CONFINED SPACE PROGRAM 29 CFR 1910146		
Approved By: Marc Rubin,		Director of EHS
	Author: Brandon Kirk	

Objective

- The purpose of this program is to protect the employees of Case Western Reserve University, who must enter, work in, and exit from confined spaces, from the risks of exposure to serious hazards such as entrapment, engulfment, and hazardous atmospheric conditions. Case Western Reserve University (CWRU) will ensure that all potential hazards are inspected before entrance into a confined space. This standard practice instruction is intended to address the inspection process and identify potential hazards within confined spaces. The Case Western Reserve University Directors of EHS or their designees are solely responsible for all facets of this program and has full authority to make necessary decisions to ensure success of the program. The Directors of EHS are the sole persons authorized to amend these instructions and are further authorized to halt any operation where there is danger of serious personal injury.

Contents

d. Blanking or blinding- means the absolute closure of a pipe, line, or duct by the fastening of a solid plate that completely covers the bore and is capable of withstanding the maximum pressure of the pipe, line, or duct with no leakage beyond the plate.

e. Confined spacemeans a space that:

i. Is large enough and so configured that an employee can bodily enter and perform assigned work; and

ii. Has limited or restricted means for entry or exit (i.e.; tanks, vessels, silos, storage bins, hoppers, vaults and pits); and

iii. Is not designed for continuous employee occupancy.

f. Double block and bleed- means the closure of a line, duct, or pipe by closing and locking or tagging two in-line valves and by opening and locking or tagging a drain or vent valve in the line between the two closed valves.

g. Emergency- means any occurrence (including any failure of hazard control or monitoring equipment) or event internal or external to the permit space that could endanger entrants.

h. Engulfment- means the surrounding and effective capture of a person by a liquid or finely divided (flow-able) 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.

i. Entry- means the action by which a person passes through an opening into a permit-required confined space. Entry includes ensuing work activities in that space and is considered to have occurred when any part of the entrant's body breaks the plane of an opening into the space.

j. Entry permit- means the written or printed document provided by the employer to allow and control entry into a permit space.

k. Entry supervisor- means 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 part.

he or she fills. Also, the duties of the entry supervisor may be passed from one individual to another during an entry operation.

iii. Has internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor that slopes downward and tapers to a smaller cross section; or

iv. Contains any other recognized serious safety or health hazard.

u. Permit-required confined space program (permit space program) means the employer's overall program for controlling, protecting employee in, permit space hazards and for regulating employee entry into permit spaces for their safety.

v. Permit system means the employer's written procedure for preparing and issuing permits and for returning the permit space to service following termination of entry.

w. Prohibited condition means any condition in a permit space that is not allowed by the permit during the period when entry is authorized.

x. Rescue service means the personnel designated to rescue employees from permit spaces (Cleveland Fire Department).

y. Retrieval system means the equipment used for rescue of persons from permit spaces.

z. Testing

i. Case Western Reserve University shall provide CWRU Employees all the necessary equipment as required by OSHA 29 CFR, Part 1910.146 (d)(4)(i) through (d)(4)(ix). Establish a written program in accordance with the entire

mivredn4 (dm)4 (m)[illegible]

3. Be aware of all persons within a space and continually maintain an accurate count and the means used to identify an entrant
4. Remain outside the permit space during entry operations until relieved by another attendant.

f. Rescue and Emergency Services

i. Rescue services shall be provided by Cleveland and Cleveland Heights Fire Departments. The direct contact numbers for these are 621-6212 (Cleveland) and 216-621-1212 (Cleveland Hts) or may be contacted through Protective Services from phone 2368-3333 or Radio on "Emergency" Channel.

ii. Non-entry rescue may be done by the attendant after the call has been placed of emergency services.

IV. Confined Space Equipment

a. Some equipment shall be used as confined space equipment that is utilized during normal working conditions, such as Motorola radios. Other equipment that is strictly used as fall protection (i.e. harness and lanyards) is also used in confined space work.

i. Atmospheric Testing Equipment

1. A gas meter shall be the instrument used to sample the air. The units are available at the CWRU EHS Department. The said instrument shall be equipped with the confined space probe with a water stop filter. This shall be "fresh air" calibrated prior to sampling in the atmosphere in the designated location. Sampling shall be conducted as instructed by the entry supervisor or by following the permit guidelines.
2. This instrument shall remain on the entrant until work has been completed and all personnel have been removed from the location.

ii. Motorola Radio

1. The Motorola radios will be the first choice of communication between entrant and attendant. The channel shall be tested prior to entry and verified on the permit. If at any time communication is lost, entrant shall establish face-to-face verbal communication with the attendant and/or

1. Many items may be used as barriers, including vehicles, Cushman carts and buildings.
2. Utilization of orange cones and caution tape expressing confined space shall be used when appropriate. The exclusion zone shall be large enough to contain all equipment, attendant and an area large enough to perform a rescue. Suggested radius or square for an entry will be a minimum of ten (10) feet. Proper posting shall be used to defer any unwanted traffic and advise the public that there is a hazardous area.

vi.

1. Using the multi-gas detector as previously mentioned, the entry team (entrant, attendant and supervisor) may establish the presence of flammable and toxic gases and to what extent the oxygen concentration value is inside of any given location.
2. The acceptable oxygen concentration is 19.5% through 23.5%.
   A. Oxygen Deficient Atmosphere
      01. If the oxygen level is below 19.5%, which is referred to as an oxygen-deficient atmosphere, there are two options available:
         - Do Not Enter!
         - Ventilate to restore and maintain the acceptable oxygen concentration. If ventilating is used, Safety must be notified and it must be documented on the permit.
   B. Oxygen Enriched Atmosphere
      01. If an oxygen level above 23.5%, which is referred to as an oxygen-enriched atmosphere, is present, follow the same procedures as stated above. An oxygen-enriched atmosphere will support combustion and may ignite with the smallest of sources. For example the static discharge from your body is enough to ignite this atmosphere. Currently there are no known PPE materials to protect a person from fire in this type of atmosphere.
   C. Flammable Atmosphere
      01. The presence of a flammable gas in the atmosphere is surveyed with the multi-gas detector. It measures the LEL or lower explosion limit, which OSHA has set at 10%. If an alarm alerts we must look at the task being performed in order to establish what action level should be taken. At no time will an employee enter when the 10% has been exceeded. The steps that should be taken shall be the same as stated above.
   D. Toxic Gases
      01. The presence of toxic gases/vapors is also detected with the multi-gas detector in the same manner as per flammables and the

oxygen concentration. The alarm will sound at the preset limit; the limit is different for several different toxins. The steps shall be followed as stated above.

ii. Permit Requirements

1. All fields are required to be filled out prior to entry. Entry is established using the findings listed. All personnel must be documented and their rolls/responsibilities clearly stated. All parties listed must sign; affirming that all entry requirements in this program and the permit have been met.
2. Any questions about the location, permit, or equipment shall be communicated to Safety and noted on permit prior to entry. If there are any doubts, entry shall be delayed until an investigation has been conducted and all parties are satisfied.

iii. Contractors and Sub-Contractors

1. Contractors are any person/persons not specifically employed by Case Western Reserve University, but hired to conduct business on Case premise on a job-to-job basis. Sub-contractors are a third party hired within a contractor to perform business on Case premise.
2. Case Western Reserve University shall recognize a program presented from a contractor/sub-contractor as long as it meets the requirements stated in the law.
3. Contractors/Sub-Contractors shall also recognize CWRU Program and adhere to the permitting requirements set fourth within this program. Contractors/sub-contractors shall make available upon request any training documents, equipment certifications, and any other items deemed necessary to assess ones competence, in order to ensure Case's' program and the law are followed. While on the premise of Case Western Reserve University contractors/sub-contractors are subject to random inspection.

VI. Recordkeeping and Review Requirements

a. CWRU shall maintain all permits as required by law and shall make available to any governing body within a timely manner

b. An employee within the CWRU EHS Department having the appropriate credentials shall review all completed permits and make needed adjustments on the

9. Sewer and acid dilution vault located in the front lawn of Biology *** NOTE *** Acid may be present***
10. Water vault located 20 feet from sewers on grass by Millis sidewalk
11. Water backflow vault located on the S.E. corner on the lawn of Adelbert Hall
12. Sewer manhole located N.E. corner by Adelbert Road at Adelbert Hall
13. Manhole on the North side at Adelbert Hall
14. Water meter vault located at Baker on the East side in the middle of sidewalk
15. Manhole located at Amasa Stone parking lot near Quad
16.

29. Manhole located near Med Center in driveway at Health Services
30. Meter manhole located on grassy knoll of Old med Park
31. DW and fire manholes (2) located on Circle Drive near Fire stand pipe at HSC
32. Water main manhole located at HSC on the Cornell side in sidewalk
33. Water meter pit and fire protection located at HSC North side by emergency drive
34. Transformer vault located at Thwing
35. Sewer manhole located in front window well of Thwing
36. Sprinkler pit located in the tree lawn near Euclid Ave. at Claude Foster Park
37. Water meter vault located in front of Mather House by the curb
38. Sewer manhole located on the front lawn of Mather House
39. Sewer manhole located at the S.E. corner by light pole at Mather Dance
40. Transformer vault located at Mather Dance
41. Storm manhole located at Mather tennis courts
42. Sewer manholes (2) located in the grass on the North side of Mather Gym
43. Transformer vault located at Guilford
44. Fire main manhole located on the North side in the sidewalk at Guilford
45. Dorm water manhole located North at the tree lawn of Guilford
46. Fountain vault located in front lawn of Guilford
47. DWC vault located on Bellflower Road in front of old tennis courts ***Not in use***
48.

52. Acid dilution system for Old Med located in the sidewalk areas facing Rainbow Babies and Childrens Hospital one on the East and the other on the West , 30 feet down from finish grade of sidewalk.
53. Acid dilution system for Millis located in the basement tunnel, there are three 6’ diameter 8’ high tanks spaced 100 feet apart.
54. Acid dilution system for Morley located behind the building in the roadway.
55. Acid dilution system for Smith Chemistry located inside building on the first floor near the service elevator.
56. Acid dilution system for Pathology located within the vault in the West lawn area.
57. Abandoned acid dilution systems for Wickenden and Glennan .