



The National Institute for Occupational Safety and Health (NIOSH)

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Ironworker Foreman Dies Following a 37-foot Fall Through Platform Opening in Indiana

FACE 9015

SUMMARY

An ironworker foreman died after falling 37 feet from a steel grating platform. This incident occurred as the foreman and his crew of four ironworkers were installing foundry process equipment from the platform. Running vertically through the platform was an 8-foot-diameter vent stack. The platform had been installed with a 12-inch annular space between the vent stack and the grating in anticipation of placing insulation material around the vent stack. The foreman was standing approximately 1 foot away from the annular space with his back to the vent stack giving task-related instructions to his crew. After giving the instructions, he stepped backwards and fell through the annular space, landing on the concrete floor 37 feet below. NIOSH investigators concluded that, in order to prevent future similar occurrences, employers and employees must:

- **guard floor openings with a railing or a floor opening cover secured against displacement**
- **conduct a hazard analysis before each job and implement appropriate controls.**

INTRODUCTION

On September 12, 1989, a 46-year-old male ironworker foreman (the victim) died after he fell 37 feet from an industrial building platform. On November 2, 1989, officials of the Occupational Safety and Health program from the State of Indiana (State OSHA) notified the Division of Safety Research (DSR) of the death and requested technical assistance. On December 7, 1989, a research industrial hygienist from DSR traveled to the incident site to conduct an investigation. The DSR investigator reviewed the incident with company representatives and State OSHA personnel, and obtained photographs and diagrams of the incident site.

The employer in this incident is an industrial building construction company that employs an average of 1500 workers. Most of the employees are ironworkers, carpenters, electricians, pipefitters, boilermakers, and laborers hired through their respective local union halls. The victim had a total of 10 years' experience as an ironworker and had been employed by the company for 12 months as an ironworker foreman. The company has a corporate-level, full-time safety manager and written safety requirements specifying procedures concerning the use of fall protection equipment and fall prevention methods. The general foreman at each construction site is responsible for jobsite safety issues and "tailgate" safety meetings, which are conducted weekly.

INVESTIGATION

The employer had been contracted to construct an industrial vacuum degassing building for a foundry. The work included the installation of vacuum degassing process machinery and equipment. Approximately 150 construction workers were employed on site to complete this project. The project, which had been under construction for about 12 months, was nearing completion. The building structure had been completed and most of the equipment had been installed. According to company representatives, workers were using appropriate fall protection equipment during this period of construction. The victim had been supervising a crew of 4 ironworkers who were assigned to finish installing equipment 37 feet above the ground floor on a permanently installed steel grating platform. The edge of the platform was surrounded by a steel railing 3 1/2 feet high. An 8-foot-diameter vent stack ran vertically through the center of the platform (Figure). The platform had been installed with a 12-inch annular space between the vent stack and the grating in anticipation of placing insulation material around the vent stack. The annular space was not protected with a temporary cover or railing because the victim did not consider it large enough for a worker to fall completely through. However, the platform opening was built with a 4-inch vertical lip (toeboard) around the edge.

The crew had been at work for about 1 hour on the morning of the incident. Standing on the platform with his back to the vent stack (and approximately 1 foot away from the annular space), the victim began giving task-related instructions to the crew. After giving instructions to the workers, the victim turned slightly while stepping backwards and fell through the annular space to the concrete floor 37 feet below. The foundry emergency medical service (EMS) was immediately notified, and arrived at the site within 3 minutes, administered emergency medical care to the victim (who was still breathing), and transported him by ambulance to a local hospital where he died 1 hour later.

CAUSE OF DEATH

The coroner listed the cause of death as skull fracture.

RECOMMENDATIONS/DISCUSSION

Recommendation #1: Platform and floor openings large enough for workers to fall through should be adequately guarded.

Discussion: The employer should implement 29 CFR 1926.500(b)(1) and (8), which require that all floor and platform openings be protected with a standard railing or a floor opening cover secured against displacement. Although the annular space in the platform was only 12 inches wide, it was, nevertheless, a "floor opening" (according to 29 CFR 1926.502(b)). The platform opening did have a toeboard. However, a standard railing or floor opening cover should also be installed to comply with the aforementioned standards. At the time of the incident, the platform had another unprotected opening near the vent stack (triangular in shape, measuring approximately 2 1/2 feet by 4 feet). This opening was not protected at the time of the incident because it was being used for hoisting equipment and materials. Even though the victim did not fall through this opening, it did pose a hazard to workers in the area and therefore should have been guarded.

Recommendation #2: Hazard analysis should be included as an ongoing part of each construction phase.

Discussion: Before starting each phase of the construction, each crew foreman should identify and review the potential hazards with his crew and discuss how to control the hazards and how the work can be done safely. These discussions should include information on hazards in the immediate work area as well as information on the activities of other work crews on the site that could create additional hazards for workers. Such a procedure might have identified the floor openings as hazards such that corrective action to guard the openings could have been taken.

REFERENCES

1. Office of the Federal Register Code of Federal Regulations, Labor 29CFR Part 1926. U.S. Department of Labor, Occupational Safety and Health Administration, Washington, D.C. 1989.

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