The National Institute for Occupational Safety and Health (NIOSH)

Promoting productive workplaces through safety and health research

Plumber Falls to His Death Through a Roof opening

FACE 8806

INTRODUCTION

The National Institute for Occupational Safety and Health (NIOSH), Division of Safety Research (DSR), performs Fatal Accident Circumstances and Epidemiology (FACE) investigations when a participating state reports an occupational fatality and requests technical assistance. The goal of these evaluations is to prevent fatal work injuries in the future by studying: the working environment, the worker, the task the worker was performing, the tools the worker was using, the energy exchange resulting in fatal injury, and the role of management in controlling how these factors interact.

On October 30, 1987, a 24-year-old plumber died when he fell 22 feet through a skylight opening to a concrete floor.

CONTACTS/ACTIVITIES

State Occupational Safety and Health Administration (OSHA) officials notified DSR concerning this fatality and requested technical assistance. On December 10, 1987, a DSR research team conducted a site visit, met with employer representatives and co-workers, and photographed the incident site.

OVERVIEW OF EMPLOYER'S SAFETY PROGRAM

The victim was employed as a plumber by a construction company which employs 50 workers. The employer has a written safety program and the victim had received both written and verbal safety instruction. The victim had worked for the company for approximately 6 months at the time of the incident.

SYNOPSIS OF EVENTS

On the day of the incident, the victim was working as a member of a crew installing various plumbing fixtures/fittings on the 36,000-square-foot roof of a new building. The victim had been working on this project for several days. The incident occurred near the end of the work day, after the victim had been on the job for 7 1/2 hours.

Numerous 4-foot-square openings, framed by 2- by 6-inch material, were present in the roof. These openings were to be used for installing "fire dome"–type skylights. No guards were present around these skylight openings, nor was any fall protection provided underneath the openings.

At the time of the incident, the victim and a co-worker were discussing the relocation of a fixture on the roof. The victim was walking away from his co-worker while looking back over his shoulder to talk. He stepped into one of the skylight openings and fell approximately 22 feet to the concrete floor below, striking his head, neck, and shoulders.

Emergency medical service (EMS) personnel were called to the scene and arrived approximately 15 minutes after the fall occurred. Medical care was provided both at the scene of the incident and while the victim was being transported to a nearby hospital. The victim was pronounced dead at the hospital approximately 1 hour and 20 minutes after the incident.

CAUSE OF DEATH

The medical examiner ruled that death was due to multiple traumatic injuries.

RECOMMENDATIONS/DISCUSSION

Recommendation #1: Employers should provide a level of guarding and/or fall protection around all roof openings that is equivalent to requirements specified by OSHA 29 CFR 1926.500 (b)(4).

Discussion: A guardrail, as required by OSHA 29 CFR 1926.500(b)(4), could have prevented the fall. In instances where the use of a standard guardrail is not practical for the type of work, an alternative form of fall protection, such as safety nets, catch platforms, etc., should be used. Construction which utilizes large numbers of skylight openings is becoming more commonplace. Consequently, numerous openings can be present on roofs during construction activities. As this type of building design increases, the potential for falls continues to grow. Guarding and/or fall protection must be utilized during the construction process, otherwise an increase in this type of incident is to be expected.

Recommendation #2: Employers should periodically monitor worksites to evaluate field compliance with company safety rules and procedures.

Discussion: While the company had a written safety program, field compliance was inadequate to protect the victim from the worksite hazards. A safety program, no matter how detailed or comprehensive, cannot be effective unless it is implemented at the worksite.

Recommendation #3: Employers should perform job hazard analyses to identify the hazards to be encountered by their employees and to develop hazard control measures for the jobsite.

Discussion: A job hazard analysis is one method of identifying the hazards associated with performing a job. Failure to adequately identify and control these hazards results in unnecessary employee exposure to harmful and potentially fatal energy sources.

Recommendation #4: Employers should utilize the job hazard analysis as a tool for training employees on the hazards associated with specific jobs and on the measures the employer intends to use to control these hazards.

Discussion: General training on company safety procedures should be supplemented by training on hazards known to exist during a specific job. Such training can make employees aware of the hazards to which they are exposed. At the same time, employees can be shown the measures which are to be taken for their protection. The job hazard analysis, through its breakdown of a job into specific steps, the hazards associated with each step, and the measures planned to control the hazards, provides an ideal means to relay this information to employees.

Return to In-house FACE reports

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