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Massachusetts Maintenance Man Dies When Crushed Beneath Container Box of Dump Truck

Massachusetts Investigation 94-MA-069-01

Release Date: November 2, 1995

SUMMARY

On November 07, 1994, a 26 year old maintenance man working for a family-owned street sweeping company died when he was crushed between the frame and container box of a dump truck. When the truck box failed to lift completely, the victim's employer, who was also his father, requested that he check and fill the hydraulic fluid level in the problematic truck. The employer then left the worksite. The victim proceeded with the task, apparently removing the plug from the hydraulic drainage/exhaust housing causing the remaining hydraulic fluid to escape and the unblocked container box to fall. The employer returned approximately one hour later and found his son pinned between the truck's container box and frame. He summoned emergency medical services immediately, and then used a company owned backhoe to raise the container box from his son. As he placed the victim on the ground, municipal fire department personnel arrived and began emergency medical treatment. The victim was transported to an area hospital where he was officially pronounced dead approximately forty minutes following his discovery. The MA FACE Field Investigator concluded, that to prevent similar future occurrences, employers should:

- ensure that elevated parts of heavy equipment are suitably blocked from movement while being serviced
- develop, implement, and enforce a comprehensive safety program that includes, but is not limited to, worker training in controlling the health and safety hazards of heavy equipment maintenance

In addition,

- hydraulic system manufacturers should consider engineering safeguard systems that will prevent worker exposure to hazardous conditions while maintaining the equipment

INTRODUCTION

On November 10, 1994, the MA FACE Program was informed by the Massachusetts Department of Labor and Industries, that a 26 year old maintenance man had died of crushing injuries on November 07, 1994. An investigation was immediately initiated.

On December 05, 1994, the MA FACE Program Field Investigator travelled to the incident region to interview the victim's father and assess the vehicle. The police report, death certificate and newspaper clippings were obtained during the course of the investigation.

The employer was a seasonal street sweeping company which had been in business over 17 years. It did not have a designated safety person, offer training programs or have any comprehensive written safety rules or policies in place at the time of the incident. It employed an average of five persons during the street sweeping season on an as needed basis.

The victim was the employer's 26 year old son who had worked for the company on a seasonal basis for approximately five years. His primary functions included, but were not limited to, the operation of street sweeping equipment and other matters as directed by his father.

INVESTIGATION

On November 07, 1994, a 26 year old maintenance man died of injuries received when he was crushed between the frame and container box of a dump truck.

In the weeks prior to the incident, the victim had aided his employer and co-workers in the construction of a second floor dormer on a company owned office building.

On the day of the incident, a company-owned 1969 dump truck was needed in the construction operation. The truck contained approximately a yard of gravel which the victim's father asked his son to remove from the container box. As the victim was in the process of elevating the container box to do so, the box stopped before its contents could be fully discharged. Assuming the dump box mechanism to be low on fluid, the employer instructed his son to add a gallon of hydraulic fluid to the container box piston. The son had reportedly performed this task on many previous occasions. The employer then left the yard while he attended to other matters off the property.

While there were no witnesses to the incident, the findings at the site suggest that the following sequence of events took place. The victim retrieved a funnel, an adjustable wrench and the containers of hydraulic fluid which he had siphoned from a fifty-five gallon drum on the property. Upon returning to the truck, the victim placed his fluid canisters on the ground and eased himself beneath the partially elevated container box to loosen the threaded fluid intake plug on the container box piston. While he was in this position, the container box piston apparently lost its remaining hydraulic pressure causing the container box to drop upon the victim.

Returning to the property approximately one hour after he had left, the employer asked his other son, who had been working inside the building, if he knew the whereabouts of his brother. The son did not know where his brother was. The father then went back out into the yard and approached the dump truck. As he did, he saw his son's hand lodged between the truck frame and container box.

The investigation revealed that on previous occasions when the victim added fluid to the container box piston, he normally used a 4" x 4" piece of wood to block the container box from inadvertent lowering. This time he did not. It was further revealed that the threaded plug removed by the victim was not from the fluid intake reservoir, but from the hydraulic fluid drainage/exhaust housing. Consequently, once removed, all remaining hydraulic pressure in the container box piston was lost resulting in the collapse of the container box onto the victim. The loss of hydraulic pressure propelled remaining piston hydraulic fluid from its housing to the office building wall, sixty feet away.

CAUSE OF DEATH

The medical examiner listed the cause of death as traumatic asphyxia.

RECOMMENDATIONS

Recommendation #1: Employers should ensure that elevated parts of heavy equipment are suitably blocked from movement while being serviced.

Discussion: United States Department of Labor OSHA Standard 29 CFR 1926.600 (a)(3) (i) requires heavy machinery, equipment, or parts thereof which are suspended or held aloft shall be substantially blocked to prevent falling or shifting before employees are permitted to work under or between them. In this case, the victim's father attested that his son normally utilized a 4" x 4" piece of wood to block the dump truck container box against unintentional lowering or collapse. This procedure may have been sufficient to hold the container box in place. It may have been necessary, however, to use several blocks of wood in different locations or even steel braces in accounting for the added weight of the gravel in the bed. Had this been done, the incident may have been avoided.

Recommendation #2: Employers should develop, implement, and enforce a comprehensive safety program that includes, but is not limited to, worker training in controlling the health and safety hazards of heavy equipment maintenance

Discussion: The company did not have any comprehensive written safety, health and/or training programs in effect at the time of the incident. Employers, with the participation of employees, should develop, implement, and enforce a comprehensive safety program. The program should begin with an analysis of hazards associated with heavy machinery and equipment and the implementation of controls of those hazards. It should also include training for all employees in hazard recognition and use of controls.

Recommendation #3: Hydraulic system manufacturer's should consider engineering safeguard systems that will prevent worker exposure to hazardous conditions while maintaining the equipment

Discussion: Manufacturing design features could minimize or eliminate worker exposure to hazardous conditions while maintaining the equipment. If the hydraulic fluid intake and drainage plugs were located somewhere other than under an elevated container box, the need to be under the raised box would not have existed. If the vehicle and/or hydraulic system manufacturer in this case included a mechanical device which could be used to hold the truck box in a fixed position while servicing, it would not be necessary to search out wooden blocks or other devices capable of holding the truck box in place. The servicer would then know that the device was physically capable of holding the bed in place. Many hydraulic systems use an automatic lock system where in case of failure of the hydraulic system, the equipment mechanically locks in position. In either case, this incident could have

been avoided. Vehicle and/or hydraulic system manufacturer's should always remain alert for new and different safeguarding mechanisms which may prevent unnecessary worker exposures.

REFERENCES

Office of the Federal Register: Code of Federal Regulations, 29 CFR 1926 Labor, Subpart O -Motor Vehicles Mechanized Equipment, and Marine Operations

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Page last reviewed: November 18, 2015

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