Confined Space Entry Procedure

Saint Joseph’s University

September 2010
Purpose

The purpose of this procedure is to provide requirements for confined space entry at Saint Joseph’s University. This guideline is based upon the Occupational Safety and Health Act Final Rule (29 CFR 1910.1461, which became effective 4/15/93. These requirements for practices and procedures are designed to protect employees from the hazards encountered when entering a confined space.

Responsibility

It is the responsibility of Saint Joseph’s University (SJU) to provide a safe working environment for employees and contractors. Confined space entry requires a comprehensive site specific program which must be followed by all personnel working at SJU. Each person authorizing entry or participating in the confined space entry is charged with the responsibility of completing their task safely.
Definitions

**Confined Space** is defined as:

a) Space that is large enough and so configured that an employee can enter it and perform assigned work

b) Space that has limited or restricted means for entry or exit

c) Space that is not designated for continuous employee occupancy

**Permit-Required Confined Space** is defined as a confined space that has one or more of the following characteristics:

a) Contains a hazardous atmosphere (or has the potential to contain one)

b) Contains a material that has the potential for engulfing an entrant

c) Has an internal configuration in which an entrant could be trapped or asphyxiated

d) Contains any other recognized serious safety or health hazard

**Nonpermit Space** is defined as:

A confined space that does not contain or have the potential to contain any hazards capable of causing death or serious physical harm, i.e. vented vaults or drop ceilings. Although these spaces are confined, they have natural or permanent mechanical ventilation to prevent the accumulation of substances that could create a hazardous atmosphere or do not present other serious hazards.

**Entrant**

An entrant is an employee who will physically enter and work in the area which has been designated a confined space.

**Attendant**

An attendant is an employee who will be placed outside the confined space of the entrant and who will monitor the conditions of the space and the employee to insure safe completion of the proscribed work.
**General Requirements:**

1) Entry into a permit required confined space requires a written plan that complies with OSHA 29CFR1910.146. This written plan must be reviewed and understood by all employees prior to entry into a confined space.

2) Facilities management shall notify all employees and visitors of confined spaces by posting danger signs, marking or barricading areas or by using other appropriate warning devices to identify the dangers posed by the permit required space. The warning signs should read:

"DANGER -PERMIT REQUIRED CONFINED SPACE -DO NOT ENTER".

3) Sealed tanks or containers normally sealed, locked or bolted shut do not constitute a permit-required confined space until they are emptied for inspection or maintenance. Warning signs are required when work is to be performed on these structures.

4) All documentation regarding authorized entry and pre-entry procedures should be reviewed by employees or contractors before anyone enters committed confined space.

5) When an outside contractor performs work that involves permit space entry, SJU will notify the contractor that permit space entry is allowed only by compliance with the confined space entry procedure.

**Identifying Confined Spaces**

The job supervisor is responsible for identifying confined spaces before entry. All permit-required confined spaces will have a sign at the entrance directing the employee to contact their supervisor before entering. An example sign would be: Danger -Permit-Required Confined Space. Do Not Enter. Call Supervisor.

**Permit issue**

1. Authorization of entry will be done through a permit approved by a Facilities supervisor. Appendix A shows a Saint Joseph's University entry permit which complies with required standards for entry into confined space. This entry permit shall be printed on orange paper with a copy kept on file at the Facilities Directors office and one copy kept by the entrant.

2. Entry permits must be retained for a period of one year to facilitate review by the Department of Health, Safety and Environmental Compliance. Any problems encountered during an entry must be noted on the permit and reported to the Director of Facilities. If additional space is required, an attachment must be attached to the permit as part of the record.
3. Permits used in the program must comply with OSHA 29-CFR 1910.146 (f) (7-15).

**Entry Procedures for a Permit-Required Confined Space**

**General**

Before an employee can enter a permit-required confined space, the following procedure must be followed:

1) The Supervisor should be contacted for evaluation of the situation.

2) Possible hazards should be identified including:
   - a) Atmospheric hazards
   - b) Physical hazards
   - c) Engulfment hazards
   - d) Corrosive hazards
   - e) Biological hazards

3) All personnel entering a permit required confined space where respiratory protection is required must have passed a medical examination that conforms with OSHA's guidelines for respiratory users.

4) All entrants will be backed up by an-attendant and supervisor.

**Responsibilities of the Entrant**

The entrant is responsible for insuring the following conditions are met:

1) Entrance Covers

   Any conditions making it unsafe to remove an entrance cover shall be eliminated before access to the space is allowed. When entrance covers are removed, the opening shall be promptly guarded by a railing, temporary cover or other barrier that will protect each employee working in the space by preventing a fall through the opening.

2) Atmospheric testing

   Before an employee enters the space, the atmosphere shall be tested with a calibrated direct-reading instrument by a trained employee. Testing should include:
   - a) Oxygen content
   - b) Flammable gases and vapors
   - c) Potential toxic air contaminants

   The atmosphere will be considered hazardous if:
   - a) Oxygen levels are greater than 23.5% or less than 19.5%
   - b) Flammable gases are present which exceed their explosive limit
c) Toxic gases exceed a physiological comfort range, i.e. carbon monoxide greater than 200 ppm

There must be no hazardous atmosphere within the space whenever any employee is inside. Continuous forced air ventilation shall be used to eliminate the atmospheric hazard. The atmosphere within the space shall be periodically tested as necessary to ensure that the continuous forced air ventilation is preventing the hazardous atmosphere.

If a hazardous atmosphere is detected during entry:

a) All employees shall leave the space immediately

b) The space shall be evaluated to determine how the hazardous atmosphere developed and measures will be taken to protect the employee.

3) Lockout Tagout

All machinery and utilities coming into contact with this space shall be shut down according to the lockout tag-out procedure

4) Confined Space Entry Permit

The space must be approved as safe for entry. This will be documented by using the confined space entry permit, Appendix A, which includes the date, location of the space, and the signature of the person making the determination. The permit will be good for 8 hours and filed with the office for one year.

**Responsibilities of the Attendant**

The attendants must remain stationed outside the permit space area at all times during entry operation and are responsible for:

1) Remaining outside the permit space during entry operations until relieved by another attendant

2) Maintaining an accurate count of entrants and locations at all times while they are in the permitted area.

3) Understanding hazards recognition and responsibilities associated with the job. If attendant detects an uncontrollable hazard, entrants are to be removed from permit space.

4) Maintaining communications with the entrant to monitor status and alert the entrant if the event evacuation is necessary or provide rescue services.

5) Understanding acceptable environmental conditions for entrant and recognizing changing conditions when they occur.

6) Evaluating any behavioral changes like euphoria or giddiness that may result from oxygen deficiency or excess of exposure of some gases and vapors.

7) Keeping unauthorized entrants and other personnel out of permitted area.
8) Not entering the space unless they are trained in the rescue procedures.

9) Having a qualified person take their place and leave only after the replacement is thoroughly briefed on the permitted operation and is approved by an authorized supervisor.

10) Having a current certification in CPR.

11) Signing the entry permit, acknowledging that entry conditions and procedures are acceptable to affect safe entry. Monitor activities inside and outside the space and order to evacuate the permit space due to detection of prohibited conditions.

12) Performing non-entry rescue procedures and receive training as a rescue team member. Attendant must exclusively manage the permitted space activity because of rescue operations. Summon rescue and other emergency services if necessary.

13) Evaluating any condition not allowed by permit, for example hot work, abrasive blasting or any unauthorized work practices or procedures.

Confined Space Preparation

Isolation

1) Safety for the entry must be provided by blocking, disconnecting or physically removing any part through which any hazardous material, solid, liquid or vapor may enter the permitted required confined space.

2) All permanent equipment must be secured by eliminating the power source (mechanical, electric, hydraulic or pneumatic) as follows:

   a. Lock out and tag out of all electrical power must be performed at the main disconnect switch. If this is not practical, remove the fuse or disconnect the circuit from the power source. Be sure the equipment is truly 100% inoperative.

   b. Where practical, mechanical drives and power trains must be disconnected. Electrical power must be turned off, locked out and tagged out to avoid accidental energizing.

   c. Hydraulic and pneumatic power supply lines must be bled and disconnected. Valves should be physically locked in their proper positions.

   d. Where practical, blocking should be used to prevent any equipment movement.

Continual preparation

1) Prior to the opening of a permitted confined space, where applicable, area should be pumped out, drained as completely as possible and no residual material left in the space. All surfaces of confined space such as coils, heating bundles, fixtures or pumps should be cleared as reasonably as possible to eliminate slip and fall hazards.
2) Containers must be cleaned and decontaminated prior to entry and flushed with water, steam or appropriate cleaning agent as practical.

3. If flammable, combustible or toxic vapors are present, the area must be purged with water, steam or inert gas to displace hazardous vapors. If steam is used, the area must be cleared prior to entry. Low pressure and/or low velocity must be used to void static electricity buildup. Steam lines must be electrically bonded to the vessel.

4. After the vessel has been cleaned and prior to entry, atmospheric monitoring must be conducted for acceptable environmental conditions. Continuous mechanical ventilation must be used where practical to eliminate air pockets and flammable and toxic vapors removed. When exhausting air, confirm that there is a second opening for uncontaminated outside air.

5. If there is only one access opening to the space, suspension of a hose or blower or both into the confined space for necessary air changes is acceptable. Communications must be maintained with the entrant on a predetermined basis. Ventilation equipment must not prevent rescue equipment.

6. Continuous ventilation shall be used where toxic atmospheres are produced as part of the work procedures. Such procedures include painting, glass repair, evaporation of residual chemical, etc.

**Rescue and emergency services**

1) Rescue or any other equipment necessary to ensure the safety of the entrant and attendee will be identified prior to issuing a permit for entry.

2) Non-entry retrieval methods must be used by attendants to the permitted confined space.

3) The following equipment must be used, unless retrieval equipment will hinder the overall risk to the entrant and not contribute to the rescue of the entrant:
   a. Chest and full body harness
   b. Alternative wrist lifts when full body harness is not feasible or creates a safety hazard
   c. Body harness or wrist lifts must be attached at all times to a retrieval line that is attached to a mechanical retrieval device. This must be attached to a fixed point outside the permitted space and must be controlled by the attendant,
   d. Mechanical retrieval devices should be capable of retrieving personnel from vertical type permitted spaces more than five feet deep.
   e. Where applicable, appropriate OSHA approved lighting, protective barriers and shields will be in place.

4) External rescue personnel

External rescue personnel will be provided by the City of Philadelphia or Lower Merion Township.
The University shall make every attempt to familiarize outside responders with the location of confined spaces. The Department of Public Safety will notify 911 for emergency rescues.

C. Training

Entrants

Employees authorized as entrants must have received appropriate training to ensure that they can successfully perform all assigned duties under the entry permit system and understand the following:

1) Hazard recognition

2) The communication system to be used to monitor status and alert attendant of the need to evacuate

3) Personnel protective equipment requirements

4) Self rescue techniques

5) Evacuation and emergency alarms

6) Atmospheric testing techniques

7) Training as an entrant and entrant's responsibilities

8) Standard first aid (first responder and CPR) if performing rescue services, current certification is required

9) Understanding acceptable environmental conditions prior to signing the entry permit

10) Recognition of signs and symptoms associated with possible behavioral effects from hazardous exposure associated with the space

Attendants

Employees authorized as attendants must have received the proper training to ensure that they can successfully perform their assigned duties under the entry permit system.

Each attendant is provided with and is trained to use the protective equipment and rescue equipment necessary for making rescues from permit spaces.

Attendant and entrant must be equipped with two way radios so that notification or summoning rescue and emergency services may be done through the Department of Public Safety. At notification, security personnel will call for appropriate emergency services and take all measures to assure proper direction and escort to the rescue scene.

Supervision
Employees certified to authorize entry or function as entry supervisor must be trained on permitted procedures, entry training, attendant training and rescue procedures.

**Rescue Personnel**

All rescue team personnel must be properly trained in confined space rescue including personal protective equipment, rescue techniques, first aid and CPR.

Rescue team members shall practice making rescues of simulated confined spaces at least once every six months. Practice must include removal of mannequin or actual person from representative confined spaces.

This training is to be documented and recorded for a one year period to be reviewed with this program.

**Procedure Review**

The review of entry operations and procedures is to be done annually by the Department of Health, Safety and Environmental Compliance. All procedure changes are to be reviewed with appropriate personnel; including supervisors, attendees and entrants.
# Appendix A

## CONFINED SPACE ENTRY PERMIT

Confined Space Permit Number _________________

Entrants Names: ___________________     Attendant(s) Names: ___________________

Date and Time of Entry:
- Start: ________________________________
- Finish: __________________________________

Approved by:

Signature of Authorized Confined Space Supervisor

### TYPES OF HAZARDS

- Oxygen-Deficient Atmosphere
- Oxygen-Enriched Atmosphere
- Welding/Cutting
- Ignited Electrical Equipment
- Enveloped Environment
- Flammable Atmosphere
- Toxic Atmosphere
- Entrapment
- Welding/Cutting
- Flammable Atmosphere
- Hazardous Chemical

Note: If welding/cutting operations are to be performed, attach form (3039) to entry form.

### SAFETY PRECAUTIONS

- Self-Contained Breathing Apparatus
- Protective Gloves
- Air-Line Respirator
- Lifelines
- Fire-Retardant Clothing
- Respirators
- Ventilation
- Lockout/Tagout
- Remarks
- Fire Extinguishers
- Clearances Secured
- Lighting
- Ground Fault Interrupter

### ENVIRONMENTAL CONDITIONS

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<td>Instruments Used: ___</td>
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Signature of Employee Conducting Safety Checks

Signature:

Remark on the overall condition of the confined space.
ENTRY AUTHORIZATION

All actions and/or conditions for safe entry have been performed.
Person in Charge of Entry

ENTRY CANCELLATION

Entry has been completed and all entrants have exited permit space.
Person in Charge of Entry

IN CASE OF EMERGENCY CALL 1111
[CFR 1910.146 (f)(11)]