FETY REGULATION NO. 10

WORKER HEALTH AND SAFETY ACT · NEW JERSEY

Relating to

WORK

in

CONFINED SPACES

Effective December 1, 1967

STATE OF NEW JERSEY
DEPARTMENT OF LABOR & INDUSTRY
BUREAU OF ENGINEERING & SAFETY,
Trenton, N.J.

SPECIAL CONFINED SPACES COMMITTEE

L. R. Becker, Chairman, American Cyanamid Company
A. Ashton, Socony Mobil Oil Company, Inc.
A. H. Bischoff, Celanese Corporation of America
E. L. Schall, New Jersey Department of Health
J. C. Sewell, Curtiss Wright Corporation
W. R. Shields, American Cyanamid Company

NEW JERSEY STATE INDUSTRIAL SAFETY COMMITTEE

Codes, Rules and Regulations Sub-Committee

J. W. Griffith, Chairman, Riegel Paper Company
A. Ashton, Socony Mobil Oil Company, Inc.
L. R. Becker, American Cyanamid Company
A. H. Bischoff, Celanese Corporation of America
O. C. Boileau, Radio Corporation of America
G. E. Cain, Hercules Powder Company
H. Fravel, Hercules Powder Company
J. T. Gresh, American Brake Shoe Company
J. R. Hanford, Public Service Electric and Gas Company
F. Krastel, E. I. DuPont de Nemours Company, Inc.
C. L. Sheckler, Johns Manville Corporation

TABLE OF CONTENTS

Foreword

This Regulation, drafted by a special sub-committee of the New Jersey State Industrial Safety Committee and incorporating suggestions of the Industrial Safety Equipment Association, Inc., establishes reasonable requirements for the health and safety of workers performing tasks in or about confined spaces. It is promulgated by the Commissioner of Labor and Industry of the State of New Jersey under authority vested in him by section 9 of the Worker Health and Safety Act, P. L. 1965, c. 154, N.J.S.A. 34:6A as follows:

> The Commissioner shall make and promulgate rules and regulations reasonably necessary to implement the purposes of this act. Such rules and regulations shall have the force and effect of law and shall be enforced in the manner provided in this act . . . .

The same statute provides authority for the commissioner to grant exceptions from the requirements of rules and regulations in accordance with section 23 as follows:

> The Commissioner shall have the power and authority to grant exceptions from the literal requirements of rules and regulations promulgated under this act. Such exception shall be granted in any particular case only where it is clearly evident that it is necessary to prevent undue hardship or where existing conditions prevent compliance. In no case shall any exception be granted unless in the opinion of the commissioner reasonable protection of the health and safety of workers and the public will be maintained hereby. An application for an exception shall be filed in writing with the commissioner, setting forth specifically the requirements of the rules and regulations from which an exception is desired and the reason why enforcement of the applicable provisions of the rules and regulations is unreasonable. The commissioner shall grant or deny the exception within 30 days from the date of receipt by him of the application. The commissioner shall maintain a record of all exceptions granted and shall make

such record reasonably available for public examination and shall mail a copy of all rulings granting exceptions to the members of the board.

Prior to its promulgation this Regulation was submitted to the New Jersey State Industrial Safety Committee and the Industrial Safety Board in accordance with the requirements of the act cited above.

SECTION 1 — PURPOSE AND SCOPE

1.1 *Purpose.* The purpose of this Regulation is to establish reasonable requirements for the protection of the safety and health of workers who work in, about or in connection with confined spaces.

1.2 *Scope.* This Regulation is applicable to every place of employment subject to the Worker Health and Safety Act, P. L. 1965, c. 154, N.J.S.A. 34:6A.

SECTION 2 — DEFINITIONS

2.1 *Commissioner* — The Commissioner of Labor and Industry or his authorized representative.

2.2 *Confined Space* — a space that is sufficiently surrounded by confining surfaces so as to permit either the accumulation of hazardous gases, mists, fumes, vapors, or dusts, or the possibility of an oxygen deficiency or excess; and that restrains egress to such a degree that a person would have difficulty in escaping from such a space in an emergency. Examples of confined spaces are tanks, tank cars, tank trucks, and certain forms of structures or parts of structures such as bins, silos, hoppers, vaults, service tunnels, manholes, boilers, and certain types of shafts. (The maintenance and repair of high pressure boilers are also subject to the requirements of the Bureau of Mechanical Inspection, Department of Labor and Industry.)

2.3 *Hazard* — the risk of injury or illness that is encountered because of the presence in the atmosphere of poisonous, irritant, toxic or flammable elements, compounds, or substances, or because of deficiency or excess of oxygen.

SECTION 3 — GENERAL REQUIREMENTS

3.1 Work in or about confined spaces shall conform to applicable requirements of this Regulation.

3.2 Wherever work is to be performed in a confined space, provisions shall be made to permit ready entry and exit.

3.3 While work is being performed inside a confined space, at least one responsible person shall be immediately available to secure or render assistance in the event of an emergency.

3.3.1 If a hazard exists or can develop in this confined space, then this responsible person shall not enter the confined space except in emergency and with proper protective equipment. While work is being performed inside this confined space, this responsible person shall not leave the vicinity of the confined space for any time whatever unless replaced.

3.4 All protective equipment required by this Regulation shall be provided by the employer and shall be maintained in proper working condition.

3.5 Whenever a worker is overcome in a confined space, he shall be removed to fresh air immediately, first aid given, and artificial respiration administered if the victim is not breathing, and a physcian shall be summoned immediately.

3.6 A suitable warning notice shall be posted in a conspicuous place in the area of confined spaces which are used for the storage of hazardous substances. This notice shall indicate the hazard of unprotected entry and shall prohibit entry without proper authorization. Rule book instructions issued to all plant employees would be acceptable in lieu of posted signs.

3.7 Every employee who may be required to enter a confined space, perform stand-by duties, provide emergency service, give first-aid or act in rescue, shall be instructed and trained thoroughly in his particular responsibilities.

SECTION 4 — WORK SUPERVISION

4.1 Work performed in a confined space shall be done only under the authorization of a competent supervisor who is thoroughly familiar with the hazards that may be encountered, and with fire and accident prevention requirements and first-aid and rescue measures.

4.2 Before the start of a job, the work supervisor shall make certain that necessary masks, equipment and tools are of the proper type, clean and in good condition, and that the workmen are instructed properly in their use.

4.3 Before entry is permitted, the work supervisor shall make certain that necessary personal protective equipment is functioning properly and that the worker is receiving clean air in sufficient quantity.

4.4 All employees working in a confined space shall be advised of hazards they may encounter.

SECTION 5 — SPECIAL PRECAUTIONS

5.1 Smoking in or around confined spaces shall be prohibited, except where permitted by the Commissioner in accordance with the requirements of Safety Regulation No. 1.

5.2 Portable electric devices used in confined spaces shall be properly guarded, and grounded or fed from low voltage insulating transformers.

5.3 Open flames, welding equipment, general purpose type electrical equipment, light sources other than explosive-proof equipment, or other spark or flame producing agents shall not be used in any confined space until it has been demonstrated by test that a flammable vapor does not exist.

5.4 If a vessel is fitted with power-driven internal equipment, the power source shall be disconnected, locked out and the disconnection shall be tested before entry is permitted. The point of disconnection must be available for inspection. Test shall be by actuating the starting button or other acceptable methods which effectively prove the disconnection.

5.5 Whenever a worker is required to enter a confined space, a safety belt, safety harness or other approved device with life line attached to the man and secured outside of the confined space shall be used. The life line shall have a strength at least equivalent to ½ inch manilla rope in good condition.

The use of a life line shall not be required in the following cases:

(a) Where the concentration of structural members, piping, equipment and other obstructions to free travel within the confined space is such as to make a life line useless for rescue purposes.

(b) Where the concentration of workers within the confined space is such that the use of life lines is likely to result in the line entanglement which would impede rescue.

(c) Where the area of the confined space is so great as to make the use of a life line obviously impracticable.

(d) Where it has been established by tests that the atmosphere of the confined space is free of contamination and remains so long as work therein is to be performed.

In such cases, however, the use of a safety belt is recommended. A life line must be immediately available for rescue.

5.6 Sufficient and proper fire extinguishing equipment to cope with the hazards which may be encountered shall be provided and maintained close at hand.

SECTION 6 — PREPARATION OF CONFINED SPACES

6.1 Before any confined space is entered, it shall be prepared as follows:

6.1.1 All pipe lines, valves, fittings and connections conveying substances to a confined space shall be disconnected or provided with a solid blank of adequate strength and compatible material before entry

into the confined space shall be permitted. In lieu of disconnecting or blanking, water lines not contaminated with harmful substances may be valved off, locked and tagged, and steam lines double-valved with a bleeder between the two valves locked and tagged.

6.1.2 The confined space shall be purged by steaming, washing, venting or otherwise be cleaned unless the test referred to in 6.1.3 below shows that purging is unnecessary. In the selection of sampling sites consideration shall be given to the possibility of stratification of contaminants.

6.1.3 Tests of the atmosphere in confined space for possible hazards such as flammability, toxicity, and the lack of excess of oxygen, shall be made where appropriate by a person trained and equipped with satisfactory test devices.

6.1.4 If the test indicates that the atmospheric conditions are hazardous, the confined space shall be purged as required in 6.1.2 above. Atmospheric conditions shall be termed hazardous if test shows any of the following:

(a) The presence of oxygen below or above the breathing air-range (16.5 to 21.9% content by volume).

(b) The presence of any toxic material in concentrations above the threshold limit value established in Safety Regulation No. 3.

(c) The presence of a flammable vapor.

6.1.5 After purging the confined space, it shall be tested and if necessary repurged.

6.1.6 If the atmospheric conditions are still hazardous and the confined space cannot be purged free of contamination, the work shall only be performed utilizing protective equipment. The use of oxygen to ventilate a confined space is prohibited because of the fire hazard such use creates.

6.1.7 If the percentage of combustible vapor in the confined space atmosphere is greater than 14% of the lower explosive limit, no work in the confined space shall be permitted.

SECTION 7 — PERSONAL PROTECTIVE EQUIPMENT

7.1 The employer shall provide suitable personal protective equipment and protective clothing whenever the risk of injury or illness in a confined space requires their use.

7.2 Where a test of the atmosphere in the confined space shows a hazard exists, or there is reason to believe such a condition might occur while the confined space is occupied, all persons entering the space shall be equipped with suitable protective breathing equipment.

7.2.1 The type of breathing equipment shall be selected by the supervisor and shall be compatible with the requirements of the work to be performed by the person entering the confined space.

7.2.2 The protective breathing equipment shall be of a type which will provide respiratory protection without creating a hazard in itself.

7.2.3 Respiratory protective equipment shall include a full face mask providing protection for the eyes as well as the respiratory organs, or if eye protection is not required oronasal masks (covering the nose and mouth) or a mouthpiece and nose clip may be used.

7.2.4 Whenever a blower-type hose mask is used the air supplied to the worker shall be from an uncontaminated source.

7.2.5 Equipment bearing the approval of the U. S. Bureau of Mines shall be considered acceptable for use under the conditions stipulated in the U. S. Bureau of Mines Schedule under which the equipment is approved.

7.2.6 U. S. Bureau of Mines-approved equipment which has been modified shall be considered acceptable when such modified equipment is in compliance with the following:

(a) Blower-type hose mask of the type approved by the U. S. Bureau of Mines under Schedule 19 but equipped with a maximum of 250 ft. of the same type of hose specified for approved equipment, and equipped with a blower capable of being operated by hand or capable of being operated by hand or electric motor.

(b) Demand-type equipment with a full face mask and a two-stage demand regulator both of the same type as those used in U. S. Bureau of Mines-approved self-contained equipment to which clean air is supplied from air cylinders outside the confined space through a high pressure hose or an armored hose of the type used in U. S. Bureau of Mines-approved self-contained equipment. The air delivery pressure to the primary pressure reducer shall be not less than 300 psi nor more than 2400 psi. However, if conditions within the confined space are or might be such that the wearer could not escape without his mask, equipment of the type described in

this sub-section shall be used only when the wearer is also equipped with a self-contained egress supply of clean air or oxygen to permit escape in the event that the hoseline supply should be interrupted. The volume of this egress supply may vary for different applications, but shall be ample to allow the worker sufficient air to escape from the contaminated area. The egress supply should never be less than 4 cu. ft. (measured at 70° F. at sea level).

(c) Self-contained demand-type equipment utilizing the same mask and demand regulator as used in equipment approved by the U. S. Bureau of Mines, but with a self-contained supply of clean air or oxygen of not less than 15 minutes duration (based on a 1.3 cu. ft./minute consumption rate). The worker shall not be permitted to continue to work in an irrespirable atmosphere with less than a three-minute supply.