

CONFINED SPACE ENTRY PROGRAM

CSU CHANNEL ISLANDS

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1.0 Policy

It is the policy of CSU Channel Islands that entry into a confined space will be done in accordance with OSHA standards and other regulatory guidelines. No individual shall enter a confined space without following the Confined Space Entry Program.

2.0 Purpose/Scope

2.1 Purpose

To establish a clear and consistent procedure for confined space entry on the CSU Channel Islands campus.

2.2 Scope

The requirements of this document apply to all CSU Channel Islands employees and employees of auxiliary organizations.

3.0 Definitions

- **Alternate Entry Procedure:** A procedure that may be used to enter a confined space if the **only** hazard present in the space is atmospheric in nature and:
 - The atmospheric hazard can be controlled by mechanical ventilation alone; and
 - The permit space will not become immediately dangerous to life and health (IDLH) if the mechanical ventilation should fail.
- **Attendant:** An individual stationed outside one or more permit required confined spaces who monitors the authorized entrants and who performs all Attendant's duties as assigned in this program.
- **Authorized Entrant:** A CSU Channel Islands employee who is authorized by the campus to enter a permit required confined space.
- **Confined Space:** A confined space means a space that:
 1. Is large enough and so configured that an employee can bodily enter and perform work; and
 2. Has limited or restricted means for entry or exit (for example, manholes, vaults, and pits are spaces that may have limited means of entry or exit); and
 3. Is not designed for continuous employee occupancy.
- **Entry Permit:** The written document that allows and controls entry into a permit required confined space.
- **Entry Supervisor:** The person responsible for determining if acceptable entry conditions are present at a permit space where entry is planned, for authorizing entry and overseeing entry operations, and for terminating entry as required by this program.

- **Hazardous Atmosphere**: An atmosphere that may expose employees to the risk of death, incapacitation, impairment of ability to self-rescue, or acute illness resulting from the following:
 1. Flammable gas, vapor, or mist in excess of 10 percent of its lower flammable limit (LFL);
 2. Airborne combustible dust at a concentration that meets or exceeds its LFL;
 3. (note: this condition may be approximated as a condition in which the dust obscures vision at a distance of 5 feet or less)
 4. Atmospheric oxygen concentration below 19.5 percent or above 23.5 percent;
 5. Atmospheric concentration of any substance that could result in an exposure greater than the Permissible Exposure Level (PEL).
 6. Any other atmospheric concentration that is immediately dangerous to life and health (IDLH).
- **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 confined space.
- **Lower Flammable Limit (LFL)**: The minimum vapor concentration of a flammable liquid in air, below which flame propagation does not occur on contact with an ignition source.
- **Non-Permit Confined Space**: A confined space that does not contain or, with respect to atmospheric hazards, have the potential to contain any hazard capable of causing death or serious physical harm.
- **Oxygen Deficient Atmosphere**: An atmosphere containing less than 19.5 percent oxygen by volume.
- **Oxygen Enriched Atmosphere**: An atmosphere containing more than 23.5 percent oxygen by volume.
- **Permit Required Confined Space**: A confined space that has one or more of the following characteristics:
 1. Contains or has a potential to contain a hazardous atmosphere;
 2. Contains a material that has the potential for engulfing an entrant;
 3. 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; or
 4. Contains any other recognized serious safety or health hazard.
- **Testing**: The process by which hazards that may confront entrants of a permit space are identified and evaluated.
- **Ventilation**: A process used to control the atmospheric hazards of confined spaces by replacing unsafe air with clean, breathable air.

4.0 References

- California Code of Regulations, Title 8, Section 5156 - 5159
- Code of Federal Regulations Title 29 Part 1910.146

5.0 Responsibilities

5.1 Environmental Health and Safety

1. Establish and update the written Confined Space Entry Program.
2. Provide training as necessary.
3. Review records of confined space entry operations.
4. Provide consultation to departments that enter confined spaces.

5.2 Facilities Services

1. Ensure that all employees who are involved with a confined space entry (including Authorized Entrant, Entry Attendant, and Entry Supervisor), have received training as specified in this plan.
2. Provide and maintain equipment that is needed for confined space entry including (but not limited to): atmospheric testing equipment, protective barriers, ventilation devices, and communications/ rescue equipment.
3. Ensure that all confined space entries involving Facilities Services employees are conducted according to this procedure.
4. Maintain records of all confined space entries.
5. Maintain inventory of confined spaces.
6. Post confined spaces as appropriate and prevent unauthorized entry.

5.3 Police Department

1. Dispatch trained officers to provide immediate medical assistance in the event of an injury.
2. Summon external resources for confined space rescue or medical assistance as needed.

5.4 Communication Services (Information Technology)

1. Ensure that all employees who are involved with a confined space entry (including Authorized Entrant, Entry Attendant, and Entry Supervisor) have received training.
2. Ensure that all confined space entries involving Communications Services employees are conducted according to this procedure.

5.5 Confined Space Entry Supervisor

1. Ensure that all persons involved in a confined space entry are properly trained and follow the procedures outlined in this plan.
2. Evaluate and classify the confined space prior to. The supervisor is responsible for verifying the safety of the space.
3. Confirm that rescue resources are available.
4. Complete the Confined Space Entry Permit.
5. Ensure that canceled permits are properly filed.

Note: The Entry Supervisor does not need to be present during the entire confined space entry operation.

5.6 Confined Space Entrant(s)

1. Know the hazards in the space
2. Know the signs and symptoms of exposure to hazards present.
3. Must have completed training
4. Must stay in constant contact with the Attendant (i.e. sight, voice, or radio) during a Permit Required Confined Space entry.
5. Must evacuate immediately when become aware of a problem or ordered to do so by attendant.
6. Use the appropriate safety equipment as specified on the Entry Permit.

5.7 Entry Attendant

1. Know the hazards in the space
2. Must have completed training
3. Obtain and install the required safety equipment for Permit Required Confined Space entries.
4. Monitor pedestrian barriers to protect entrant(s) from external hazards.
5. Monitor the atmosphere within the confined space during the entire entry operation.
6. Must not enter space; must remain in position until relieved by another trained Attendant.
7. Ensure that all lockout/tag out measures (if implemented) remain in place.
8. Responsible for ordering an evacuation if a situation develops that could endanger the Entrant
9. In an emergency, must call for help and perform non-entry rescue.

6.0 Confined Spaces on Campus

1. EH&S and Facilities Services will jointly determine which types of spaces or specific spaces are classified as "Confined Spaces". Further, spaces which are normally expected to be "Permit Required Confined Spaces" will be identified. A list and maps of these spaces can be found in Appendix C.
2. The only individuals authorized to downgrade the entry requirements for a particular space are designated "Entry Supervisors".

7.0 Confined Space Entry Procedures

7.1 Space Evaluation

Note: Refer to Appendix A for Confined Space Entry Decision Flow Chart

1. All Permit Required Confined Spaces are to be evaluated by an Entry Supervisor prior to authorizing an entry (refer to Appendix A for a list of these spaces on campus).

2. The primary purpose of the evaluation will be to determine if:
 - a) the space can be reclassified to a "Non-Permit Confined Space"
 - b) the entry will be via "Alternate Entry Procedures" or
 - c) the entry will be via "Permit Required Entry Procedures"

7.2 Reclassification to Non-Permit Confined Space

To be reclassified as a "Non-Permit Confined Space," the following conditions **must** exist:

- a) The space poses no actual or potential atmospheric hazard
- b) All hazards within the space are eliminated without entry

7.3 Reclassification to Alternate Entry

To be reclassified as an "Alternate Entry" space, the following conditions **must** exist:

- a) The only hazard in the space is the potential for a hazardous atmosphere; and
 - b) The potential hazard can be eliminated through the use of continuous forced ventilation; and
 - c) Previous and current atmospheric monitoring data (gas tests) must demonstrate that (a) and (b) are true (i.e. there has never been a record of an atmospheric hazard during an entry).
- If the above conditions are true (a, b, and c), and the gas test(s) indicate that the atmosphere is non-hazardous, is then the space may be entered using the "Alternate entry Procedures" below.
 - If the potential for atmospheric hazard cannot be eliminated with ventilation, the space must be entered using the "Permit Required Entry Procedures"

7.4 Alternate Entry Procedures

1. Entry Supervisor shall ensure that space has been classified.
2. If an entrance cover must be removed, the opening shall be promptly guarded by railing, temporary cover, or other temporary barrier that will prevent an accidental fall through the opening, and will protect each employee working in the space from foreign objects entering the space.
3. All hazardous sources of energy shall be locked and/or tagged out.
4. Ensure that the air has been tested for hazardous air contaminants and that the tests were negative.

- a. **Note:** this should have been completed prior to reclassifying space as "Alternate Entry"). Log the test results on the "Confined Space Entry Permit and Record Sheet" (only pre-entry readings need to be entered). The gas detector should be used during the entire entry procedure. Test for the following contaminants, **in the order listed:**
 - b. Oxygen content;
 - c. Flammable gases and vapors; and
 - d. Potential toxic air contaminants.
5. Entry Supervisor shall fill out the "Confined Space Entry Permit and Record Sheet" (Appendix C).
6. Set up adequate ventilation for the space that will be entered. Ensure that the supply air is taken from a clean source and that the ventilation is allowed to operate for at least 5 minutes prior to entering the space. If the ventilation ceases to operate, all Entrants must leave the space immediately.
7. The Entrant shall immediately evacuate the confined space if he/she becomes aware of a previously unrecognized hazard. If this occurs, the Entrance Permit shall be canceled, and the space must be reevaluated by an Entry Supervisor prior to re-entry.

Note: 1. The Entry Supervisor may act as an entrant during "Alternate Entry Procedure" entries.
8. An attendant or Standby person is still necessary for "Alternate Entry Procedure" entries.
9. When the confined space entry has concluded, the completed Record Sheet shall be filed and kept on file for a minimum of one (1) year.

7.5 Permit Required Entry procedures

1. As a **minimum**, an Entry Supervisor, Entry Attendant and Entrant shall be designated to participate in each Permit Required Confined Space Entry. Note: The Entry Supervisor may act as the Entry Attendant as well.
2. Acquire, inspect and setup and safety equipment required by the permit including blowers, full body harness, rescue tripod, and traffic control systems.
3. The Entry supervisor shall establish appropriate rescue procedures specific to the space entry and shall list these procedures on the permit.
4. All hazardous sources of energy shall be locked and/or tagged out.
5. If an entrance cover must be removed, the opening shall be promptly guarded by railing, temporary cover, or other temporary barrier that will prevent an accidental fall through the opening, and will protect each employee working in the space from foreign objects entering the space.

6. Test the air for hazardous contaminants and enter the results on the Confined Space Entry Permit and Record Sheet. Continuously sample and record results throughout the entire entry procedure.
7. The Entry Supervisor shall complete and sign the Confined Space Entry Permit (all sections) and Record prior to space entry. The permit conditions, entry precautions, and rescue procedures shall be reviewed with the Attendant and Entrant prior to entry.
8. Prior to entry, the Attendant shall verify that the entry conditions are acceptable.
9. The Entrant must wear retrieval equipment during the entire entry operation.
10. The Attendant will continuously monitor the portable gas detector and record the readings every hour (minimum).
11. An immediate evacuation of the space shall be ordered if the safety equipment fails or if the space becomes, or has the potential to become, immediately hazardous.
12. Upon completion of the job, the Entry Supervisor shall cancel the permit (line 12) and ensure that the completed permit is placed in the proper department file.

8.0 Hazard Control

8.1 Monitoring Confined Space Air Quality

1. Prior to entering a Permit Required or Alternate Entry confined space, prepare the gas detector by ensuring the device has been recently calibrated (check manual for frequency) and is in good working order.
2. Conduct a "bump test". Breathe into the gas detector probe and look for a decrease in the oxygen concentration - the detector should alarm due to the lack of oxygen.
3. Sample the air quality of the space by slightly moving the lid, or by testing the space through the hole in the lid (if available) before completely opening the space.
4. Lower the probe slowly, allowing time for the instrument to detect atmospheric changes at different vertical heights within the space.
5. Measure in the following order:
 1. Oxygen
 2. LEL
 3. H₂S
 4. CO

Record the results on the Confined Space Entry Permit Record Sheet.

6. The gas detector shall remain on during the entire entry operation shall be regularly inspected by the Attendant. The Attendant shall also record the gas readings on the Record Sheet at a minimum of one (1) hour intervals.

7. Cease entry operations and remove entry personnel if the following concentrations are exceeded at any time:
 - Oxygen reading less than 19.5% or greater than 22.5%
 - Combustible gas reading greater than 9% LEL
 - H₂S reading greater than 9 ppm
 - CO reading greater than 34 ppm

8.2 Ventilating a Confined Space

1. Set up one or more blowers to provide adequate ventilation for the space. Ventilation must be forced draft discharge of clean air into space (not exhaust of space).
2. Ensure that the ventilation air supply is from a clean source.
3. Allow enough time for blowers to clear the space before entering.
4. Ensure that the blowers remain on during the entire entry operation. If the blower fails, the Entrant must leave the space immediately (Note: this applies to both Permit Required and Alternate Entry procedures.)

9.0 Emergency Rescue from Permit Required Confined Spaces

Historically, many rescuers are killed while attempting a confined space rescue. In light of this fact, Emergency rescues within confined spaces should only be attempted by persons who are properly trained and have the proper rescue equipment.

1. All rescues attempted by CSU Channel Islands personnel will be **Non-Entry Rescues** (i.e. rescuer will not enter the space at any time during rescue).
2. Retrieval equipment is required for all Permit Required vertical entries greater than 5 ft. Retrieval equipment shall include (but not be limited to) the following:
 - Rescue harness (chest or full body)
 - Rescue tripod
 - Rope or cable (inspected for damage)
3. Entry Supervisor will notify the Police Department by dialing 911 in an emergency.
4. All persons involved in the rescue must have received training and practiced a rescue within the last 12 months.
5. At least one member of the rescue team must have training in CPR and First Aid.

10.0 Training

1. All CSU Channel Islands employees who participate in Permit Required or Alternate Entry Procedures including Entrance Supervisors, Attendants, and Entrants, must receive training in the requirements of this program.
2. All CSU Channel Islands employees who are designated as rescue personnel must be trained in proper rescue techniques as well as CPR and First Aid.

11.0 Contractors

3. Contractors that enter confined spaces on the CSU Channel Islands campus must comply with the Confined Space Standard as defined in Section 5156 - 5158 of Title 8 of the California Code of Regulations.
4. CSU Channel Islands will notify contractors of confined spaces and hazards therein when contracted work will require entry. A contractor notification form can be found in Appendix B.
5. CSU Channel Islands is not responsible for employees of contractors who may enter University confined spaces.

12.0 Revision Record

Revision	Changes	Date
1.0	Format change, added requirement to periodically record atmospheric conditions during alternate entry procedures, specified review of confined space permit	Sep 2014
1.1	- 7.3.8 An Entry Attendant is necessary for Alternate Entry Procedures - "Plant Operations" name changed to "Facilities Services" - Emergency Radio channel reference changed to 911	July 2015
1.2	Format Change and update off-site Emergency Response Team number on CSE permit for VCFD	Sept 2015
1.3	Update maps in appendices and locations of CSE's on campus	Dec 2016

13.0 Confined Space Entry Permit and Record Sheet

Confined Space Entry Permit and Record Sheet	
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1. General Information

Confined Space Location:	Emergency Rescue: Call 911
Reason for Permit:	Date / Time Issued:
Entry Supervisor:	Date / Time Permit Expires:

2. Entrants	3. Attendants	4. Standby Person(s)

5. Type of Confined Space Entry

- This is a “**PERMIT REQUIRED**” Confined Space. Complete all sections below
 This is an “**ALTERNATE ENTRY PROCEDURE**” Confined Space. Complete shaded sections (#10, 11 and 13). Use section #15 for notes and comments if necessary
 This is a “**NON-PERMIT REQUIRED CONFINED SPACE**”. All hazards have been eliminated

6. Confined Space Pre-Entry Check List

CHECKLIST INSTRUCTIONS: The Entry Supervisor shall answer and initial each checklist item as it is completed. The Entry Supervisor shall authorize work to begin by signing below, only after all checklist items have been appropriately addressed. The Entry Supervisor shall cancel the permit by signing below after work is completed, or if conditions arise that are out of compliance with the checklist

	YES	NO	N/A	Initial
A. Have all personnel been appropriately trained and instructed in CSE procedures?				
B. Have emergency communications and action procedures been identified and explained?				
C. Have off-site Emergency Services been verified and available by Entry Supervisor? VCFD (805) 384-1500 – Supply: Location, # entrants, hazards, & length of entry. Call CI Dispatch (805) 437-8444 – Supply: Location, # entrants, hazards, & length of entry				
D. Have all hazardous sources of energy been locked / tagged out?				
E. Is a Hot Work Permit required?				
F. Are air blowers positioned and operating properly?				
G. Are the air blowers in use sufficient to maintain an atmosphere free from contaminants?				
H. Is the gas detector within calibration limits and operating properly?				
I. Is the space and surrounding area free of harmful vapors and gases?				
J. Has the appropriate fall protection / retrieval equipment been installed and inspected?				
K. Has the body harness been properly donned and inspected?				
L. Is a fire extinguisher available?				
M. Is explosion proof equipment required (i.e. lighting, radios, blowers, etc)?				
N. Is an appropriately maintained First Aid Kit available?				
O. Is the entry area secured and marked with barriers?				
P. Is traffic control equipment in place?				
Q. Is other safety equipment necessary (i.e. hard hat, SCBA, etc)?				

7. List of Potential Hazards of the Space	8. List Safety Equipment Required

9. Method of Attendant / Entrant Communication	10. Method for Contacting Emergency Services Personnel

11. All concerns associated with this Confined Space Entry have been appropriately addressed. Work is hereby authorized to begin.

Entry Supervisor’s Signature	Date and Time
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12. Confined Space work is complete. This permit is hereby cancelled. **Call CI Dispatch & VCFD when done with entry**

Entry Supervisor’s Signature	Date and Time
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	Confined Space Entry Permit and Record Sheet	
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11. Sampling Results (Permit Spaces Only)

Additional Sampling Results attached

Event	Time	Percent Oxygen Reading (%O ₂)	Percent Explosimeter Reading (% of LFL)	Hydrogen Sulfide Reading (H ₂ S) PPM	Carbon Monoxide (CO PPM)	Detectable Odors	
						Observed YES / NO	Describe If Yes
Exit Space if reading are:		> 22.2 % < 19.5 %	Greater than 9% of LFL	Greater than 9 PPM	Greater than 34 PPM		
Pre-Entry Readings						Y N	
Ventilation Started						Y N	
Entry into PR Space						Y N	
Te +1 hrs						Y N	
Te +2 hrs						Y N	
Te +3hrs						Y N	
Te +4 hrs						Y N	
Te +5 hrs						Y N	
Te +6 hrs						Y N	
Te +7 hrs						Y N	
Te +8 hrs						Y N	

Note: Gas detection equipment must be operational during the entire occupancy of a "Permit Required Confined Space" and an "Alternate Entry Procedure Confined Space".

14. Employee Entry / Exit Log

Name	Time In	Time Out	Time In	Time Out	Time In	Time Out

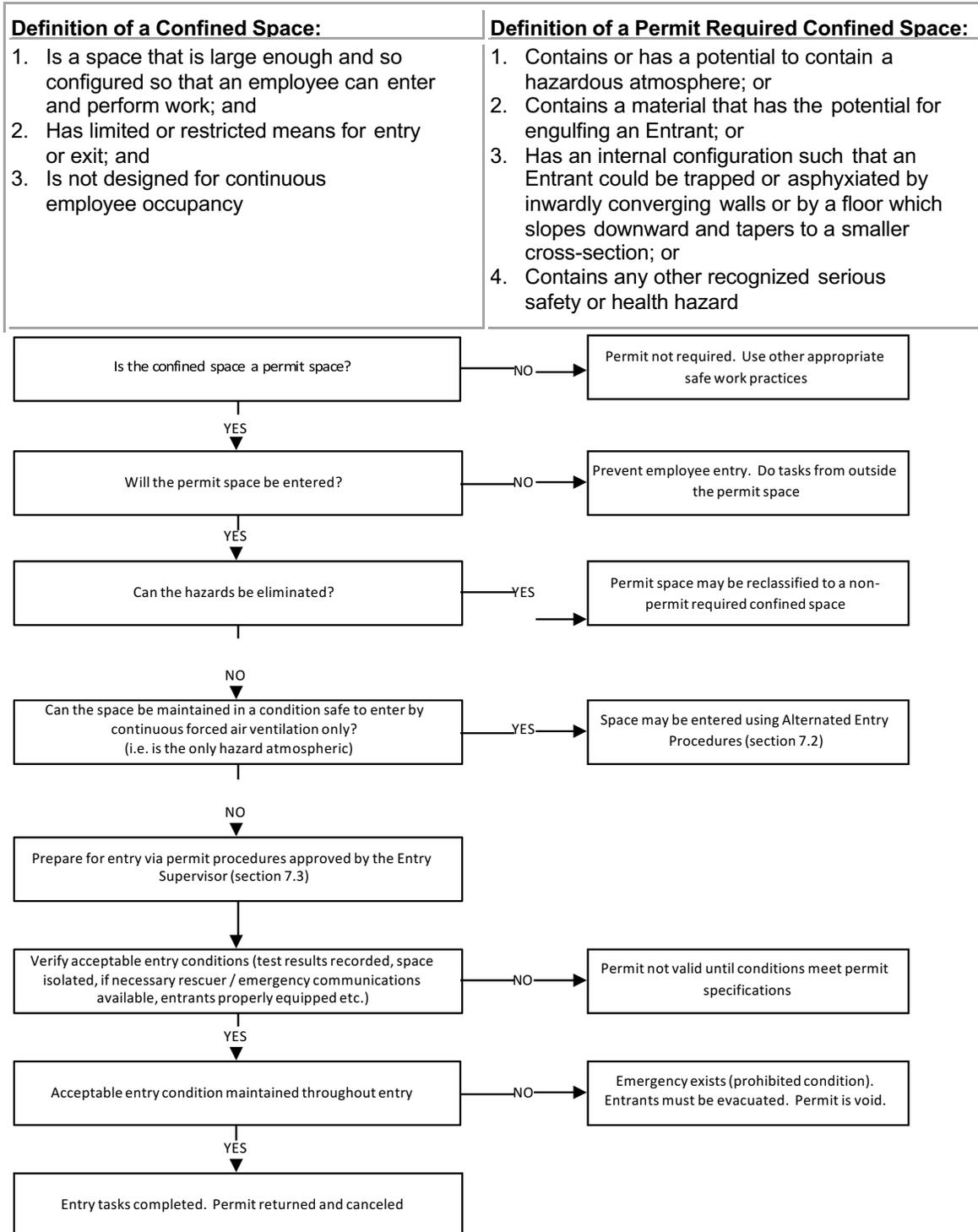
15. Notes and Additional Information

Sampling Equipment
Manufacturer:
Model and Serial Number:
Calibration Date:

NOTE: This Permit must be maintained in your Department for no less than one (1) year

14.0 Appendix A Confined Space Entry Decision Flow Chart

	Confined Space Entry Decision Flow Chart	
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15.0 Appendix B Contractor Notification

Confined Space Notification

California State University Channel Islands has areas on campus that are regulated as Permit Required Confined Spaces by Cal/OSHA under Title 8, section 5156-5158 of the California Code of Regulations. Following is a listing of these areas as well as some of the hazard(s) that may be present in the confined spaces:

ConfinedSpace	Location	Hazard(s)
Electrical vaults	campus wide	electrical hazards, low oxygen, asbestos
Sewer manholes	campus wide oxygen, toxic gases	carbon monoxide, low
Storm drain manholes	campus wide oxygen, toxic gases	carbon monoxide, low
Communication Vaults	campus wide electrical hazards	low oxygen, asbestos,
Sewer Tanks	campus wide	toxic gases, low oxygen, drowning, electrocution
Boilers	Central plant	lack of oxygen, asbestos, steam, heat, hot water
Steam vaults	campus wide	heat, lack of oxygen, asbestos, toxic gases, steam, hot water

CSU Channel Islands is not responsible for employees of contractors who may enter University confined spaces.

Other hazards may be present in the spaces listed and other spaces may become regulated confined spaces in certain situations.

Contractors that enter confined spaces on the CSU Channel Islands campus must comply with the Confined Space Standard as defined in Section 5156 - 5158 of Title 8 of the California Code of Regulations.

Contractor acknowledgement of notification:

Contractor representative (signature)

Date

Print name

16.0 Inventory and Maps of Confined Spaces
(On File at Environmental Health and Safety Office)