DATE: March 6, 1998

FROM: Minnesota Fatality Assessment and Control Evaluation (MN FACE) Program Minnesota Department of Health

SUBJECT: MN FACE Investigation 98MN00401
Worker Dies After Crane Tips Into Holding Pond

SUMMARY

A 49-year-old worker (victim) suffocated after the crane he was operating tipped into a holding pond at a secondary waste water treatment plant. On the day of the incident, workers used a crane to dredge sludge from a holding pond. The crane was equipped with a bucket that was used for excavating solid materials. The crane was also equipped with a locking device that allows the bucket to be operated but prevents the crane from moving. The locking device was not set at the time of the incident. The victim had extended the boom and bucket and started dredging when the crane rolled over the edge of the roadway and into the pond. Another worker placed a 911 call to emergency personnel who arrived shortly after being called and pronounced the victim dead at the scene.

MN FACE investigators concluded that, in order to reduce the likelihood of similar occurrences, the following guidelines should be followed:

- ensure that workers follow established safe-work practices;
- manufacturers should design cranes with an interlock which would prevent the boom from being operated unless the locking device was set; and
- employers should design, develop, and implement a comprehensive safety program.

INTRODUCTION

On January 26, 1998, MN FACE investigators were notified of a work-related fatal incident that occurred on June 24, 1997. The victim worked for a construction company. An interview with the employer was not conducted. During MN FACE investigations, incident information is obtained from a variety of sources such as law enforcement agencies, county coroners and medical examiners, employers, coworkers and family members.

INVESTIGATION

On the day of the incident workers were emptying a holding pond at a secondary waste water treatment plant. The construction company the victim worked for had been contracted to remove the sludge from the holding pond so the holding pond could be reused. The victim had been operating a crane that was used to dredge the holding pond. The sludge that was removed with the crane was then loaded into trucks with a back-hoe and hauled away.

The victim's job was to operate the crane which was equipped with a boom and a bucket. When the crane was used for dredging the bucket was let out to the end of the boom, dropped, and pulled back to the machine by means of cables. The crane was also equipped with a locking device that allowed the bucket to be operated, but prevented the crane from moving by locking the crane's tracks. A coworker of the victim had reported that earlier in the day the locking device had been working while he operated the crane. Apparently, before the victim extended the boom and bucket into the pond, he failed to set the locking device to prevent the crane from rolling on its tracks.

At the time of the incident, the victim had driven the crane to the end of a roadway that had been built for it and positioned it for operation. He swung the boom out and had started to drag the bucket in when the crane began to move forward. The victim stood up in the cab just before the crane rolled forward and off the end of the roadway. Witnesses stated the tracks of the crane were turning when it rolled forward. On the morning of the incident, a coworker of the victim had tested the locking device on the crane and it had been working. The standard procedure was to move the crane to the work area, engage the locking device, and then operate the boom. In this incident, because the locking device was not engaged, the resistance of the full bucket in the sludge caused the crane to be pulled forward off the roadway and into the holding pond. Several workers in the area witnessed the incident and a 911 call to emergency rescue personnel was immediately placed. Rescue workers responded shortly after being called, but it took them approximately 30 minutes to remove the victim from the overturned crane that was completely submerged in the sludge. The victim was pronounced dead at the scene.

CAUSE OF DEATH

The cause of death listed on the death certificate was asphyxiation.

RECOMMENDATIONS/DISCUSSION

Recommendation #1: Employers should ensure that workers follow established safe-work procedures.

Discussion: Workers were trained to operate the boom only after the track locking device on the crane tracks had been engaged. Locking the tracks may have prevented the resistance of the full bucket in the sludge from pulling the crane forward off the roadway. Had the established procedures been followed in this instance, this fatality may have been prevented.

Recommendation #2: Manufacturers should design cranes with an interlock which would prevent the boom from being operated unless the locking device was set.

Discussion: Mobile cranes, such as the one in this case can be moved on tracks to a desired location at a worksite before being operated. After a mobile crane is positioned for operation, it becomes a stationary piece of equipment, and the tracks should be locked at all times while the boom is being operated. If the tracks are not locked while the boom is operated the crane may roll on its track due to the resistance of the load against the crane. In this incident, if the crane had been equipped with an interlock that prevented the boom from operating if the tracks wre not locked, this fatality may have been prevented.

Recommendation #3: Employers should design,develop, and implement a comprehensive safety program.

Discussion: Employers should ensure that all employees are trained to recognize and avoid hazardous work conditions. A comprehensive safety program should address all aspects of safety related to specific tasks that employees are required to perform. OSHA Standard 1926.21(b)(2) requires employers to "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." Safety rules, regulations, and procedures should include the recognition and elimination of hazards associated with tasks performed by employees.

REFERENCES

1. Office of the Federal Register: Code of Federal Regulations, Labor, 29 CFR part 1926.21 (b)(2) U.S. Department of Labor, Occupational Safety and Health Administration, Washington, D.C., July 1, 1994.

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