

**UCDAVIS
COMMUNICATIONS RESOURCES
CONFINED SPACE ENTRY
POLICY & PROCEDURE MANUAL**

March 2003

I. PURPOSE

This section describes policies and procedures regarding the Communication Resources Telecommunications Confined Space Entry Program. This policy expands upon the UC Davis Environmental Health and Safety (EH&S) Confined Space Entry Program Employee Guide to provide specific guidance associated with entry into telecommunications maintenance holes and vaults.

II. DEFINITIONS

- A. Atmospheric Hazards. (Dangerous Air Contamination) An atmosphere presenting a threat of causing death, injury, acute illness, or disablement due to the presence of flammable and/or explosive, toxic, or otherwise injurious or incapacitating substances. Dangerous Air Contamination is further defined as:
1. Dangerous air contamination due to the flammability of a gas or vapor is defined as an atmosphere containing the gas or vapor at a concentration greater than 10 percent of its lower explosive limit (LEL).
 2. Dangerous air contamination due to a combustible particulate is defined as a concentration greater than 20 percent of the minimum explosive concentration of the particulate.
 3. Dangerous air contamination due to the toxicity of a substance is defined as the atmospheric concentration immediately hazardous to life or health (IDLH).

4. Dangerous air due to oxygen deficiency is defined as an atmosphere containing oxygen at a concentration of less than 19.5 percent by volume.

B. Physical Hazards. Potential problems caused by equipment or by other dangerous conditions. Physical hazards include the following:

1. Moving equipment or parts and energized or pressurized systems
2. Entrapment hazards: inwardly converging walls or floors that slope downward and taper to a smaller cross-section
3. Engulfment hazards: surrounding or burial of the worker in a liquid or loose, finely divided solid material such as sand or grain
4. Thermal hazards: dangerous condition caused by excessive heat or cold or a hot surface
5. Noise hazards
6. Biological hazards: snakes, rodents, vermin, spiders, and other pests
7. Other hazards: poor lighting, obstructions, falling objects, wet surfaces, slip/trip/and fall hazards, electrical shock, and acute chemical hazards

C. Confined Space. The California Code of Regulations, Title 8, Section 5158 of the General Industrial Safety Orders defines a confined space pertaining to the telecommunications industry as a space defined by the concurrent existence of the following conditions:

1. Existing ventilation is insufficient to remove dangerous air contaminants and/or correct oxygen deficiency, and
2. Access to or exit from the space is difficult.
3. Is not designed for continuous employee occupancy.

- D. Log Entry. (Non-Permit Required Confined Space) A confined space that can pass air monitoring testing is clear of any potential hazards or materials that could cause harm to the entrant and does not contain any other recognized safety or health hazards within the space.

III. POLICY

- A. Communications Resources has the responsibility of maintaining the underground communications cable system located on the UC Davis campus. This cable system is installed in maintenance holes and vaults located throughout the campus. System maintenance involves the entry into telecommunication maintenance holes and vaults (confined spaces) to conduct the installation and removal of cable, and perform continuous, on-going maintenance tasks to insure a trouble free cable system.
- B. Communications Resources manages its confined space program in compliance with the California Code of Regulations, Title 8, Sections 5156 and 5158 of the General Industrial Safety Orders and Sections 8604 and 8616 of the Telecommunications Safety Orders. The Communication Resources program works conjunction with the UC Davis EH&S Confined Space Entry Program Employee Guide. In accordance with these regulations and campus procedures, normal operational tasks in telecommunication maintenance holes and vaults require the use of an **Entry Log** (Appendix A).
- C. The Communication Resources Confined Space Program is applicable **ONLY** to UC Davis telecommunication maintenance holes and vaults.

IV. PROCEDURES

This section describes the mandatory procedures regarding entry into UC Davis telecommunication maintenance holes and vaults (confined spaces).

- A. Instrumentation:
 - 1. It is mandatory that atmospheric monitoring be completed prior to and continuously during any confined space entry with a Communications Resources approved, calibrated instrument (meter).

2. Communication Resources personnel performing atmospheric monitoring **MUST** be able to retrieve sampling information about the oxygen level, as well as, the presence of both toxic and flammable gases.
3. Atmospheric monitoring instruments shall be calibrated per manufacturer's requirements and/or recommendations. Instruments that fail to pass calibration tests shall be removed from service, and entrance into confined spaces shall be suspended until a replacement instrument is available.

B. Confined Space Entry Log

1. Entry Log forms are to be filled-out and kept at the job site until the operation is completed. A sample Entry Log form can be referenced in Appendix A.
2. Measurement data from the sampling activities are to be recorded on the Entry Log. An electronic copy of a test log produced by the test unit itself can be attached to this Entry Log, if available.
3. Upon completion of the confined space work, all entry logs are to be signed by the supervisor and kept in departmental records for three years. Although not required under State regulation, this signature shall indicate the supervisor has reviewed the measurement data, and will insure all required testing is being accomplished.
4. Entry Log records must be available for periodic inspection by authorized employees, their representatives, EH&S personnel and/or Cal-OSHA inspectors.

C. Pre-Entry Procedures

1. The following items are required to be obtained prior to entering a telecommunication maintenance hole or vault:
 - a. An Entry Log (Appendix A)

- b. Air Monitoring equipment (check battery and calibration status) Air Monitoring equipment, for both initial testing and a four gas personal monitor (check battery and calibration status)
 - c. Ventilation equipment and its power supply
 - d. Personal Protective Equipment (PPE) (hardhat, gloves, protective eye wear, safety toed shoes, safety vest)
 - e. Communications equipment (cell-phone, two-way radio, etc)
 - f. Appropriate barricades (warning signs, maintenance hole guard, orange traffic cones, truck/equipment strobe/warning lights)
2. Securing the Environment: Observe spaces pedestrians could fall into and set up appropriate barricades in all pedestrian-accessible areas.
3. Initial Monitoring: Use an appropriate instrument (meter) that has been recently field calibrated with all sensors operating.
4. Pre-test Air Monitoring: Activate the instrument and allow to warm up, checking the instrument's operation condition and battery charge level.
5. Air Monitor Probe Use: While the air-monitoring instrument is running, remove the protective boot and attach the probe. Insert the probe into the weep hole, or if there is no weep hole available, open the maintenance hole/vault cover enough to insert the probe. If instrument readings are within acceptable limits, perform level testing starting at the bottom of the confined space working upward every 4 feet until all of the vertical space has been tested. (For further information, refer to page 10 of the EH&S Employee Guide).
6. Record these findings on the Entry Log.

7. **If the instrument alarms or detects any unacceptable levels of toxic gases, STOP. Do not enter the space. Call your supervisor, safety coordinator, or EH&S immediately.**
8. Use of Personal Air Monitors: While the air monitor is still running, remove the probe, attach the protective boot, and carry case. The instrument is to remain running in the confined space with the entrant until the project is completed and the entrant exits the space.
9. This instrument shall be active prior to entering the confined space, and allowed to auto calibrate.
10. Observe battery level.
11. **If the instrument fails to auto calibrate, or indicates a low battery condition, STOP. Do not enter the space. Notify your supervisor immediately.**
12. This instrument is to be attached to the outer garment, and in an area that will not present a safety hazard. This unit is to remain running and in the confined space with the entrant at all times.

D. Entry Procedures

1. Once the initial tests are completed and the atmosphere has been determined to be within acceptable limits, visually inspect the area for any additional hazards such as:
 - a. Maintenance hole worksites where hazards are created by traffic patterns that cannot be corrected by provisions of Section 8604(a) and Section 8616(a)(1).
 - b. Maintenance hole worksites that are subject to unusual water hazards that cannot be abated by conventional means.
 - c. Maintenance hole worksites that are occupied jointly with power utilities as described in Subsection (c) of Section 8616.

- d. Where combustible or explosive gas vapors have been initially detected at an explosive level.
 - e. Where toxic or otherwise hazardous substances are used in such quantities that the work operations or inadvertent spills would create unsafe airborne concentrations or other bodily injury exposures.
 - f. Where open flame torches are used in the work procedures.
 - g. Where hazardous substances (i.e. pesticides, herbicides, etc) are encountered.
 - h. When employees are required to perform extended night work in maintenance holes, except where constant voice communications is maintained with other person(s) who can render ready assistance. This shall not prohibit performing emergency trouble work without assistance providing the work can be performed safely.
2. If none are present or observable, work may proceed using the following procedures.
- a. Promptly, guard the opening to the maintenance hole/vault with a barricade or guard to prevent accidental fall-through and to protect employees from falling objects.
 - b. Portable blowers **WILL** be used to purge stagnant air and provide comfortable ventilation during confined space work. The blower intake **WILL** be located outside of the confined space and away from any operating internal combustion engine to ensure that fresh air is being supplied. The blower **WILL** be activated, allowed to run a minimum of five minutes within the space prior to the employee entering the maintenance hole/vault, and **WILL** be in continuous operation at all times while the employee is present in the maintenance hole/vault.

- c. Entrants **WILL** have an air-monitoring instrument turned-on and with them at all times while in the confined space.
- d. **If at any time atmospheric conditions change and the monitor indicates (alarms) the presence of toxic or flammable gases or a change in oxygen level, employees are to evacuate the space at once. Notify your supervisor, safety coordinator, or EH&S immediately.**
- e. Failure to follow these instructions will result in disciplinary action.

E. Emergency and Rescue Procedures

Communications Resources personnel working in confined spaces **MUST** only perform self-rescue and/or non-entry rescue procedures.

1. Self-rescue: Self-rescue is the preferred plan. The self-rescue plan provides entrants with the best chance of escaping a space when hazards are detected. Whenever authorized entrants recognize their own symptoms of exposure to dangerous atmosphere or detect a dangerous condition, entrants are still able to escape from the space unaided and as quickly as possible.
2. Non-entry rescue: Non-entry rescue is the next best approach when self-rescue is not possible. Non-entry rescues can be started right away and prevents additional personnel from being exposed to unidentified and/or uncontrolled confined space hazards. Usually, equipment and other rescue aids, such as a full body harness with a retrieval tripod, are used to remove endangered entrants.
3. Entry rescue: Emergency response personnel from the UC Davis Fire Department are the only individuals trained and qualified to perform entry rescue. Entry rescue entails UCD Fire Department personnel entering the space to retrieve the entrant or provide the victim with emergency assistance such as CPR, first aid, or air via SCBA or a supplied air respirator.

F. Employee Training

1. As directed by the UC Davis Hazard Communications Program, every employee working in confined spaces has the right to clearly understand the hazards, both atmospheric and physical, which may be encountered in any confined space entry.
2. It is the responsibility of Communication Resources supervisors to ensure that appropriate training resources are made available to all Communication Resources personnel prior to assigning confined space entry tasks. It is also the responsibility of Communication Resources supervisors to ensure that each employee has available to him/her all protective equipment needed to conduct the job safely and that each individual clearly understands how to use such equipment correctly.
3. It is the responsibility of each Communication Resources employee engaged in confined space activities to follow all procedures and instructions outlined in this manual.
4. Communication Resources personnel should receive training for telecommunications maintenance holes and vaults confined space operations annually. Entry into any other UC Davis confined space by Communications Resources personnel requires additional training and is strictly prohibited. Annual training programs may be presented by Communication Resources supervisors, EH&S staff, and/or qualified off-campus representatives. Additionally, all new employees assigned to work in confined spaces must receive this information as part of their initial orientation.

G. Contractors

1. Contractors required to enter UC Davis confined spaces **MUST** be notified of any known hazardous conditions, **MUST** have their own written confined space program, and **MUST** know how to contact emergency rescue personnel on campus (UCD Fire Department).

2. Project managers must communicate hazardous conditions in writing to the contractor and must verify the training and qualifications of contractor personnel entering confined spaces. A check sheet for contractors performing confined space work is provided in Appendix D of the UCD EH&S Confined Space Entry Program Employee Guide. A sample of this check sheet is included as Appendix B to this document.

V. REFERENCES AND RELATED POLICYS

UC Davis Environmental Health & Safety (2001). Confined Space Entry Program Employee Guide.

California, Department of Industrial Relations, Division of Occupational Health & Safety (1999). Is It Safe To Enter A Confined Space? Confined Space Guide.

California Code of Regulations, Title 8, General Industrial Safety Orders, Sections 5156 and 5158.

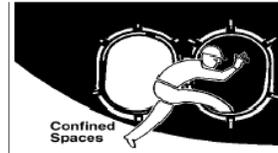
California Code of Regulations, Title 8, Telecommunication Safety Orders, Sections 8604 and 8616.

APPENDIX A: UCD CONFINED SPACE ENTRY LOG



UC DAVIS

Confined Space Entry Log



KEEP THIS ENTRY LOG AT THE WORK SITE DURING OPERATIONS.
RETURN COMPLETED ENTRY LOG TO YOUR SUPERVISOR WHEN FINISHED.

DATE: _____ TIME: _____ LOCATION: _____

ENTRANT(S): _____ ATTENDANT (SAFETY STANDBY): _____

REASON FOR ENTRY: _____

FORM COMPLETED BY: _____ SIGNATURE: _____

PRE-ENTRY PROCEDURES

	Yes	No/NA
I. Organize Equipment		
1. Confined Space Entry Log	<input type="checkbox"/>	<input type="checkbox"/>
2. Air monitoring equipment (check battery status)	<input type="checkbox"/>	<input type="checkbox"/>
3. Arrange for standby person/communication equipment	<input type="checkbox"/>	<input type="checkbox"/>
4. Proper barricades	<input type="checkbox"/>	<input type="checkbox"/>
5. Tripod with harness (if applicable)	<input type="checkbox"/>	<input type="checkbox"/>
6. Ventilation equipment and power supply (if applicable)	<input type="checkbox"/>	<input type="checkbox"/>
II. Secure Area and Environment		
1. Restrict public access (i.e. barricades/caution tape)	<input type="checkbox"/>	<input type="checkbox"/>
2. Lockout/Tagout equipment	<input type="checkbox"/>	<input type="checkbox"/>
3. Lockout/Blank/Blind input lines and pipes	<input type="checkbox"/>	<input type="checkbox"/>
III. Initial Atmospheric Monitoring		
1. Perform initial monitoring from top to bottom of space	<input type="checkbox"/>	<input type="checkbox"/>
2. Document initial monitoring on Entry Log	<input type="checkbox"/>	<input type="checkbox"/>

IF ANY INITIAL READINGS DO NOT MEET LIMITS, **DO NOT ENTER SPACE**. CALL YOUR SUPERVISOR

ATMOSPHERIC MONITORING RESULTS							
INSTRUMENT NO.:		BATTERY CHECKED: YES			STATUS: F ¼ H ¼ E		
GAS	LIMIT	INITIAL RESULT	2ND HOUR RESULT	4TH HOUR RESULT	6TH HOUR RESULT	8TH HOUR RESULT	OTHER
OXYGEN	19.5% TO 23.5%						
COMBUSTIBLES (LEL)	<10% LEL						
CARBON MONOXIDE	<35 PPM						
HYDROGEN SULFIDE	<10 PPM						
TIME TESTED:							
PERSON PERFORMING TESTING:							

MONITOR CONTINUOUSLY, RECORDING RESULTS EVERY TWO HOURS. RETEST AFTER BREAKS AND LUNCH.

EMERGENCY NUMBERS

MECHANICAL SAFETY COORDINATOR:	754-4375	FIRE DEPT.:	LAND LINE
EH&S:	752-1493	POLICE:	911
EMPLOYEE HEALTH:	752-2330	AMBULANCE:	USING CELL PHONE
			752-1230

EH&S – January 4, 2002
UCD CS Entry Log.doc
APPENDIX A

APPENDIX B: UCD CONTRACTORS CHECK SHEET**UCD Contractor Check Sheet****CONTRACT**

- _____ 1. Contract specifies contractor will comply with all federal, state, and local regulations as well as University policies and procedures.
- _____ 2. Contract notifies contractor of any known hazardous conditions associated with confined space work to be performed.
- _____ 3. Contract specifies contractor must provide a written copy of their confined space program as part of the bid package. The written program must be in compliance with California Code of Regulations, Title 8, Sections 5156-58 of the General Industry Safety Orders and Section 8616 of the Telecommunication Safety Orders.

CONTRACTOR

- _____ 4. Contractor must provide UCD a written copy of their confined space program. Contractor must maintain a written copy of their confined space program at the project location during confined space work.
- _____ 5. Contractor must provide confined space training documentation for all employees associated with confined space work to be performed at UCD.
- _____ 6. Contractor must provide an Emergency Rescue Plan prior to performing confined space work. Documentation of Emergency Rescue Service personnel retained for the project is required.
- _____ 7. Contractor must obtain a Hot Work permit from the UCD Fire Department prior to conducting any work capable of providing an ignition source within the confined space.
- _____ 8. Contractor must contact the UCD Project Manager and EH&S immediately if work cannot be initiated or must be halted due to atmospheric or physical hazards.
- _____ 9. Contractor must debrief the UCD Project Manager and provide copies of all confined space entry logs and/or permits at project completion.