The National Institute for Occupational Safety and Health (NIOSH)

Promoting productive workplaces through safety and health research

28 Year-Old Dies in Rescue Attempt in Drainage Pit In Illinois

FACE 8648

Introduction:

The National Institute for Occupational Safety and Health (NIOSH), Division of Safety Research (DSR) is currently conducting the Fatal Accident Circumstances and Epidemiology (FACE) Project, which is focusing primarily upon selected electrical-related and confined space-related fatalities. The purpose of the FACE program is to identify and rank factors that influence the risk of fatal injuries for selected employees.

On August 17, 1986, the owner of a sewer service company and three workman were in the process of cleaning out a 12 foot deep drainage pit when the accident occurred. The owner entered the pit and experienced euphoria within a few minutes and became incoherent. Two of the workers attempted rescue and were unsuccessful. One of the rescuers died.

Contacts/Activities:

The National Institute for Occupational Safety and Health (NIOSH), Division of Safety Research (DSR) was notified of this fatality by the Water Pollution Control Federation and technical assistance was requested by the National Association of Waste Transporters. This case has been included in the Fatal Accident Circumstances and Epidemiology (FACE) Project. On September 15 and 16, 1986, a research industrial hygienist and a medical officer met with the occupational safety and health administration compliance officer investigating this case, the county deputy chief medical examiner, the owner of the company (employer of the victim), and a representative of the metropolitan sewer district. A site visit was conducted and photographs were taken. Co-worker interviews were precluded because the owner of the company stated he was a one-man operation that picks up transient help when needed.

Overview of Employer's Safety Program:

The employer is a one-man sewer cleaning operation with absolutely no safety program. The owner has a pickup truck that he uses to transport a portable electrically-powered routing machine that is used to clean out sewer lines. The owner of the company generally works alone; however, when the job requires more than one person, he will pickup temporary unskilled workers from off the street. The victim had worked on a few small jobs for the employer before this job. No employee training or personal protective equipment was provided or "needed", according to the employer.

Synopsis of Events:

A sewer service company had been contracted to clean out a water run-off drainage pit (12 foot deep and 24 inches in diameter) and to unclog and clean out a drain line to the street. The drainage pit is located outside the delivery door of a metal window framing operation. The operation is basically a dry process; therefore, any drainage to the pit would consist of rain water, leaves, and debris from the roof and parking lot. A drain line from the drainage pit to the street was blocked shut by this debris and resulted in run-off water filling the 12 foot deep pit until it overflowed. The owner of the sewer service had worked on and off for two weeks in an attempt to drain the pit and unclog the drain line. Work was done in the evening or on weekends so that access to the delivery door could be maintained so that the business was not interrupted. on Sunday, August 17, 1986 (the day of the accident), the owner and three workers arrived at the site at approximately 10:30 a.m. This was the first day an this job for the victim and a 22 year-old worker. A fourth worker had worked on several different occasions for the owner. Upon arrival at the site, the owner opened the manhole cover to the drainage pit and went in, shimming down the concrete block walls. No ladder was provided for entry or exit. A rope tied to a bucket was used to remove liquid and sludge from the pit. The owner in the pit would fill the bucket and one of the workmen would pull it out, dump it, and return the bucket to the pit.

After filling and emptying the bucket approximately 20 times, the owner requested a beer and his cigarettes. He was handed a beer and his cigarettes and work proceeded. Within a few minutes, the owner, still in the pit, became euphoric – singing, praying, and stating, “This stuff Is really bad.” The 22 year-old noticed the owner was in trouble and decided to enter the drainage pit in a rescue attempt. An electric extension cord was tied around the chest of the 22 year-old worker and he was lowered into the pit. When he reached the bottom he tried to untie the cord but was unable to because he stated his fingers were numb. The victim pulled the 22 year-old out of the drainage pit and went in to assist the downed owner. The victim tried to lift the semi-conscious owner up the shaft, but was overcome and f ell down with the owner now on top of him. The fire department was summoned and arrived within ten minutes. Both workers were removed from the drainage pit. Both men were transported to a local hospital where the rescuer was pronounced dead. The owner was treated and released. The blood alcohol level for the rescuer (victim) was negative; however, the owner (survivor) had levels significantly above the state’s legal limit for intoxication.

Cause of Death:

Asphyxia due to oxygen deficiency.

Investigation Notes:

o Atmospheric tests done by the fire department revealed the 02 level to be less than 5% at the bottom of the pit on the day of the accident.

o During the site visit field evaluators observed that the manhole cover was off of the drainage pit and that the 12 foot deep pit was half full of water. Also, an extension cord had been run under the metal delivery door into the pit to supply electricity to a pump. The extension cord was below the water level. FACE field evaluators removed the extension cord from the pit to prevent a possible electrocution. No work wax being done on the day of the site visit.

Recommendations/Discussion:

Recommendation #1: The employer should develop a comprehensive safety program for confined space entry that clearly documents procedures for safe entry.

Discussion: All employees who work in or around confined spaces should be aware of potential hazards, possible emergencies, and specific procedures to be followed prior to entering a confined space. These procedures should include, but not be limited to:

1. Air quality testing to determine adequate 02 level.

2. Ventilation of the space to remove air contaminants.

3. Monitoring of the space to determine a safe oxygen level is maintained.

4. Employee training in confined space entry, testing, and use of personal protective equipment (respirators, clothing, etc.).

5. Emergency rescue procedures.

Air quality (02 level and C02 level) was not tested prior to entry. 02 and C02 testing devices should be ordered and used for testing the atmosphere. Training on correct use of these devices, plus calibration of each should be stressed. Respirator training, fitting, and proper maintenance procedures should be required of all employees.

Recommendation #2: Companies contracting to have a service performed on their property should implement and enforce a safety program to be followed by the contractor.

Discussion: The company that contracts out work to be performed on their property and assumes the contractor is an expert and adheres to safety procedures can be operating on a dubious assumption. Especially when hazardous tasks such as confined space entry are contracted out, outside contractors should be required to comply with a written safety policy that Includes safe work procedures. and these requirements should be enforced. For confined space entry, the recommendations in NIOSH Publication Mo. 80-106, “Working in Confined Spaces” should be used.

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Last Reviewed: November 18, 2015