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PUBLIC HEALTH SERVICE/CDC/NIOSH/DSR
FACE-98-08

TO: **Director, National Institute for Occupational Safety and Health**

FROM: **Division of Safety Research, NIOSH**

SUBJECT: **Scaffold Erector Dies After Falling 60 Feet From Scaffold Inside Boiler--South Carolina**

SUMMARY

A 24-year-old male scaffold erector (the victim) died after falling from a 60-foot-high scaffold that had been erected inside a co-generation boiler at a paper-manufacturing plant. The victim was one of eight workers erecting a steel-tubular scaffold inside a co-generation boiler that was to undergo a 3-day service. The scaffold had been erected to a height of 60 feet inside the boiler. The victim and a foreman were at the top of the scaffold and had just finished erecting the sides of the final stage. The foreman instructed the victim to climb down to the next stage with him to get sufficient steel-deck flooring to finish the floor of the final stage. The foreman climbed down the scaffold members to the next stage, then heard a rush of air and turned to see the victim fall from the scaffold to the steel floor of the boiler. Plant personnel summoned the emergency medical service (EMS). Upon arrival at the scene, the EMS personnel summoned the county coroner who pronounced the victim dead at the scene. NIOSH investigators determined that, to prevent similar incidents, employers should:

- ***provide appropriate fall protection to employees and ensure its use***
- ***train employees in the recognition and control of fall hazards and ensure that employees understand their training***
- ***perform a hazard evaluation at each work site before any work is initiated.***

INTRODUCTION

On March 21, 1998, a 24-year-old male scaffold erector (the victim) died after falling 60 feet from a scaffold that had been erected inside a boiler. On March 23, 1998, officials of the South Carolina Occupational Safety and Health Administration (SCOSHA) notified the Division of Safety Research (DSR) of the fatality, and requested

technical assistance. On April 16, 1998, a DSR occupational safety and health specialist conducted an investigation of the incident. The incident was reviewed with employer representatives and the SCOSHA compliance officer assigned to the case. The coroner and medical examiner's reports were requested during the investigation.

The employer was a scaffold erecting firm that had been in operation 11 years and employed 10 workers. The company had a written safety policy and written general safety rules that included rules regarding fall prevention (use of fall protection equipment, proper footwear, etc.). There are no OSHA regulations requiring the use of fall protection equipment during the erection or dismantling of scaffolding, and none was worn by the workers or foremen in this incident. Training was accomplished on the job, and safety meetings were conducted at the job site as deemed necessary by the supervisor. The victim had worked for the employer for slightly over a year and had never been disciplined for safety reasons. The Spanish-speaking crew of six erectors were not fluent in the English language, and the foremen did not speak Spanish. The SCOSHA compliance officer had to obtain the services of an interpreter to interview the men. It could not be clearly determined if the men could fully understand the directions or the training they were receiving. While being interviewed, the crew merely nodded or uttered one-work responses. This was the first fatality experienced by the employer.

INVESTIGATION

The employer had been contracted by a paper-manufacturing plant to erect a tubular steel scaffold inside the plant's 60-foot-high co-generation boiler during a planned maintenance outage. Refuse tree bark and wood chips were incinerated in the co-generation boiler, which provided the paper plant with heat and power. During the outage, plant employees would clean the interior of the boiler by scraping down the sides, using the scaffold for access. The employer was contracted only to erect the scaffold. Plant employees would perform the cleaning operations, although two erectors would remain on site during the outage in case maintenance or other repair work needed to be performed on the scaffold.

A crew consisting of six erectors and two foremen were dispatched to the plant to erect the scaffold. The men began the job at 11:00 a.m. and continued working throughout the day. At 5:00 p.m., with approximately 45 minutes of work remaining, the victim was working with one of the foremen on the sides of the last (top) stage of the scaffold. After completing the sides, the foreman instructed the victim to climb down one stage with him to get materials to finish the floor of the final stage. Neither the foreman or victim were utilizing any form of fall protection.

The foreman climbed down the scaffold members to the next stage, then heard a rush of air and turned to see the victim falling from the scaffold. The victim made no sound and did not call out for help.

The second foreman was crawling on his stomach into the boiler through the boiler door when he saw the victim hit the boiler's steel floor. The foreman instructed plant personnel to summon the emergency medical squad (EMS). Due to the extent of the victim's injuries, no first aid was attempted. EMS personnel arrived and summoned the county coroner, who pronounced the victim dead at the scene.

CAUSE OF DEATH

The county coroner listed blunt force trauma to the head as the cause of death.

RECOMMENDATIONS/DISCUSSION

Recommendation #1: Employers should provide appropriate fall protection to employees and ensure its use.

Discussion: There are no OHSA standards that address fall protection during scaffold erection and none was used by the erectors, or required by the employer in this incident; however, employers should provide employees exposed to fall hazards the safest possible work environment. Although standard fall-protection means, such as a body harness and lanyard, could have been worn during movement from stage to stage, the lanyard may have gotten in the way while lifting and turning the scaffold components, and may have presented a hazard in and of itself. Traditional fall protection is more effective when the employee is stationary and tied onto a structure. It is recommended that other methods of fall protection be used that protect employees while they are moving as well as when stationary. Employees could be equipped with two lanyards so that while moving from point to point, one lanyard will be connected at all times. If these types of fall protection are not feasible, safety nets could be installed at the worksite in accordance with 29 CFR 1926.105(a)which states that safety nets shall be provided when workplaces are more than 25 feet above the ground where the use of ladders, scaffolds, catch platforms, temporary floors, safety lines, or safety belts is impractical.

Recommendation #2: Employers should train employees in the recognition and control of fall hazards and ensure that employees understand their training.

Discussion: Employers are required by 29 CFR 1926.21 (b)(2)to instruct each employee in the recognition and avoidance of unsafe conditions, and to control or eliminate any hazards or other exposures to illness or injury. Employers need to provide training that ensures that employees understand existing hazards and how to properly protect themselves. The employees in this incident were Spanish speaking and it could not be determined by the OSHA compliance officer, even through an interpreter, whether or not they understood the training or work instructions they received, due to the vague answers they gave while being interviewed. Employers should ensure that employees understand any material necessary to do their job in the safest possible manner. This may entail the use of an interpreter, and having safe work procedures printed in different languages.

Recommendation #3: Employers should perform a hazard evaluation at each work site before any work is initiated.

Discussion: The employer should identify all potential hazards at a work site. Job hazard analysis consists of analyzing the sequential steps in routine operations to identify potential hazards, and attempting to develop procedures or other control measures which effectively eliminate or reduce the hazards. Additionally, each specific job involves hazards particular to that job or working environment. Therefore, employers should conduct a job-site survey, identify all hazards, and implement appropriate control measures prior to starting a job. A job-site survey in this instance would have identified the fall hazard associated with working at elevations without personal protective equipment. Standard safe operating procedures regarding the proper use of fall protection during scaffold erection could then be developed. Both job hazard analysis and pre-job survey techniques can be effectively used to train workers in hazard identification and appropriate control measures.

REFERENCES

Code of Federal Regulations 29 CFR 1926, 1997 edition. U.S. Government Printing Office, Office of the Federal Register, Washington DC.

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Fatality Assessment and Control Evaluation (FACE) Project

The National Institute for Occupational Safety and Health (NIOSH), Division of Safety Research (DSR), performs Fatality Assessment and Control Evaluation (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.

States participating in this study: North Carolina, Ohio, Pennsylvania, South Carolina, Tennessee, and Virginia.

Additional information regarding this report is available from:

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