May 30, 2006

Nebraska FACE Investigation NE 2004-44

SUBJECT:

Hispanic Carpet Laborer Overcome by Carbon Monoxide Fumes

SUMMARY:

The victim, a 25-year-old male carpet installer was part of a two-person crew installing carpets in a new residential home. Since electrical service had not yet been established they were using a gas-powered generator for power. Due to the extreme cold they did not open any windows or doors for ventilation. A neighbor noticed their work van was still at the house later in the evening and investigated. Upon finding the workers unconscious, he called emergency personnel. The victim was pronounced dead at the scene.

The Nebraska Workforce Development, Department of Labor's Investigator concluded that to help prevent future similar occurrences, employers should:

- **Instruct employees in the recognition and avoidance of unsafe condition(s) in his/her work environment.**

- **Establish an effective Written Injury Prevention Program & Safety Committee.**

PROGRAM OBJECTIVE:

The goal of the Fatality Assessment and Control Evaluation (FACE) workplace investigation is to prevent future work-related deaths or injuries, by a study of the working environment, the worker, the task the worker was performing, the tools the worker was using, and the role of management in controlling how these factors interact.

This report is generated and distributed **solely** for the purpose of providing current, relevant education to employers, their employees and the community on methods to prevent occupational fatalities and injuries.

INTRODUCTION:

On December 30, 2004, at approximately 10:30 p.m., a 25-year-old Hispanic male carpet installer died after he inhaled carbon monoxide fumes. The Nebraska Department of Labor received notice of the fatality on January 3, 2005, from the investigating OSHA Compliance Officer (CSHO). The FACE Investigator met with the CSHO on January 6, 2005 and April 17, 2006. Attempts to meet with the company owner were negative.

The victim's employer was a self-employed carpet installer, doing both residential and commercial work (SIC Code 1752/NAICS 23552). It could not be determined how long the company had been in business. At the time of the incident the company employed one full-time employee, the victim.

The company had no known previous history of employee fatalities.

INVESTIGATION:

Personnel:

Victim: The victim was a 25-year-old male Hispanic from Honduras. He was hired by this company as a laborer/installer approximately 3 months prior to the incident when he arrived in the United States. He did not speak English.

Training: The General Contractor (GC) did not provide any type of training to the victim's employer, who spoke very broken English. He assumed the employer and victim knew how to safely use a gas powered generator. The employer told the CSHO he had used one once approximately 10 years ago in Texas, but none since then. The employer did not provide any safety-related training to the victim.

Equipment: The gas powered generator was owned by the General Contractor. It was an MQ Multiquip 6000 GA6HZR. The age of the generator is unknown.

ANALYSIS/SYNOPSIS:

At 8:53 p.m. on May 22, 2004, a rural Nebraska farming community with a population of 309 was devastated by a tornado. The tornado was rated at f4 on the Fajita damage scale and was over 2 ½ miles wide. Over 95% of the homes and businesses were either destroyed or severely damaged. Public utility services were also disrupted for several weeks.

The GC was hired by a family to oversee installation of a new modular house on the residential site where their previous house had stood before it was destroyed by the tornado. At the time of the incident, December 30, 2004, the basement and foundation had been completed and the house set on top, but no electrical service was connected. Various independent sub-contractors had been hired by the GC to finish off the house. The victim's employer had worked for the GC before. On this job he was hired to install carpet.

On December 30, 2004, a crew of electricians and heating & air conditioning (HVAC) personnel were working on the house during the morning hours. Although the trench had been dug for the electrical wire from the power pole to the house, the electrical service had not been hooked up, so subcontractors were using the GC's generator to power their tools. The carpenters were building steps to the basement so the HVAC crew could install and connect the ductwork. Due to the extreme cold conditions, heat was provided by a propane heater in the unfinished full basement. After their work was completed, they moved the generator inside to prevent its theft, shut off the heater and left. On "stick-built" house construction sites the electrical service is normally hooked up by the time the carpet layers arrive.

The victim and his employer arrived at the house shortly after 12:30 p.m. and began laying out the new carpet and making the rough cuts. Sometime between 2:30 p.m. and 3:00 p.m. the GC stopped by the house and spoke with both workers. He stated that at that time the generator was inside the house but was not running.

As time passed it started getting darker inside the house and the victim or his employee started the generator. It was going to be used for interior lights and to run the seaming iron. As their work continued, the employer went outside a couple different times to get supplies and the last time to return the seaming tool. The generator was still being used to provide interior lighting so they could finish stretching the carpet.

A nearby neighbor had seen the workers at the house earlier in the afternoon. At approximately 10:30 p.m. he noticed their van still at the house which was dark inside. He went over to the house to investigate. Upon entering he heard what he thought was a fan running. As he went further into the house, he discovered the two workers lying on the living room floor. The sound he heard was the employer's labored breathing. Emergency personnel were called. The victim was pronounced dead at the scene and the employer was taken to a hospital where he fully recovered.

Investigation by the CSHO and local law enforcement personnel determined that all of the windows upstairs were closed. One of the basement windows had not fit correctly when installed and had been removed. The hole had been covered with cardboard, which possibly allowed small amounts of fresh air into the basement. It is believed that the employer survived because he had made several trips outside of the house to the van, thereby breathing fresh air for a few minutes before reentering the structure. The generator was found to have all switches in the ON position with gas remaining, but it was not running when the neighbor entered the house. It is believed it shut down due to lack of oxygen.

CAUSE OF DEATH:

According to the death certificate, the cause of death was: *Acute carbon monoxide intoxication*.

RECOMMENDATIONS/DISCUSSION:

- **Recommendation #1: Instruct employees in the recognition and avoidance of unsafe condition(s) in his/her work environment.**

  Discussion: The employer did not instruct the victim of the hazards associated with the use of a gasoline powered generator producing carbon monoxide inside the house. "The employer shall instruct each employee in the recognition and avoidance of unsafe conditions and the regulations applicable to his work environment to control or eliminate any hazards or other exposure to illness or injury."

  Ref: Code of Federal Regulations 1926, General Construction, para. 1926.21(b)(2)

Employers should instruct workers never to use gas generators indoors due to the potential of lethal carbon monoxide build up. It is best to wait for temporary or permanent electrical connections to be installed.

If a gas powered generator must be utilized inside a structure, adequate ventilation must be obtained. This may be accomplished through either open windows, doors, fans, etc. or a combination thereof. The work area must be constantly monitored with an approved carbon monoxide testing device. As soon as the assigned task is completed or electrical service is provided, remove the generator to an outside location. If the generator had been placed outside while running chances are this incident would not have occurred

Carbon monoxide is one of the most dangerous industrial hazards and one of the most widespread, killing an estimated 2,000 persons each year. Carbon monoxide is an invisible, odorless gas which normally gives no warning to its victims. The chief source, as in this case, is the incomplete burning of anything containing carbon, i.e. gasoline. Although slightly lighter than oxygen, given the right atmospheric and enclosure conditions it can accumulate very rapidly. Once inhaled, the gas poisons by displacing oxygen in the blood. Oxygen from the lungs is carried through the body by the blood's hemoglobin. When carbon monoxide is inhaled, the hemoglobin grabs the poison first, passing over the available oxygen. Without oxygen moving through the bloodstream, the individual suffocates. Large amounts of carbon monoxide in the air can kill a worker within minutes.

Ref: OSHA pamphlet 2224 titled: Carbon Monoxide

- **Recommendation #2: Establish an effective Written Injury Prevention Program & Safety Committee.**

Discussion: Although not required by Federal law, the State of Nebraska does require each company that carries Worker's Compensation insurance on their employees to have an effective Written Injury Prevention Program and formal Safety Committee.

When Legislative Bill 757 was adopted in 1993 it mandated that employers develop an effective written injury prevention plan that addresses all work sites and all classes of workers. Programs required include, but are not limited to, *Emergency Action Plan*, *Fire Prevention Plan*, *Confined Space Program*, *Lock-Out/Tagout*, etc. Each program shall approach each category of workplace danger with the intention of totally preventing workplace injuries where feasible.

A Safety Committee shall consist of equal membership representing management and employees. The purpose of the committee is to bring employees and employers together in a non-adversarial, cooperative effort to promote safety at each worksite. They shall meet every three months at a minimum and maintain records of each meeting.

Assistance to develop these programs is available free of charge through the Nebraska Workforce Development's Department of Labor Voluntary On-Site Consultation Program in Lincoln. A copy of their brochure will be sent to the employer.

Ref: Nebraska Workers' Compensation Reform (LB 757), Title 230, chapter 6.

ATTACHMENTS:

Attachment 1. Photo of the gas generator sitting inside the house taken shortly after discovery of the workers.

KEY WORDS: Hispanic, Construction, Confined Space

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Attachment 1. Photo of gas generator sitting inside of house taken shortly after workers were discovered.