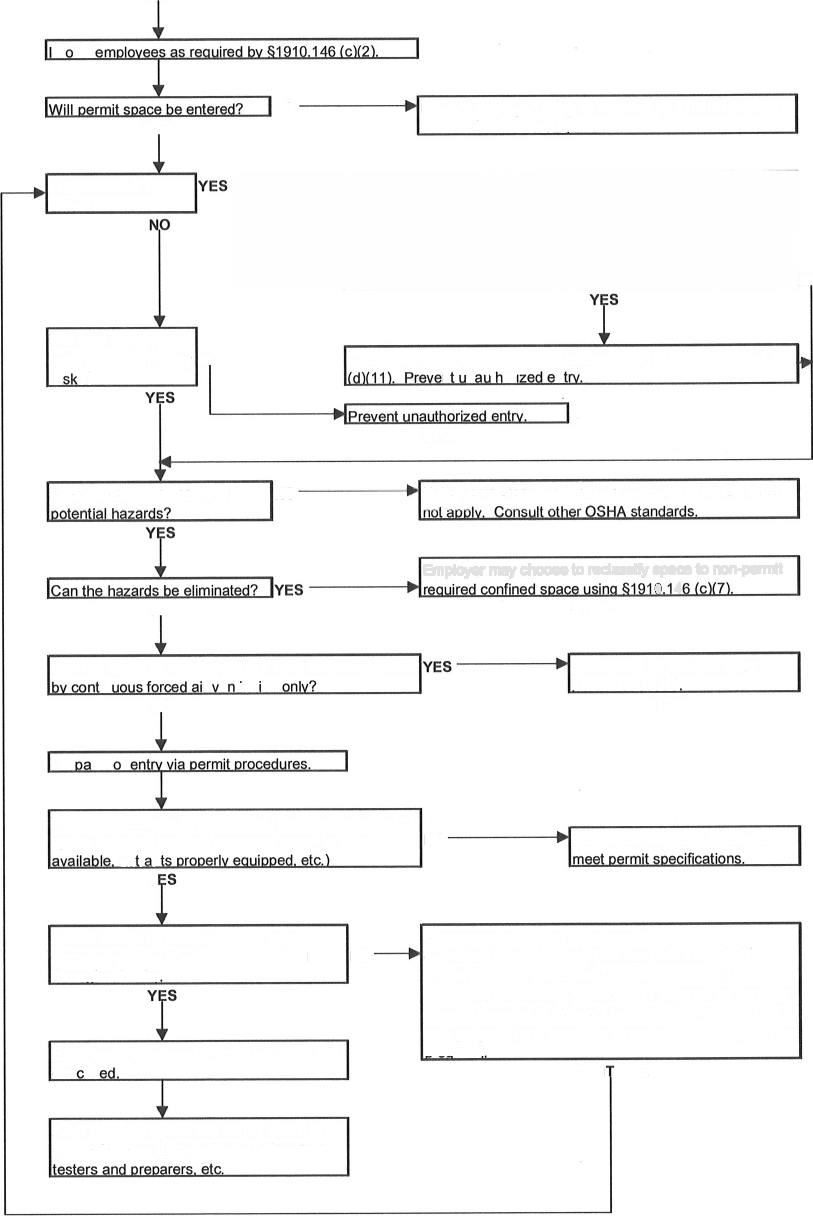
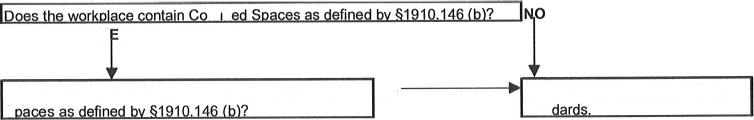
) o ) ) ) ) ) ) ) )

( N ( ( ( ( ( ( ( (

No ( ) ()

if applicable

Yes ()



Confined Space Entry Flowchart

nfn

s

NO

YES

STOP

nf rm

NO

YES

|  |
| --- |
| Task will be done by contractors' employees. lnform contractor as required by 51910.140 (cXB)(l), (ii), and (iii). Contractor obtains inform nr-. r ! | n t fr mr. |
| .. | ^.nf f n! t. ! n f r- ? |

NO

Coordinate entry ooperations as required by 51910.146 (c)(8)(iv) and

Not a p€rmit-requirod confined space.

51910.146 does

Employer may choose to reclassi! space to non-permit r4

STOP\*

STOP\*

Permit not valid until conditions

INUE

stan

Consult other applicable OSHA

S

Y

Does the workplace contain Permit-required Confined

Prevent employee entry as required by 51910.1aG (cX3).

Do task from outside s

oac€.

Will contractors enter?

Will host employees enter to perform entry

NO

ta

S?

n n tor' n

STOP

Does spsce have known or

NO

NO

Can the space be maintained in a cond

ition safe to enter

Space may be entered under

tn

re

tlat

on

S1910.146 (c)(5)

NO

Pre

re( r

Verify acceptible entry conditions (Test results recorded, space isolatedif needed, rescuers/means to summon

NO

enr n Y

Permit issued by authorizing signature.

Acceptable entry cond itions maintained

NO

Emergency exits (prohibited conditoin). Entrants

evacuated, entry aborts. (Call rescuers if needed).

Permit is void. Reevaluate program to correct / prevent prohibited condition. Occurrence of emergency condition (usually) is proof of deficient program. No re-entry until until program (and permit) is amended. (May require new

throu

ohout entrv

Entry tasks completed.

can ell

Permit returned and

nrooram)

coN

Audit permit program and permit based on evaluation of entry by entrants, attendants,

\*

Spaces may have to be evaluated and re-evaluated if hazards arise during entry