SUBJECT:	Effective Date:	Procedure Number:
Confined Spaces Entry Procedure	4/18/12	FS 2012 EHS0002
	Supersedes:	Page 1 Of 14
	Responsible Authority: Director of Environmental Health and Safety	

APPLICABILITY/ACCOUNTABILITY:

This procedure applies to all departments, support personnel, and functional units within Facilities and Safety in the University of Central Florida (UCF), when personnel enter into confined spaces.

PROCEDURE STATEMENT:

This procedure provides guidance to supervisors, superintendents and employees for their protection against hazards while working in confined spaces when other controls are not feasible. This procedure meets the requirements of the Occupational Safety and Health Administration (OSHA) regulation 29 CFR 1910.146 Permit-Required Confined Spaces.

As stated in the "UCF Design, Construction, and Renovation Standards (09-13-11), Division 1 General Requirements, Section Environmental Health and Safety Construction Information", contractors are individually responsible for meeting and monitoring their job specific requirements set forth by OSHA.

DEFINITIONS:

Acceptable Entry Conditions: Conditions that must exist in a permit-required confined space to allow entry and to ensure that the employees can safely enter and work within the space.

Attendant: An individual stationed outside the permit-required confined space that monitors the authorized entrants.

Authorized Entrants: An employee who has been properly trained and authorized by the employer to enter into a permit-required confined space.

Confined Space: Any space that meets **all** of the following criteria:

- Is large enough and so configured that an employee can bodily enter and perform assigned work; **and,**
- Has limited or restricted means for entry or exit; (Generally, openings that require the employee to crouch, crawl, climb, or be lowered into, or an interior configuration that restricts egress or rescue, is considered limited or restricted.) **and,**
- Is not designed for continuous human occupancy.

Some examples of confined spaces are fuel storage tanks, manholes, underground vaults, equipment tunnels for wires or pipes, and sewers.

Confined Space Entry Permit: The employer's written authorization to perform a job (for example, welding, cutting, burning, and heating) inside a Permit-Required Confined Space.

Emergency: Any occurrence (including any failure of a hazard control or monitoring equipment) or event, internal or external, to the permit-required confined space that could endanger entrants.

Energy Isolating Device: A mechanical device that physically prevents the transmission or release of energy, including but not limited to the following:

- A manually operated electrical circuit breaker
- A disconnect switch
- A line valve, block, or any similar device used to block or isolate energy

Engulfment: The surrounding and effective capture of a person by a liquid or finely divided solid substance that can be aspirated to cause death by filling or plugging the respiratory system or that can exert enough force on the body to cause death by strangulation, constriction, or crushing.

Entry: The action by which a person passes through an opening into a permit-required confined space.

Entry Supervisor: The person (such as the superintendent or supervisor) responsible for determining if acceptable entry conditions are present at the permit-required confined space where entry is planned, for authorizing entry and overseeing entry operations, and for terminating entry.

Hazardous Atmosphere: An atmosphere that may expose employees to the risk of death, incapacitation, and impairment of ability to self-rescue (that is, escape unaided from a permit-required confined space). It may also have the risk of injury from one or more of the following causes:

- Flammable gas, vapor, or mist in excess of 10% of its lower flammable limit (LFL)

- Airborne combustible dust at a concentration that meets or exceeds its LFL
- Atmospheric oxygen concentrations below 19.5% or above 23.5%
- Atmospheric concentrations of any substance for which a dose or a permissible exposure limit is published in Subpart G, Occupational Health and Environmental Control, or in Subpart Z, Toxic and Hazardous Substances, of OSHA Standard, 29 CFR 1910
- Any other atmospheric condition that is immediately dangerous to life or health

Immediately Dangerous to Life or Health (IDLH): Any condition that poses an immediate or delayed threat to life or that would cause irreversible adverse health effects or that would interfere with an individual's ability to escape unaided from a permit-required confined space.

Lock-out: The placement of a lock-out device on an energy isolation device ensuring that the equipment being controlled cannot be operated until the lock-out device is removed by the person who placed the lock.

Major Non-Compliance: The occurrence of an unsafe activity or operation not in accordance with the OSHA requirements or the UCF Safety Procedures, and that does pose an immediate life threatening danger to the employee.

Minor Non-Compliance: The occurrence of an unsafe activity or operation not in accordance with the OSHA requirements or the UCF safety procedures, and that does not pose an immediate life threatening danger to the employee.

Non-Permit-Required Confined Space: Any confined space to which entry is permitted without written authorization because:

- The confined space poses no actual or potential hazard
- No such hazard will be produced by work performed inside the space

Oxygen Deficient Atmosphere: An atmosphere containing less than 19.5% oxygen by volume.

Oxygen Enriched Atmosphere: An atmosphere containing more than 23.5% oxygen by volume.

Permit-Required Confined Space Procedure: The employer's written procedure for preparing and issuing permits for entry and for return into a permit-required confined space.

Rescue Service: The personnel designated to rescue employees from permit spaces.

Retrieval Systems: The equipment (including a retrieval line, full body harness, and a lifting device for retrieval) used for the rescue of persons without entering permit-required confined space.

Tag-out: The placement of a tag-out device on an energy isolating device to indicate that the energy isolating device and the equipment being controlled may not be operated until the tag-out device is removed by the person who issued the tag.

Testing: The process by which the hazards of permit-required confined spaces are identified and evaluated.

PROCEDURES:

I. Evaluating Hazards for Initial Classification of Confined Spaces

Each confined space shall be classified as either a Permit-Required Confined Space, or a Non-Permit Required Confined Space, as stated in the definitions section of this procedure. Superintendents and supervisors of each area, such as Maintenance, Telecommunications, Water and Wastewater Treatment, General Utilities, and other similar groups will ensure property and equipment under their responsibility are evaluated and confined spaces are controlled in accordance with this procedure.

When initially classifying confined spaces as permit-required confined spaces or non-permit required confined spaces, they must be evaluated for internal and external conditions that have the potential for creating a hazard. This evaluation shall be performed by the Department of Environmental Health and Safety (EH&S) with the help of the supervisors or superintendents.

If the space has a potential of being oxygen enriched, oxygen deficient, explosive, or if it contains carbon monoxide or hydrogen sulfide, a quantitative analysis is required. A four gas monitor or equivalent instruments which analyze and indicate oxygen in percent by volume, lower explosive limit in percent LEL, carbon monoxide, and hydrogen sulfide expressed in parts per million (ppm) will be used.

Due to size or configuration, it may not be feasible to perform atmospheric testing while stationed outside the space. These conditions may necessitate entry for appropriate testing. The supervisors or superintendents shall consult with the Department of Environmental Health and Safety before sending employees into confined spaces with these characteristics. The tests shall be accomplished by testing atmospheres as far as possible with an instrument probe. If safe readings are found, entrants may then proceed to areas probe-tested. Once entry is gained, testing samples shall be read continuously in all areas employees will be working or may need to access.

Readings other than those shown below cause the confined space to be classified as permit-required confined space. The following are considered normal readings:

- Oxygen levels between 19.5% and 21.5% by volume
- Flammable Limit (LFL) readings under 10%
- Carbon Monoxide readings less than 35 ppm
- Hydrogen Sulfide readings less than 10 ppm

In some cases, the space may have the potential to contain unknown atmospheric hazards (for example, the potential for other toxic gases or extremely hot temperatures) which cannot be quantified or detected by a multi-gas monitor. In these situations, appropriate measures shall be taken to ensure no entry is permitted and Department of Environmental Health and Safety shall be contacted to conduct the evaluation.

If the space does not contain other hazards and the confined space evaluation reveals levels within permissible limits, the space may be classified as non-permit-required. However, if the Environmental Health and Safety Office has reasonable cause to believe the space has the potential of developing an atmosphere capable of causing inability for self-rescue, unconsciousness, incapacitation, injury, acute illness, serious physical harm or death, such space must be classified as a permit-required confined space.

II. Procedures for Entering Spaces Classified as Non-Permit-Required Confined Spaces

Confined spaces classified as non-permit-required confined spaces do not need written procedures to authorize an employee to enter. The supervisors or superintendents may still test the confined space at their discretion as an additional safety precaution, but no further action is needed unless work to be performed inside would change the classification to a permit-required confined space. When there are changes in the physical configuration or nature of the process used within a non-permit-required confined space that might increase the hazard to entrants, the space shall be re-evaluated. If necessary, reclassify to a permit-required confined space. A common example could be welding or cutting in the confined space.

III. Permit-Required Confined Space

Any space that meets the definition of confined space and which will require written procedures to authorize an employee to enter because the space or work to be performed inside has one or more of the following characteristics:

- Poses an actual or potential hazardous atmosphere (such as oxygen deficiency, explosive vapors or gasses, toxic chemicals or dusts, etc.); **or**

- Contains materials that have the potential for engulfing an employee (such as sand, rocks, grain, coal or similar finely divided particulate matter); **or**
- Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor which slopes downwardly and tapers to a smaller cross section (such as a hopper car or sand tower); **or**
- Contains other recognized serious safety or health hazards (such that may be produced by chemicals, moving parts, falls, electrocution, drowning, etc.).

IV. Notifying Employees of Permit-Required Confined Spaces

Employees entering permit-required confined space(s) shall be informed by a sign which reads:

V. Written Procedures for Entering Spaces Classified as Permit-Required Confined Spaces

Each confined space classified as permit-required confined space that will be entered by UCF employees must have written procedures for authorizing and controlling entry by one of the methods provided in this procedure. Each written procedure must contain specific procedures and precautions to be taken for entering and working within the space.

A copy of the written procedures and the entry permit must be maintained at the place of entry and made readily available to employees affected by such procedures.

VI. Responsibilities

A. The Department of Environmental Health and Safety (EHS):

- Assists in the development and revision of this procedure
- Offers the training required by this procedure
- Conducts periodic audits for compliance with this procedure
- Provides technical support on confined spaces safety
- Performs the initial evaluation as requested by the supervisors or superintendents to determine if a confined space is permit-required

- Assists the supervisors and superintendents with calibration of the gas monitors used to test the atmosphere in the confined spaces if requested

B. Supervisors and Superintendents

- Promote safe practices in confined spaces jobs
- Enforce compliance with this procedure
- Identify the confined spaces and request an initial evaluation from the Department of Environmental Health and Safety to determine if a confined space is permit-required
- Ensure that all the supervised personnel are properly trained and knowledgeable of the safety procedures in confined spaces
- Perform the inspection and fill the "Confined Space Entry Permit" (Appendix B) before authorizing any employee to enter in a confined space
- Close the "Confined Space Entry Permit" after job is finished or if an unsafe condition arises
- Keep records of the entry permits and training
- Ensure that the safety equipment needed for the entrance to confined spaces is available and in working condition (blower, retrieval system, guard rails, etc.)
- Ensure that the gas monitor used for testing the confined space is working properly and calibrated according to the manufacturer's recommendations
- Arrange payment for the acquisition and maintenance of the safety equipment needed to enter a confined space

C. Employees

- Attend required training (only trained personnel can enter in confined spaces)
- Follow safe practices at all times
- Inform the supervisor or superintendent if they do not understand the information given in the training
- Inform the supervisor or superintendent about any safety concern or situation before entering the confined space
- Exit the confined space immediately and inform the supervisor or superintendent if an unsafe condition arises while working in confined spaces

VII. Entry by Written Permit Method

The entry to a permit-required confined space cannot be accomplished without a written permit granting authority to enter. The form included in Appendix B of this procedure "Confined Space Entry Permit" shall be used as the written permit.

Written procedures governing entry by permit shall contain at least the following elements:

A. Method to prevent unauthorized entry

B. Means, procedures and practices necessary for safe entry

C. Procedures for evaluating conditions when entry operations are conducted, specifying acceptable entry conditions which include, but are not limited to:

- Acceptable atmospheric conditions
- Isolation procedures (lock-out/tag-out, etc.)
- Purging, flushing, or ventilating procedures
- Methods for providing pedestrian, vehicle, or other barriers to protect entrants from external hazards

D. Means and practices necessary for continuous safe working conditions within the space and, if necessary, procedures for continuous monitoring of atmospheric conditions

E. Provisions for at least one attendant outside the permitted space for the duration of entry operations

F. Means of communication between the employee inside the permit-required confined space and the attendant

G. Procedures for summoning or providing emergency services for rescuing employees in case of accident, injury, or illness

VIII. Issuing and Controlling Entry Permits

Issuance and control of written permits for entry will be the responsibility of the supervisors or superintendents and shall meet the following minimum requirements:

A. All protective measures outlined in this written procedure shall be completed before the entry is authorized

B. Only UCF permit forms may be used

C. Before entry begins, the supervisor or superintendent shall complete all applicable items on the permit and sign it (It shall be made available to all authorized entrants, either by posting it at the entry portal or any other equally effective means.)

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

E. The entry supervisor shall terminate entry and close the entry permit when operations have been completed

F. Anyone can stop the operation for safety reasons (If an unsafe condition arises during operations, the entry supervisor will close the permit until the situation is corrected.)

IX. Notifying Contractors or Other Company's Employees of Confined Spaces

When a contractor is invited to perform services on UCF property which involves a permit-required confined space, the supervisor, superintendent or project manager in charge of the project shall notify the contractor of:

A. The location and nature of UCF's permit-required confined spaces and that entry is allowed only through compliance with this Confined Space Entry Program

B. The known or potential hazards of the particular space

C. The precautions or procedures UCF has implemented for the protection of employees in the space

The supervisor, superintendent or project manager in charge shall also:

A. Coordinate entry with the contractor when UCF employees will be working simultaneously

B. Debrief the contractor at the conclusion of the entry operations regarding any hazards confronted or created in the space during operation

If UCF employees are to enter simultaneously with the contractor, this written procedure shall be followed.

X. Training

Employees whose duties are affected by this procedure shall be trained to ensure they are proficient in knowledge, understanding, and skills necessary to perform their duties. They must also be trained on how to recognize the hazards they may face during entry, including information on the sign, symptoms, and consequences of exposure.

The supervisors or superintendents will be responsible for the training of their employees. They will coordinate with the Department of Environmental Health and Safety and will arrange for payment of any cost associated with the training. Employees must be trained before performing any duties associated with a permit-required confined space, before any change in the assigned duties, whenever there is a change in procedures that present a hazard about which an employee has not been previously trained, or when the written procedures for entry or safe work practices have been changed.

To ensure proficiency, training may include: practice exercises covering the use of tools, personal protective equipment, communication equipment, emergency notification, and rescue procedures.

XI. Recordkeeping

The supervisors or superintendents shall keep records of all training. They should also keep records of all the permits generated and evaluations, as well as any other document related to an entry to a confined space. Electronic or scanned records in the computer are accepted.

ENFORCEMENT

The Department of Environmental Health and Safety will perform periodic inspections to determine compliance with this procedure. The following section describes the actions to be taken after a Minor Non-Compliance or a Major Non-Compliance.

I. Minor Non-Compliance

If a Minor Non-Compliance is noted, the Department of Environmental Health and Safety (EH&S) shall:

- Send an electronic notification to the supervisor or superintendent within five (5) calendar days with the non-compliance findings and with a request for corrective actions
- Conduct a follow-up inspection within 30 calendar days to ensure corrective actions were implemented

- Send an electronic notification to the Director of the Department requesting a correction plan if the unsafe situation was not corrected after the follow-up inspection
- Conduct a second follow-up inspection within seven (7) calendar days to ensure corrective actions were implemented, if necessary
- Send an electronic notification to the Vice President of the Department requesting a correction plan if the unsafe situation was not corrected after the second follow-up inspection
- Conduct a third follow-up inspection within seven (7) calendar days to ensure corrective actions were implemented, if necessary
- Refer the case to the Provost or the Safety Council for further actions if the unsafe situation has not been corrected after the third follow-up inspection

After receiving the notification from EH&S, the supervisor or superintendent (and the Director of the Department, and the Vice President, if necessary) shall:

- Ensure that all corrective actions recommended by EH&S are implemented
- Coordinate with EH&S to provide re-training on the Safety Procedures, if necessary
- Recommend disciplinary actions for the responsible personnel if the Minor Non-Compliance Safety Violation has not been corrected after the third notification
- Coordinate payment to EH&S of $50 for the second follow-up inspection and $100 for the third follow-up inspection, if necessary

II. Major Non-Compliance

If a Major Non-Compliance is found, the Department of Environmental Health and Safety (EH&S) shall:

- Order or direct the employees to stop the unsafe operation immediately and demand to speak with the supervisor or superintendent
- Send an electronic notification the day of the occurrence to the Director of the Department with a copy to the supervisor or superintendent with the non-compliance findings and with a request for immediate corrective actions
- Conduct a follow-up inspection the next day or before the operation is resumed, to verify corrective actions were implemented
- Send an electronic notification to the Vice President of the Department if the unsafe situation was not corrected after the second follow-up inspection
- Refer the case to the Provost or the Safety Council for further actions

After receiving the notification from the Department of Environmental Health and Safety (EH&S), the supervisor or superintendent (and the Director of the Department, and the Vice President, if necessary) shall:

- Ensure that all corrective actions recommended by EH&S are implemented
- Coordinate with EH&S to provide re-training on the Safety Procedures before sending the employee back to the worksite or procedure that was found in non-compliance

- Recommend disciplinary actions, and possibly job termination for the employee if the Major Non-Compliance has not been corrected after the second notification

Approved By:	Date Approved:
John Jackson Interim Director Environmental Health and Safety	4/18/12

Appendix A

Confined Space Survey Form

DATE _____ SITE LOCATION/ DESCRIPTION _____

Confined Space #_____ PERMIT REQUIRED? YES / NO

Possible atmospheric Hazards

_____

_____

Possible Content Hazards

_____

_____

Can be bodily entered?	Yes / No	Hazardous atmosphere?	Yes / No
Limited or restricted entry?	Yes / No	Potential for engulfment?	Yes / No
Not designed for continuous		Internal configuration Hazard?	Yes / No
human occupancy?	Yes / No	Other serious safety Hazards?	Yes / No

Atmospheric Tests	Permissible Level	
PERCENT OF OXYGEN	19.5% TO 23.5%	_____
LOWER FLAMABLE LIMIT	Under 10%	_____
CARBON MONOXIDE	Under 35 PPM	_____
HYDROGEN SULFIDE	Under 10 ppm	_____

INSTRUMENT(S) USED	MODEL &/OR TYPE	SERIAL &/OR UNIT #
_____	_____	_____

Reasons for entering the space and typical activities_____

_____

Who usually enters the space? _____

Frequency of entry? _____

Number of entry points _____

Additional comments

_____

_____

_____

Survey completed by _____

Appendix B

Confined Space Entry Permit

PERMIT VALID FOR 8 HOURS MAXIMUM. ALL PERMIT COPIES REMAIN AT SITE UNTIL JOB COMPLETED.

DATE _____ SITE LOCATION/ DESCRIPTION _____

PURPOSE OF ENTRY _____

SUPERVISOR(S) in charge	Crew	Phone#
_____	_____	_____
_____	_____	_____

COMMUNICATION PROCEDURES _____

METHODS TO PREVENT UNAUTHORIZED ENTRY _____

ESTIMATED DURATION OF THE JOB _____

REQUIREMENTS COMPLETED	DATE	TIME
Lock Out/De-energize/Test	_____	_____ ☐a.m ☐p.m.
Line(s) Broken-Capped- Blank	_____	_____ ☐a.m ☐p.m.
Purge-Flush and Vent	_____	_____ ☐a.m ☐p.m.
Ventilation	_____	_____ ☐a.m ☐p.m.
Secure Area (Post and Flag)	_____	_____ ☐a.m ☐p.m.
Breathing Apparatus	_____	_____ ☐a.m ☐p.m.
Standby Safety Personnel	_____	_____ ☐a.m ☐p.m.
Full Body Harness w/ "D" ring	_____	_____ ☐a.m ☐p.m.
Emergency Escape Retrieval Equipment	_____	_____ ☐a.m ☐p.m.
Lifelines	_____	_____ ☐a.m ☐p.m.
Fire Extinguishers	_____	_____ ☐a.m ☐p.m.
Lighting (Explosive Proof)	_____	_____ ☐a.m ☐p.m.
Protective Clothing	_____	_____ ☐a.m ☐p.m.
ator(s) (Air Purifying)	_____	_____ ☐a.m ☐p.m.
Burning and Welding Permit	_____	_____ ☐a.m ☐p.m.

Note: Items that do not apply enter N/A in the blank.

** RECORD CONTINUOUS MONITORING RESULTS EVERY 2 HOURS**

CONTINUOUS MONITORING** TESTS TO BE TAKEN	Permissible Entry Level				
PERCENT OF OXYGEN	19.5% TO 23.5%	_____	_____	_____	_____
LOWER FLAMABLE LIMIT	Under 10%	_____	_____	_____	_____
CARBON MONOXIDE	Under 35 PPM	_____	_____	_____	_____
HYDROGEN SULFIDE	Under 10 PPM	_____	_____	_____	_____

REMARKS: _____

GAS TESTER	INSTRUMENT(S) USED	MODEL &/OR TYPE	SERIAL &/OR UNIT #
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

SAFETY STANDBY PERSON IS REQURED FOR ALL CONFINED SPACE WORK

Attendant(S)	CONFINED SPACE ENTRANT(S)
_____	_____
_____	_____
_____	_____

SUPERVISOR AUTHORIZATION - CONDITIONS SATISFIED: _____

DEPARTMENT: _____

PHONE (_____)_____-_____

AMBULANCE:_____ FIRE: _____ SAFETY _____