CHAPTER 70
16 VAC 25-70-10 et seq.
VIRGINIA CONFINED SPACE STANDARD
FOR THE TELECOMMUNICATIONS INDUSTRY
(1910.268(t))

16 VAC 25-70-10 Definitions

The following words and terms, when used in this chapter, shall have the following meanings, unless the context clearly indicates otherwise:

"Attendant" means an individual with no other duties assigned to remain immediately outside the entrance to the confined space and who may render assistance as needed to employees inside the space.

"Blind" or *"blinding"* or *"blanking"* means the absolute closure of a pipe, line or duct, to prevent passage of any material (e.g., by fastening a solid plate or "cap" across the pipe).

"Calibration" or *"Recalibration"* means a laboratory or bench-top re-setting of alarm points, spans and zeros, if applicable, according to manufacturer's specifications. "Calibration" or "recalibration" shall be conducted by a factory authorized service center, a factory trained technician, or a trained company technician.

"Confined space" means any space not intended for continuous employee occupancy, having a limited means of egress, and which is also subject to either the accumulation of an actual or potentially hazardous atmosphere as defined in this subsection or a potential for engulfment as defined in this subsection. Confined spaces generally include, but are not limited to, storage tanks, process vessels, bins, boilers, ventilation or exhaust ducts, sewers, manholes, underground utility vaults, acid tanks, digesters, ovens, kiers, pulpers, tunnels, and pipelines. Open top spaces more than 4 feet in depth such as pits, tubs, vaults and vessels may also be confined spaces if the three criteria above are met.

"Engulfment" means the surrounding and effective capture of a person by finely divided particulate matter or a liquid. There is a potential for engulfment when such particulate matter or liquid exists in a sufficient quantity or at a sufficient pressure to surround a person before normal exit can be effected.

"Entrant" means any employee who enters a confined space.

"Entry" means any action resulting in any part of the employee's face breaking the plane of any opening of the confined space, and includes any ensuing work activities inside the confined space.

"Entry permit" means the employer's written authorization for employee entry into a confined space under defined conditions for a stated purpose during a specified time.

"Field checked" means a method of checking an instrument for a proper response in the field. It is a check of the instrument's functionality and is a pass-fail or go/no-go check. When an adequate response is not obtained then the equipment should be removed from service and adjusted or repaired by a factory authorized service center, or a factory trained technician, or a trained company technician.

"Ground-fault circuit interrupter" means a device whose function is to interrupt the electric circuit to the load when a fault current to ground exceeds a predetermined value that is less than that required to operate the overcurrent protective device of the supply circuit.

"Hazardous atmosphere" means an atmosphere presenting a potential for death, disablement, injury, or acute illness from one or more of the following causes:

(i) A flammable gas, vapor, or mist in excess of 10% of its lower explosive limit (LEL);

(ii) An oxygen deficient atmosphere containing less than 19.5% oxygen by volume or an oxygen enriched atmosphere containing more than 23% oxygen by volume;

(iii) An atmospheric concentration of any substance listed in Subpart Z of Part 1910 Standards above the listed numerical value of the permissible exposure limit (PEL); or

(iv) A condition immediately dangerous to life or health as defined in this subsection.

"Immediately dangerous to life or health (IDLH)" means any condition that poses an immediate threat to life, or which is likely to result in acute or immediately severe health effects. *See* Appendix A for concentrations at which several chemicals exhibit IDLH effects.

"Immediate severe health effects" means that an acute clinical sign of serious, exposure-related reaction is manifested within 72 hours of exposure.

"Lockout or tagging" means placing locks or tags on the energy isolating device in accordance with 16 VAC 25-70-30 B of this chapter. Tags shall indicate that the energy isolated device shall not be operated until the removal of the tag.

"Qualified person" means a person who is trained to recognize the hazards of the confined space and how to evaluate those anticipated hazards and shall be capable of specifying necessary control measures to assure worker safety. The employer may designate an employee as employer representative for the purpose of assuring safe confined space entry procedures and practices at a specific site. The qualified person may also be the entrant when permissible according to 16 VAC 25-70-50 A of this chapter.

"Rescue team" means those persons whom the employer has designated prior to any confined space entry to perform rescues from confined spaces. A rescue team may consist of outside emergency personnel, provided the training requirements of 16 VAC 25-70-70 A 2 of this chapter have been met.

"Retrieval line" means a line or rope secured at one end to a worker's safety belt, chest or body harness, or wristlets with the other end secured to an anchor point or lifting device located outside the entry portal. The anchor point shall not be a motor vehicle. Retrieval lines must be of sufficient strength to remove an entrant when necessary.

"Zero mechanical state" means that the mechanical potential energy of all portions of the machine or equipment is set so that the opening of the pipes, tubes, hoses or actuation of any valve, lever, or button, will not produce a movement which could cause injury.

16 VAC 25-70-20 Scope and application

A. This section prescribes basic mandatory practices and procedures which employers must establish and use for employee entry into and work within confined spaces.

B. This section applies to all employers with employees covered by 29 CFR 1910.268.

16 VAC 25–70-30 Preparation

Entry into a confined space shall not be made unless the qualified person has assured that the following procedures have first been completed.

A. All pumps or lines which may convey flammable, injurious, or incapacitating substances into a space shall be disconnected, blinded, double blocked and bled, or effectively isolated by other means to prevent the development of dangerous levels of air contamination or oxygen deficiency within the space. The closing of valves alone, or the closing of valves and locking or tagging them, is not considered effective protection. The disconnection or blind shall be so located or done in such a manner that inadvertent reconnection of the line or removal of the blind are effectively prevented.

B. All fixed mechanical devices and equipment that are capable of causing injury shall be placed at zero mechanical state (ZMS). Electrical equipment, excluding lighting, shall be locked out in the open (off) position with a key-type padlock except in cases where locking is impossible; in such cases equipment shall be properly tagged in accordance with 16 VAC 25-90-1910.145(f). The key shall remain with the person working inside the confined space.

C. All confined spaces shall be emptied, flushed, or otherwise purged of flammable, injurious, or incapacitating substances to the extent feasible. Initial cleaning shall be done from outside the confined space to the extent feasible.

D. Where the existence of a hazardous atmosphere is demonstrated by tests performed by the qualified person, the confined space shall be mechanically ventilated until the concentration of the hazardous substances is reduced to a safe level, and ventilation shall be continued as long as the recurrence of the hazards is possible or appropriate personal protective equipment, as defined in Subpart I of the Virginia Standards for General Industry (16 VAC 25-90-1910) and Subpart E of the Virginia Standards for Construction Industry (16 VAC 25-175-1926), shall be used by all employees during entry. The mechanical ventilation shall be located in an unconfined space with the blower intake away from traffic and sources of exhaust fumes and the blower exhaust away from the confined space opening. The blower shall be located a minimum of five feet from the confined space opening to avoid returning purged air into the confined space.

E. When the confined space entry occurs on a public thoroughfare, warning devices, barricades, and traffic cones shall be used for the protection of workers and shall conform to the American National Standards Institute D6.1-1978, *"Manual on Uniform Traffic Control Devices for Streets and Highways."*

16 VAC 25-70-40 Atmospheric testing.

A. Where mechanical ventilation is utilized in accordance with subsection C, the qualified person shall assure that each confined space into which an employee may be required to enter is tested immediately prior to entry using direct reading instruments or go/no-go instruments with preset values, with remote sampling capacity for the following conditions:

1. Potential flammable hazard; and

2. Toxic materials known or expected to be present.

In the absence of mechanical ventilation as specified in subsection C, the qualified person shall also test for oxygen levels prior to entry. The testing of the atmosphere for a particular toxic material is

not necessary where the presence of that material is known by virtue of a previous test and appropriate personal protective equipment to protect against that material is utilized.

B. When an attendant has been assigned, as prescribed by 16 VAC 25-70-50 A, a qualified person shall perform atmospheric testing during occupancy at intervals dependent on the possibility of changing conditions, but in no case less frequently than hourly. Atmospheric test results must be recorded on the permit at least hourly in accordance with 16 VAC 25-70-60 B.

C. When a non-attendant entry is permitted, as allowed by 16 VAC 25-70-50 A, at least one entrant shall use a continuous monitoring device equipped with an alarm and capable of evaluating oxygen concentrations and combustible gas concentrations in the confined space. When large confined spaces are entered, a sufficient number of monitoring devices shall be either worn or located in the work area to adequately monitor the atmosphere. Where continuous mechanical ventilation which conforms to the Bell System Practices for Testing and Ventilating Manholes [' 620-140-501 (4.01-7.05) (1976)] is utilized, monitoring for oxygen concentrations in the confined space shall not be required.

D. Each atmospheric testing instrument shall be calibrated according to the manufacturer's instructions, or, if no manufacturer's specifications exist, at least yearly, and field checked immediately prior to its use. Instruments which are out of calibration or fail a field check cannot be used until they are properly calibrated.

16 VAC 25-70-50 Attendants and rescue teams.

A. The qualified person shall evaluate each confined space that an employee may be required to enter by identifying and evaluating the hazards and potential hazards of that space. The qualified person then may allow an employee to make an unaccompanied, non-attendant entry into a confined space which has no potential for engulfment or IDLH atmosphere, and only low potential for hazardous atmosphere, provided the requirements of 16 VAC 25-70-40 C are met.

B. An attendant shall be stationed immediately outside every confined space which has been found to have an IDLH atmosphere, a hazardous atmosphere or a potential for engulfment. The attendant shall be trained as directed by 16 VAC 25-70-70 A 2, be within sight or call of the entrant, and have the means available to summon assistance.

C. Rescue teams shall be available where the confined space has been found to have an IDLH atmosphere, a hazardous atmosphere or a potential for engulfment.

16 VAC 25-70-60 Permit systems.

A. The employer shall develop and implement a written entry permit system for all confined space entries which includes a written permit procedure that provides the following minimum information:

1. The minimum acceptable environmental conditions which are acceptable to the employer for entry and work in the confined space;

2. A record of atmospheric test results conducted prior to entry and at least hourly thereafter when an attendant is required;

3. The last calibration dates for the oxygen detector and combustible gas indicator being used;

4. The signature of the qualified person responsible for securing the permit and reviewing conditions prior to entry;

5. A written description of the location and type of work to be done;

6. Each permit shall be dated and carry an expiration time of not more than 12 hours; the permit may be extended for another 12-hour period pending recertification of acceptable conditions.

B. Entry permit forms shall be retained until the corresponding entry has been successfully completed.

C. The permit may be on a preprinted form or incorporated into a work order, a log book, or any other format, as long as each contains the minimum information required by A 1 to A 6 of this section.

16 VAC 25 70-70 Training.

A. The employer shall inform his employees of the hazards of working in confined spaces by providing specific training to employees before they may be authorized to enter a confined space.

1. General. The employer shall assure that the qualified person and all employees who may be required to enter a confined space have received training covering the following subjects:

a. Hazard recognition;

b. Use of respiratory protection equipment if the use of such equipment will be required. Training requirements are specified in 16 VAC 25-90-1910.134;

c. Use of atmospheric testing devices for those employees required to perform atmospheric tests. Training shall cover field checks as specified by the manufacturer, normal use, and specific limitations of the equipment;

d. Lockout and tagging procedures;

e. Use of special equipment and tools;

f. Emergency and rescue methods and procedures.

2. Rescue teams Rescue teams shall be trained to use the equipment they may need to perform rescue functions assigned to them.

a. At least annually rescue teams shall practice removing victims through openings and portals of the same size, configuration and accessibility as those of spaces from which an actual rescue could be required.

b. The attendant or at least one member of each rescue team shall hold current certification in basic first aid and CPR (Cardio-Pulmonary Resuscitation).

B. The employer shall maintain the records of the most recent training program conducted. These records shall include the dates of the training program, the instructors of the training program, and the employees to whom the training was given.

16 VAC 25 70-80 Special equipment and tools.

A. No sources of ignition shall be introduced into a confined space until the implementation of the appropriate provision of this section has ensured that dangerous air contamination due to flammable or explosive substances does not exist.

B. All electrical cords, tools, and equipment shall be inspected for visually detectable defects before use in a confined space. In the absence of low voltage circuits and equipment or double insulated tools, equipment shall be of the heavy duty insulation type, or ground-fault circuit interrupters shall be used. Temporary lighting shall conform with 16 VAC 25-175-1926.405(a)(2)(ii)(G).

C. No fan or other equipment used for removing flammable gases or vapors shall create an ignition hazard.

D. Cylinders of compressed gases shall never be taken into a confined space, and shall be turned off at the cylinder valve when not in use. When to be left unattended, the torch and hose shall be removed from the confined space. Open end fuel gas and oxygen hoses shall be immediately removed from enclosed spaces when they are disconnected from the torch or other gas-consuming device.

Exempt from this rule are cylinders that are part of self-contained breathing apparatus or resuscitation equipment.

16 VAC 25 70-90 Tripods, safety harnesses, retrieval lines, and respiratory protection.

A. Where the existence of an IDLH atmosphere, a hazardous atmosphere or potential for engulfment has been demonstrated by the qualified person, the following requirements shall also apply:

1. An appropriate retrieval device with retrieval line shall be used by any entrants, except where the retrieval lines themselves could cause a hazard because of structures, equipment, or becoming entangled with other lines inside the confined space. Where a retrieval line is used, the free end of the retrieval line shall be secured outside the entry opening either by another person holding the line or by securing it in some other manner.

2. When entry is made through a top opening, a hoisting device such as a tripod shall be provided for lifting employees out of the space.

B. When a person is required to enter a confined space which has either an IDLH atmosphere or a hazardous atmosphere there shall be either a positive-pressure self-contained breathing apparatus or a combination positive-pressure air-line respirator with an auxiliary self-contained air supply immediately outside the entrance to the confined space.

C. When persons must enter a confined space which contains either an IDLH atmosphere or a hazardous atmosphere without a retrieval line attached, then each entrant shall be supplied with and wear a MSHA/NIOSH approved positive pressure self-contained breathing apparatus.

16 VAC 25-70-100. Effective date and start up date.

A. Effective date - July 1, 1987.

B. Startup date - Enforcement of 29 CFR 1910.268(t) requirements for continuous mechanical ventilation will begin November 15, 1987. Enforcement of all other portions of 29 CFR 1910.268(t) will begin July 1, 1988. Appendix B lists those subsections of 29 CFR 1910.268(o) to be amended or deleted effective July 1, 1988.

APPENDIX A

Concentrations at which some common substances exhibit immediately dangerous to life or health (IDLH) effects.

Appendix A is a non-mandatory appendix. According to The National Institute for Occupational Safety and Health (NIOSH) the levels listed below represent a maximum concentration from which one could escape within 30 minutes without any escape-impairing symptoms or any irreversible health effects. These levels were published by NIOSH in September 1985 and are subject to frequent change. This list is not meant to be all inclusive but rather is meant to list some of the more frequently encountered chemicals in confined spaces.

CHEMICAL NAME	IDLH LEVELS*
Ammonia	500 ppm
Benzene	2,000 ppm
Butadiene	20,000 ppm
2 - Butanone	3,000 ppm
Carbon Dioxide	50,000 ppm
Carbon Monoxide	1,500 ppm
Carbon Tetrachloride	300 ppm
Chlorine	25 ppm
Chlorobromomethane	5,000 ppm
Chloroform	1,000 ppm
Cresol	250 ppm
Cyclohexane	10,000 ppm
Dichlorodifluoromethane	50,000 ppm
Dichloromonofluoromethane	50,000 ppm
Ethyl Acetate	10,000 ppm
Fluorotrichloromethane	10,000 ppm
Heptane	4,250 ppm
Hexane	5,000 ppm
2 - Hexane	5,000 ppm
Hydrogen Chloride	100 ppm

Hydrogen Sulfide	300 ppm
Isopropyl Alcohol	20,000 ppm
Liquefied Petroleum Gas	19,000 ppm
Methyl Alcohol	25,000 ppm
Methyl Cellosolve	2,000 ppm
Methyl Cellosolve Acetate	4,500 ppm
Methyl Chloroform	1,000 ppm
Methylene Chloride	5,000 ppm
Nitric Oxide	100 ppm
Nitrogen Dioxide	50 ppm
Octane	3,750 ppm
Ozone	10 ppm
Pentane	5,000 ppm
Petroleum Distillates Mixture	10,000 ppm
Phenol	100 ppm
Phosgene	2 ppm
Propane	20,000 ppm
Sodium Hydroxide	200 mg/M^3
Stoddard Solvent	5,000 ppm
Styrene	5,000 ppm
Sulfur Dioxide	100 ppm
1, 1, 2, 2, - Tetrachloro-1, 2 – Difluroethane	15,000 ppm
Toluene	2,000 ppm
Toluene-2, 4-Diisocyanate	10 ppm
Trifluoromonobromomethane	50,000 ppm
Turpentine	1,900 ppm
Xylene	10,000 ppm

* Reference NIOSH/OSHA Pocket Guide to Chemical Hazards DHEW (NIOSH) Publication No. 78-210.

APPENDIX B

Amendments and deletions to 29 CFR 1910.268(o), Telecommunication standard for General Industry, to become effective July 1, 1988 and to coincide with the start up date of 1910.268(t):

Telecommunications, 1910.268	
1910.268(o)	Amended to apply 1910.268(t)to the ventilation and testing for gas in manholes and unvented vaults.
1910.268(o)(1)(ii)	Deleted
1910.268(o)(1)(ii)(a)	Deleted
1910.268(o)(1)(ii)(b)	Deleted
1910.268(o)(1)(ii)(c)	Deleted
1910.268(o)(2)	Amended to apply 1910.268(t) to entry of manholes and unvented vaults.
1910.268(o)(2)(i)	Deleted
1910.268(o)(2)(i)(a)	Deleted
1910.268(o)(2)(i)(b)	Deleted
1910.268(o)(2)(ii)	Deleted
19l0.268(o)(2)(ii)(a)	Deleted
1910.268(o)(2)(ii)(b)	Deleted
1910.268(o)(2)(ii)(c)	Deleted
1910.268(o)(2)(ii)(d)	Deleted
1910.268(o)(2)(ii)(e)	Deleted
1910.268(o)(2)(iii)(a)	Deleted
1910.268(o)(2)(iii)(b)	Deleted
1910.268(o)(3)	Deleted
1910.268(o)(5)	Deleted
1910.268(o)(5)(i)	Deleted
1910.268(o)(5)(ii)	Deleted