Section 10: Confined Spaces

Note: The Confined Space Program will be reviewed annually and revised as necessary.

OSHA regulation 1910.268 paragraph (o) describes the requirements for working in manholes and un-vented vaults in the course of performing telecommunication related activities.

Training will be conducted, and documented, prior to initial assignment, prior to a change in assigned duties, if a new hazard has been created and/or if special deviations have occurred.

Supervisors, in conjunction with the utility owner (host employer), will prepare, issue, use, and cancel permits when work is completed. Additionally, permits will be closed out or terminated as needed.

Requirements for Telecommunication Manholes

Guarding manholes and street openings = when covers of manholes or vaults are removed, the opening shall be promptly guarded by a railing, temporary cover, or other suitable temporary barrier which is appropriate to prevent an accidental fall through the opening and to protect employees working in the manhole from foreign objects entering the manhole.

Requirements prior to entering manholes and un-vented vaults = before an employee enters a manhole, the following steps shall be taken:

1) The internal atmosphere shall be tested for combustible gas and, except when continuous forced ventilation is provided, the atmosphere shall also be tested for oxygen deficiency.

2) When unsafe conditions are detected by testing or other means, the work area shall be ventilated and otherwise made safe before entry. Do not enter, or remain in, a manhole if the alarm in the meter is activated.

3) An adequate continuous supply of air shall be provided while work is performed in manholes under any of the following conditions:

   a) where combustible or explosive gas vapors have been initially detected and subsequently reduced to a safe level by ventilation,

   b) where organic solvents are used in the work procedure,

   c) where open flame torches are used in the work procedure,

   d) where the manhole is located in that portion of a public right of way open to vehicular traffic and / or exposed to a seepage of gas or gases, or

   e) where a toxic gas or oxygen deficiency is found.

Emergency assistance = someone with basic first aid training shall be immediately available to render assistance. Never enter a confined space to perform a rescue.

OSHA regulation 1910.269 paragraphs (e) and (t) describes the requirements for working in enclosed spaces, and un-vented manholes and vaults in the course of performing electric power transmission and distribution related activities.

Requirements for Power Manholes and Un-vented Vaults

Power manholes and vaults are referred to as *enclosed spaces* and *permit-required confined spaces*. Only qualified employees may enter a power manhole or vault. We will consider all power manholes and un-vented vaults with existing energized, or potentially energized, electrical conductors or hardware as permit-required confined spaces. Exception: when the expected and actual duration of entry is less than 15 minutes or the scope of work does not include physical contact with energized, or potentially energized, electrical facilities.

Confined Space Entry Permit = an entry permit must be completed before employee entry into a power manhole or un-vented vault. The permit must be available at the space during entry and retained for a period of one year at the office.

Entrants = the duties of an entrant must be familiar with every aspect of the entry operation and work to be performed in the confined space prior to beginning work in order to remain safe including chemical potential atmospheric hazards.

Entry Supervisors = the entry supervisor's duties include responsibility 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.

Rescue equipment / ***services*** = shall be provided and used to ensure the prompt and safe rescue of employees from the enclosed space. Annual rescue training is required. If needed, rescue services will be provided or arranged by the host facility. Confined spaces located in the public right-of-way, such as utility manholes, will utilize 911 to summon rescue services. The attendant, foreman, or supervisor onsite will use company-provided communication devices to call rescue services. Communication devices will be tested prior to use to ensure function.

Evaluation of potential hazards = before any entrance cover to an enclosed space is removed, it shall be determined whether it is safe to do so by checking for the presence of any atmospheric pressure or temperature differences and by evaluating whether there might be a hazardous atmosphere in the space. Any conditions making it unsafe to remove the cover shall be eliminated before the cover is removed. No employee is permitted to enter any space that is IDLH (Immediately Dangerous to Life and Health).

Removal of covers = when covers are removed from enclosed spaces, the opening shall be promptly guarded by a railing, temporary cover, or other barrier intended to prevent an accidental fall through the opening and to protect employees working in the space from objects entering the space.

Attendants = while work is being performed in the enclosed space, a person with first aid and CPR training shall be immediately available outside the enclosed space to render emergency assistance. Never enter a confined space to perform a rescue. Attendants will not be allowed to monitor more than one confined space at a time. Attendant duties include to know the hazards that may be faced during the entry, as well as the effects of those hazards, monitor conditions inside and outside of the space, call for the evacuation of the space in the event of an emergency or the detection of a prohibited condition.

Testing for oxygen deficiency = before an employee enters an enclosed space, the internal atmosphere shall be tested for oxygen deficiency with a direct-reading meter or similar instrument, capable of collection and immediate analysis of data samples. If continuous forced air ventilation is provided, testing is not required provided that the procedures used ensure that employees are not exposed to the hazards posed by oxygen deficiency. Do not enter, or remain in, a manhole if the alarm in the meter is activated.

Testing for flammable gases and vapors = before an employee enters an enclosed space, the internal atmosphere shall be tested for flammable gases and vapors with a direct-reading meter or similar instrument capable of collection and immediate analysis of data samples. Do not enter, or remain in, a manhole if the alarm in meter is activated.

Apparel = each employee who is exposed to the hazards of flames or electric arcs shall not wear clothing that, when exposed to flames or electric arcs, could increase the extent of the injury. Clothing made from the following types of fabrics, either alone or in blends, is prohibited: acetate, nylon, polyester, rayon. Outer clothing must be treated to withstand the conditions that may be encountered (flame resistant). Garments worn under flame resistant clothing must be made of wool or cotton.

Multi-employer entrants = company employees are not authorized to work in any confined space with other employers' entrants.

Joint Power and Telecommunication Manholes

Work performed in joint-use manholes must adhere to the requirements for power manholes.

Additional Requirements

Ladders = shall be used to enter and exit confined spaces exceeding four feet in depth.

Excavations = bell-bottom pier holes and deep narrow shafts are considered to be permit-required confined spaces. Excavations deeper than four feet and excavated in or near swamps, landfills, above or underground storage tanks, pipelines, refineries, or other areas where atmospheric hazards could reasonably be encountered, could be considered a confined space. Atmospheric monitoring and ventilation in the excavation shall be determined by the competent person based on the conditions found.

Special hazards = employees that are claustrophobic or have a fear of rodents, or any other animal/insect that might inhabit that confined space, are not required to enter that space.

Atmospheric conditions in the confined space should be tested at three levels; top, middle and bottom since some gases are lighter than air and others are heavier. Entrants shall be informed of atmospheric test results. Atmospheric conditions will be continuously monitored during entry. Air monitors must be calibrated at least every six months. Host employer or other agencies may require calibrations more frequently. Entrants or their representatives can participate in the calibration process or review calibration data before entry.

Permit-Required Confined Spaces

OSHA regulation 1910.146 contains the requirements for all permit-required confined spaces excluding the types of manholes listed above. This regulation is specific to maintenance work performed in permit-required spaces.

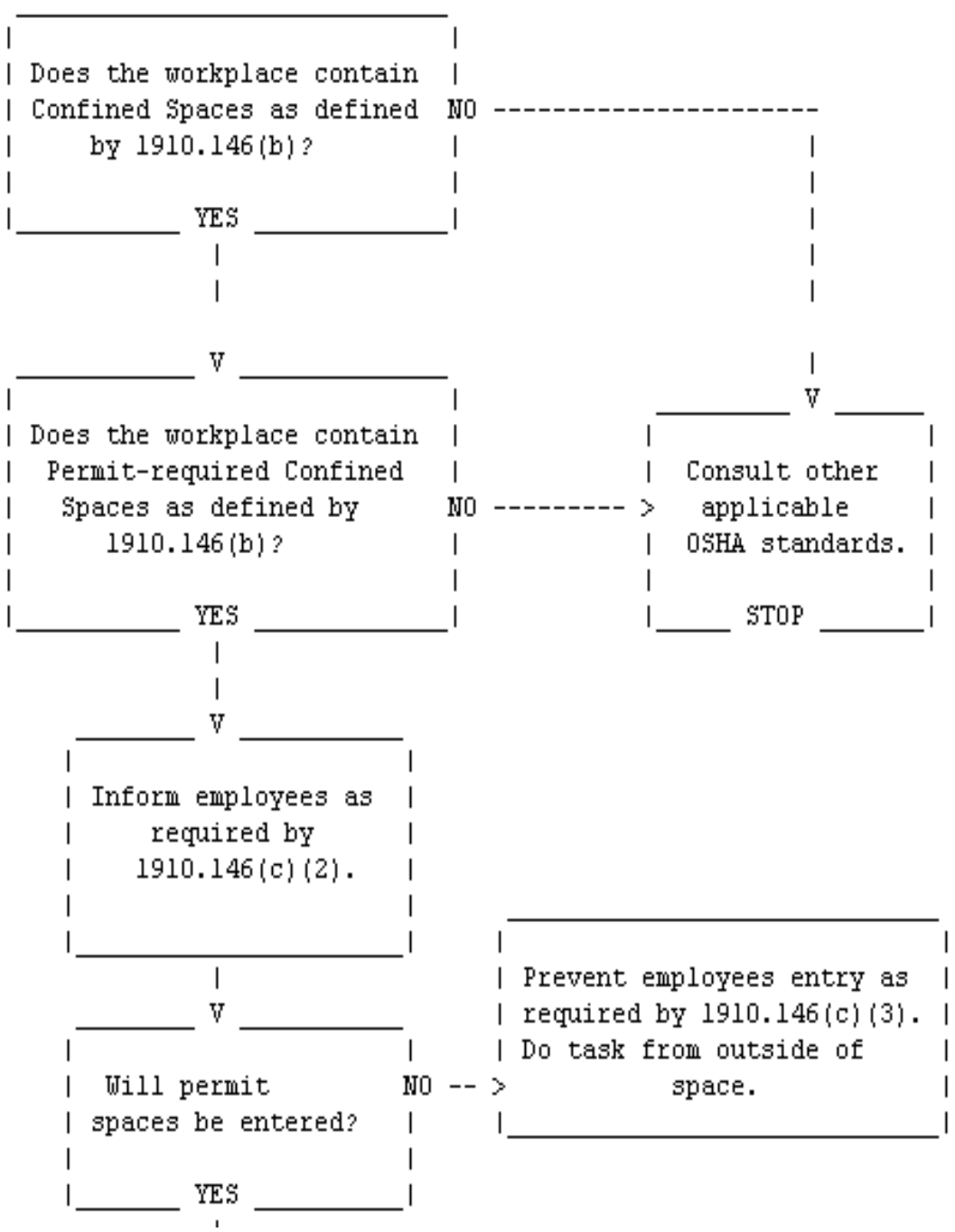
Permit-required confined space definition: 1) contains or has the potential to contain a hazardous atmosphere; 2) contains a material that has the potential for engulfing an entrant; 3) has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor which slopes downward and tapers to a smaller cross-section; or 4) contains any other recognized safety or health risk.

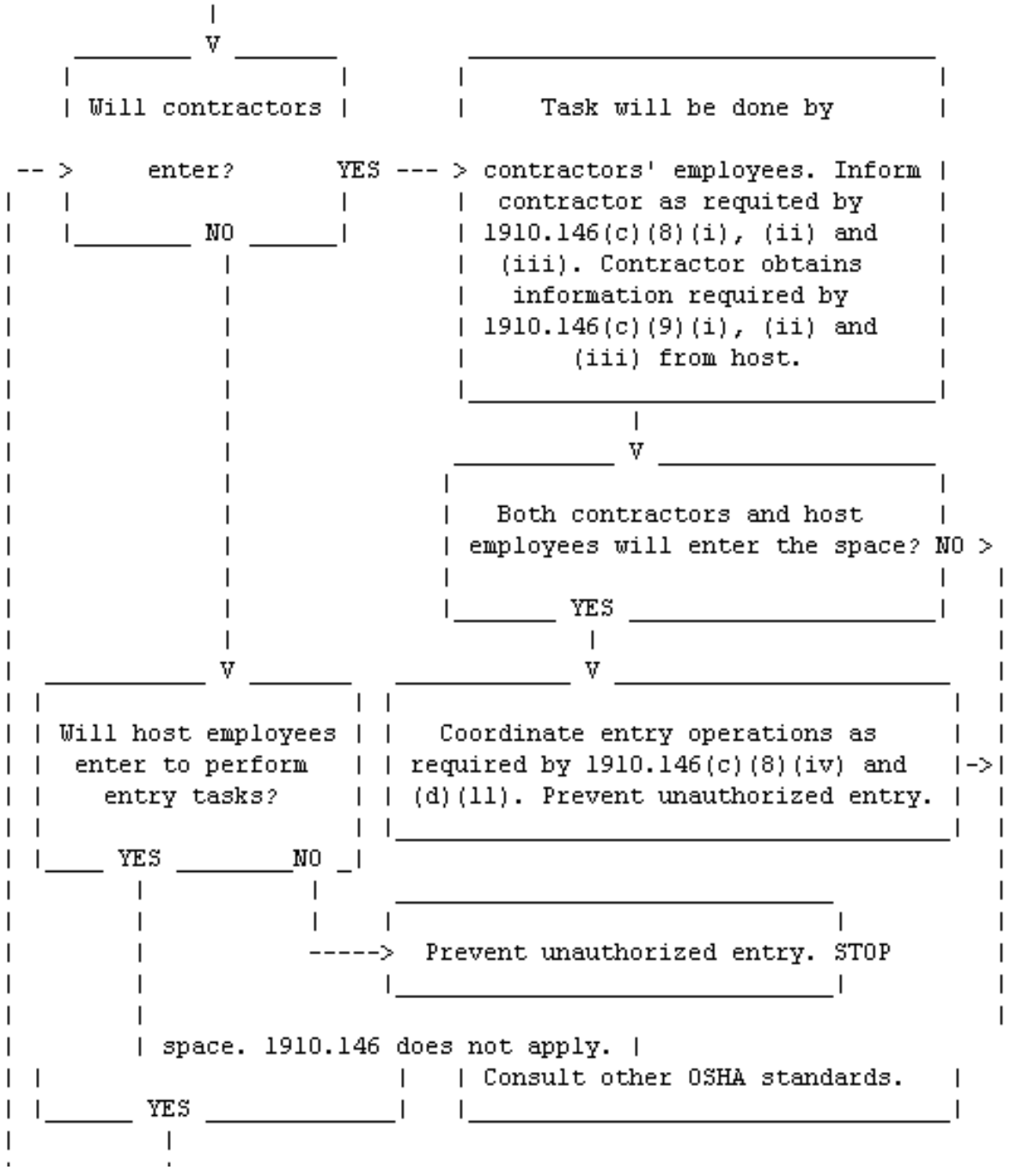
Examples of permit-required spaces would include, but not limited to: 1) water or sewer systems; 2) pipelines; 3) tanks, 4) vats.

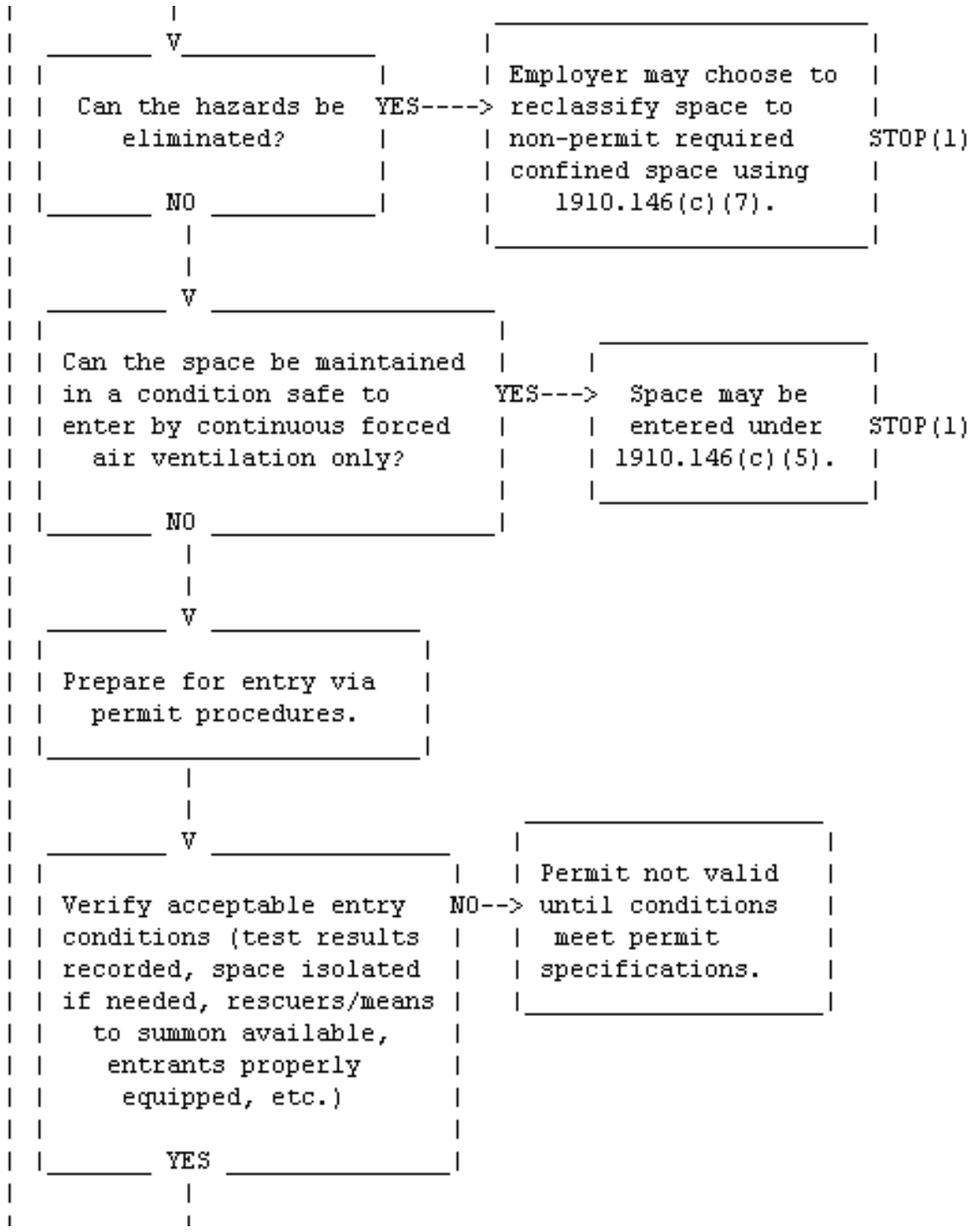
See Pages 4 - 7 for OSHA's Permit-Required Confined Space Decision Flow Chart to help determine if a space is permit-required.

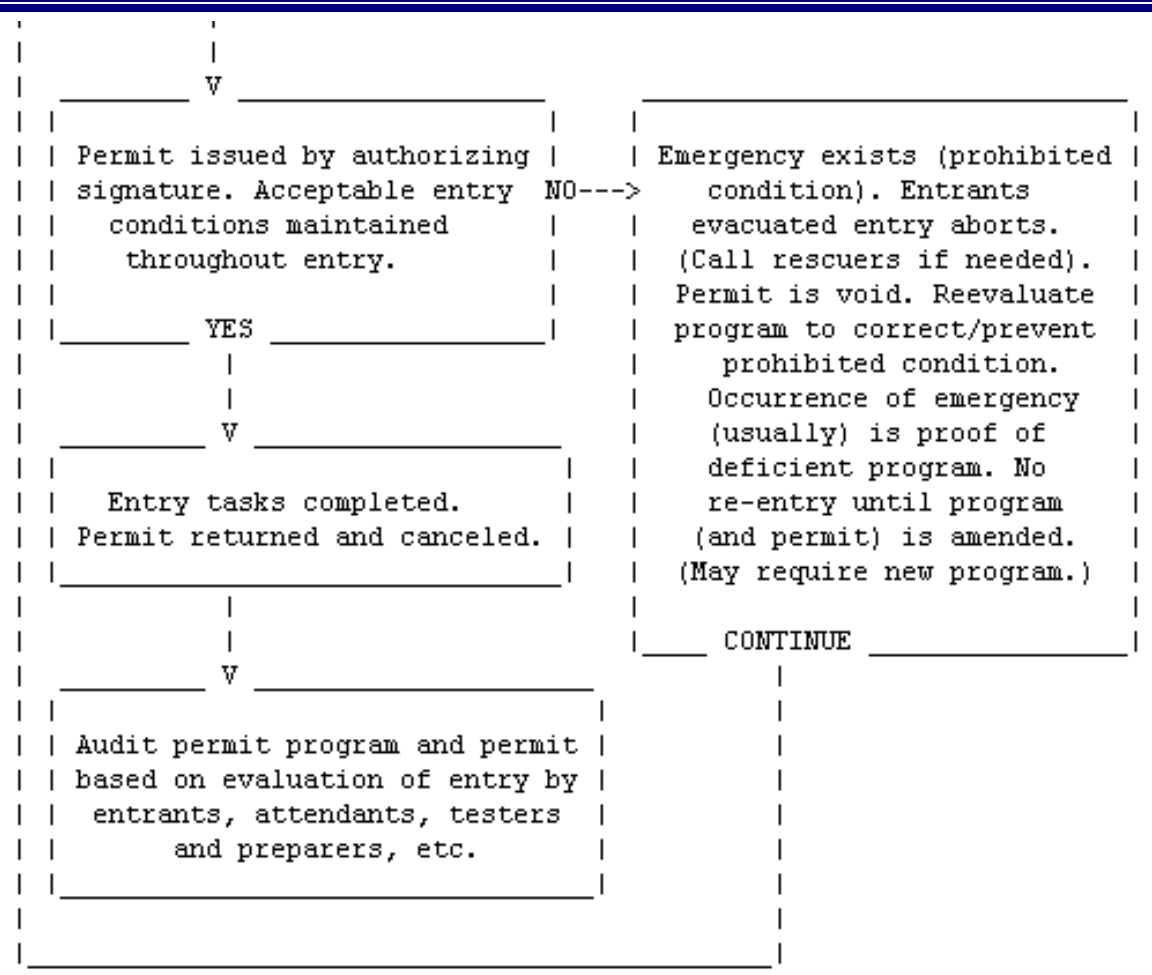
Appendix A

-- PERMIT-REQUIRED CONFINED SPACE DECISION FLOW CHART --




Will contractors enter?
NO
YES
Task will be done by contractors' employees. Inform contractor as requited by 1910.146(c)(8)(i), (ii) and (iii). Contractor obtains information required by 1910.146(c)(9)(i), (ii) and (iii) from host.
Both contractors and host employees will enter the space?
NO
YES
Will host employees enter to perform entry tasks?
YES
NO
Coordinate entry operations as required by 1910.146(c)(8)(iv) and (d)(11). Prevent unauthorized entry.
Prevent unauthorized entry. STOP
space. 1910.146 does not apply.
YES
Consult other OSHA standards.


Can the hazards be eliminated?
YES
Employer may choose to reclassify space to non-permit required confined space using 1910.146(c)(7).
STOP(1)
NO
Can the space be maintained in a condition safe to enter by continuous forced air ventilation only?
YES
Space may be entered under 1910.146(c)(5).
STOP(1)
NO
Prepare for entry via permit procedures.
Verify acceptable entry conditions (test results recorded, space isolated if needed, rescuers/means to summon available, entrants properly equipped, etc.)
NO
Permit not valid until conditions meet permit specifications.
YES



Footnote(1) Spaces may have to be evacuated and re-evaluated if hazards arise during entry.

A SAMPLE Confined Space Entry Permit is on page 8 and 9 and must be completed when entering all permit spaces. A BLANK Permit is at the end of this section. Completed permits must be kept on file for at least one year.

Confined Space Entry Permit (Page 1 of 2)

SAMPLE

Location of Space:

Street: 2290 Buster Parkway.

City/Town: Chrysler.

County: Selma. **State:** Kentucky.

Description (include identification number of space, if appropriate):

___ Telephone Manhole
___ Telephone Vault/CEV
_X_ Power Utility Manhole
___ Power Utility Transformer Pit
___ Power Utility Vault
____ Other: (Describe Below)

Manhole # 43550

Date & Time of Planned Entry:

Date: January 31, 2007. **Time:** 8:00 AM.

Purpose for Entry:

Place electrical cable between manholes.

List of Authorized Entrants and Eligible Attendants:

Name:	Title:	Name:	Title:
Bud Abbott	Lineman	Oliver Hardy	Groundman
Lou Costello	Lineman	Stan Laurel	Groundman

Individual In-charge: Moe Howard **Title:** Supervisor

Authorizing Person: Larry Fine **Title:** Project Manager

Authorizing Person Telephone Number: 606.555.1161

Pre-Entry Checklist (answer all questions)	Yes	No	N/A
1. Has the permit space atmosphere been tested and found safe for entry and work?	X		
2. Has the space been purged?	X		
3. Is continuous ventilation in place and working properly?	X		
4. Is all work area protection in place including guards, barriers, signs, etc.?	X		
5. Have all electrical conductors been insulated or protected in some manner? (Lockout/Tagout)	X		
6. Have all other sources of energy been guarded against? (Lockout/Tagout)			X
7. Does the space require a ladder and is it in place?	X		
8. Is an emergency retrieval system in place and connected to entrant?	X		
9. Is the entrant(s) fitted with a harness and lifeline?	X		
10. Does the entrant have the proper personal protective equipment?	X		
11. Does the entrant have the proper tools for the job?	X		
12. Have all entrants and attendants been outfitted with a communication system?	X		
13. Have all *entrants* involved been trained and informed in: safe methods of work in confined space, have knowledge of the hazards, recognition of signs and symptoms of exposure to hazards, proper communication techniques, what protective equipment is needed and how to use it, and what to do in an emergency?	X		
14. Have all *attendants* involved been trained and informed in: "logging-in" all entrants, recognizing internal and external hazards that may compromise the safety of entrants, recognizing behavioral changes in entrants that indicate exposure to hazards, proper communications techniques, evacuation procedures, summoning rescue help, and that they are ***never*** to enter the confined space to attempt a rescue?	X		
15. Have all **foremen, lead people and superintendents** involved been trained and informed in: ensuring that procedures, practices, and equipment are in effect before entry; that entry operations remain consistent and in-line with permit limits, ensuring that all un-authorized persons are kept from entering the confined space, and that all personnel working on this job have been trained in confined space entry?	X		
16. Has adequate lighting been provided?	X		

SAFETY EQUIPMENT CHECKLIST

X	Hard Hat	X	Ventilation Equipment
X	Safety Glasses/Eye Protection	X	Calibrated Atmospheric Monitor w/Alarm
X	Safety Harness	X	Communication Equipment
X	Retrieval System	X	Protective Clothing
X	Hearing Protection	____	Respirator(s)
____	Other: (specify) _____		

Monitor Readings:	Gas	Permissible Range	Pre-Entry	After Purge	During Work	End of Shift
	Oxygen	19.5% - 23.5%	19.3	20.9	20.9	20.9
	Combustible Gas	10% of LEL	0	0	0	0
	Carbon Monoxide	less than 50ppm	0	0	2	2
	Hydrogen Sulfide	less than 10ppm	0	0	0	0

Air Monitor (make and model): BINFORD 5000 **Serial No.** 54321