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TO: Director, National Institute for Occupational Safety and Health

FROM: California Fatality Assessment and Control Evaluation (FACE) Program

SUBJECT: Equipment operator dies after being crushed by a beam during a demolition operation in California.

SUMMARY**California FACE Report #92CA010
April 15, 1993**

A 27-year-old Hispanic male Equipment Operator (victim) died after being crushed by a wooden beam and falling approximately 20-30 feet from a bucket (4 in 1 bucket with a 2 yd. capacity), which was being elevated by a front-end loader in a demolition operation. The victim had just removed several bolts from a wooden beam when the incident occurred. There were two different scenarios given after the incident occurred. First, according to the front-end loader operator, after the bolts had been removed the beam shifted approximately 18 inches pinning the victim and a co-worker in the bucket. Second, according to the co-worker (injured employee in the bucket), the front-end loader operator moved the bucket forward into the beam, rather than down to the ground after the bolts had been loosened. The victim then either fell over the side (operator's statement) of the bucket or out the bottom (injured co-workers' statement) of the bucket when it was opened by the operator. Paramedics were called to the scene and administered cardiopulmonary resuscitation to the victim. The California FACE investigator concluded that, in order to prevent similar occurrences, employers should:

- provide a safe way to lift employees off the ground without risk of being injured by objects in their work area.
- have an experienced operator lift employees when doing this type of work.
- have power controls on the elevated platforms and vehicles so that the workers who are up at such heights may also control their movements.

INTRODUCTION

On May 9, 1992, a 27-year-old Hispanic male equipment operator died after being crushed by a wooden beam and falling 20-30 feet to the ground below. On May 16, 1992, the FACE investigator was notified by the California Occupational Health and Safety Administration (Cal/OSHA) Office. The demolition operation had already been completed at the time of notification so a onsite investigation was not conducted. The California FACE investigator attempted to contact the employer in the incident to conduct an interview, but was informed by their attorney that he (the attorney) would be responding to all questions with regard to the incident.

After consultation with California Department of Health Services, the California FACE investigator prepared this report based on information collected by the Cal/OSHA Investigator, the Coroner's Autopsy Report, and the police report. The company had a safety officer (foreman) and a written safety program at the incident site.

INVESTIGATION

A 27-year-old Hispanic male equipment operator (victim) died while doing demolition work at a large concrete-block structure that had been an auto dealership. The roof had been supported by laminated-wood beams secured to the block walls. At the front of the structure there were three sets of concrete block columns each supporting wood-laminated beams. Each set consisted of three columns with a beam across all three and bolted to the top of each column. Each column was approximately 3 feet square and 20 feet high. The beam extended approximately 9 feet beyond the edge of each side column. The first two sets of columns and beams on the street side of the property had been removed. On these two sets, an elevated work platform had been used to elevate employees in order to remove the bolts which secured the beams to the columns. The elevated work platform had been taken to another site and was not on the property.

The foreman thought that rather than have the employees work from ladders, which he felt was unsafe, he would raise them in the bucket of a front-end loader. The front-end loader was a Dresser International. The bucket was known as a 4-in-1 bucket with a 2 yard capacity. It was a two-piece bucket hinged at the top, with the forward section of the bucket moving hydraulically so that it opened at the bottom with a clam-shell effect. The foreman was operating the loader and two employees were in the bucket as it was elevated alongside the top of a column next to the beam. An employee in the bucket was directing the operator.

According to the foreman, as the last bolt was being removed, the beam shifted approximately 18 inches toward the employees in the bucket. As it shifted, the beam momentarily pinned the employees to the edge of the bucket. The foreman stated that the beam was against their

backs. The victim (deceased) signaled the foreman to lower the bucket, which he did. The victim then fell from the bucket to the ground below. The foreman stated to police that the bottom of the bucket was open when the victim fell, however later when interviewed by the Cal/OSHA investigator the foreman stated that the victim had fallen over the side of the bucket. Two witnesses told police that the victim had fallen through the open bottom of the bucket. When interviewed later by the Cal/OSHA investigator, the witnesses stated that they were in another part of the building and did not witness the victim's fall.

The day after the incident the injured co-worker in this incident stated to the police dept., that he and the victim had been raised up in the bucket by the foreman to remove the bolts. The foreman was then to lower them to the ground before using the bucket to grab the beam and remove it from the structure. The injured employee stated that the foreman caused the bucket to move forward pinning them both against the beam. He also stated that the beam did not shift towards the bucket, and that after he and the victim had been pinned against the beam, the foreman opened the bottom of the bucket and the victim fell to the ground. He said that he managed to hold on to the bucket until it was lowered to the ground. The injured employee suffered injuries to his chest, back, and neck and was hospitalized for three days.

CAUSE OF DEATH

The Sheriff/Coroner's Autopsy Report stated that the Cause of Death was bilateral pneumothorax with thoracic cord transection due to crushing chest injuries and blunt force trauma.

RECOMMENDATIONS/DISCUSSION

Recommendation #1: Employers should provide a safe way to lift employees off the ground without the risk of them being injured by objects in their work area.

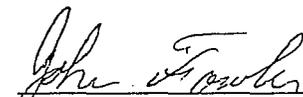
Discussion: In this incident scaffolding had been provided to remove the bolts from the beams on the other side of the building. It was not made clear why the scaffolds were removed from the site. Under Title 8 of the California Code of Regulations section 1637 (a) employers should provide scaffolds for all work that cannot be done by employees standing on permanent or solid construction at least 20 inches wide, except where such work can be safely done from ladders.

Recommendation 2: Employers should have an experienced operator lift employees when doing this type of work.

Discussion: It was not known whether the operator in this incident had received proper training before the incident occurred. However, employers should always provide training for employees who work with motorized equipment.

Recommendation 3: Employers should have power controls on all elevated platforms and vehicles so that the workers who are up at such heights may also control their movements.

Discussion: This would be helpful in preventing incidents where the machine operator has a problem with the controls on a vehicle. Management would have to be instrumental in the design of such controls so that work would be both efficient as well as safe for workers.



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