

CONFINED SPACE ENTRY

Many serious injuries and fatalities occur in the work place that involves confined spaces. Generally, these incidents are the result of employees who disregarded instructions and failed to follow established safety precautions. Unfortunately, many accidents involve several people being injured or killed in the same incident.

A confined space may be generally defined as any area with limited means of egress that has an atmosphere deficient in oxygen and/or an accumulation of toxic or flammable gas or vapors. This includes bins, boilers, pits, process vessels, sewers, silos, tanks, vats and vaults. When it becomes necessary to enter a confined space, certain actions must be taken to insure the safety of all employees.

All personnel who must work in a confined space should be properly trained in the proper work procedures. If the established procedures are not regularly used in actual operations, periodic practice sessions should be undertaken.

Only those employees who are physically able to perform the work and use the equipment should be assigned duties in confined spaces. Employees who perform a job that requires a respirator should have a physical examination because the breathing resistance created by a respirator could cause employees with certain lung deficiencies to suffer a heart attack.

Determine, prior to entering a confined space, the nature of hazards that may be encountered there. It is vital to detect the level of any atmospheric contaminants present and to verify that an adequate supply of oxygen is available. Testing the conditions of the air can only be accomplished by using equipment specifically designed to measure the levels of the appropriate dust, mist, vapor, gas and oxygen contained in the confined space.

Information gathered from evaluating the potential exposure will dictate what personal protective equipment is needed. This could include respiratory protection, gloves, boots, clothing, ear/eye protection and a safety harness.

Care must be taken to insure that the controls for equipment associated with the confined space are made inoperable and are kept in that mode during the entire operation. This will include lockout-tagout procedures of any electrical controls and inserting blanks in any inlet piping to the area.

Only after the initial testing has been completed should approval be given to enter a confined area. The approval should be written and signed by the supervisor of the area, the person who did the initial testing and the supervisor of the person(s) entering the area. This is called an entry permit and it indicates what conditions are to be met before work may begin and what is required while the work is being performed. The entry permit documents the assigned responsibilities of each individual for the specific parts of the

program. (See sample entry permit.) The entry permit should be posted at the entry site and removed only after the job is completed. Several persons have key responsibilities in a confined space entry program; however, no one has a more important function than the standby watch. This person is responsible for maintaining constant watch or communication with the employee(s) in the confined space. Training for a watchperson should emphasize constant attentiveness and the proper procedures to follow if a problem should develop.

The work that is to be performed can change the atmospheric conditions within the confined space, and create additional hazards resulting in slips, falls, electrical shock, heat stress, etc. Consequently, continuous observation by another is necessary, as is periodic monitoring of the quality of the air and contaminant levels. Continuous mechanical ventilation is the most effective means to insure the quality of air in the confined space. The air flow will also aid in maintaining the worker's comfort and help avoid heat stress. Periodic rest breaks and ample liquids to replace those lost are important.

If an emergency occurs, the watchperson should activate an alarm to get prearranged rescue personnel to the area immediately. The necessary rescue equipment, including a captive air supply and retrieval gear, should be established during the information-gathering process before issuing the entry permit. The equipment should be on site before any personnel enter the confined space and should not be removed until the job is complete.

Rescue operations are recommended to be practiced periodically. Include in these practices procedures that have to be followed when an emergency occurs during unexpected entry into a confined space.

If there were an emergency where it is found necessary to evacuate the confined space, reentry should not be attempted until the cause of the problem has been found and corrected. Retest the confined space for oxygen and toxic contaminant levels.

All employees need to be aware of potential problems when entering any confined space. The efforts expended in altering, training, and developing a program of safe confined space entry for the employees will reduce the potential for a tragedy.

Specific entry procedures are detailed in the OSHA regulations and the National Institute for Occupational Safety and Health (NIOSH) publication, "Working on Confined Spaces", No. 80-106. This document is available from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.