

TO: Director, National Institute for Occupational Safety and Health

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

SUBJECT: A Mechanic Died When Crushed by the Lift Bed of a Trash Roll-off Truck

SUMMARY
California FACE Report #05CA008

A 22-year-old Hispanic male mechanic died when he was crushed by the hydraulic lift bed of a trash roll-off truck. The victim was making repairs on the truck's hydraulic system when the incident occurred. The victim raised the hydraulic bed of the truck but failed to install safety jack stands or other blocking devices to hold the raised bed in place. The victim, working under the raised truck bed, disconnected a hydraulic line that released the hydraulic pressure to the cylinders holding the bed in the raised position. The victim was working alone in the shop at the time of the incident. The CA/FACE investigator determined that in order to prevent future occurrences, employers, as part of their Injury and Illness Prevention Program (IIPP), should:

- Ensure lift beds of trucks are properly supported before performing maintenance or repairs.
- Ensure mechanics release pressure in hydraulic systems that are supporting loads or otherwise under pressure before beginning maintenance or repairs.
- Develop and implement a job hazard check sheet that all mechanics fill out and supervisors check and verify prior to starting each work assignment.

INTRODUCTION

On July 12, 2005, at approximately 11:00 a.m., a 22-year-old Hispanic male mechanic died when crushed by the lift bed of a trash roll-off truck. The CA/FACE investigator learned of this incident on July 19, 2005, through a news report. Contact with the victim's employer was made on July 21, 2005. On July 27, 2005, the CA/FACE investigator traveled to the facility where the incident occurred and interviewed the general manager of the facility and other mechanics working in the heavy equipment maintenance shop. The service bay within the maintenance shop where the incident took place and a truck similar to the one involved in the incident were examined and photographed.

The employer of the victim was a waste collection and recycling company. The company had been in business for over 40 years and had 64 employees. The victim was the only one in the service bays of the maintenance shop when the incident took place. The victim

had worked as a mechanic for one year with the company. The victim was born in the United States and worked in the community where he lived all his life. According to his employer, he spoke both English and Spanish.

The company had a written safety program printed in English. The program had procedures and policies that were task-specific for employees to follow, including a specific policy that required the use of jack stands when working under raised truck beds. Safety meetings were held monthly and were documented. The company had a training program that provided specific training for the employees of the company. The training program consisted of a combination of classroom and on-the-job training covering all the subjects addressed in the company's safety manual and employee hand book. Training was measured by job performance and observation by supervisors. This training was documented.

INVESTIGATION

The site of the incident was a maintenance and repair shop for a waste collection and recycling company. Most of the equipment mechanics worked the swing shift in order to perform the maintenance and repairs to the trucks that were parked overnight. The day shift usually had one or two equipment mechanics working in order to cover any road or shop emergency that may develop. The truck involved in the incident was a roll-off truck used to pick up, drop off, and haul large containers of waste and recyclable trash (Exhibit 1). The truck bed consisted of two long steel rails hinged at the rear of the truck frame and a hydraulic system capable of raising and lowering the truck bed with a designated load. This particular model of truck did not come equipped with safety devices installed to hold the bed in a raised position, so a portable or external type of safety jack stand was needed in between the bed and frame of the truck when the bed was in a raised position. The safety jack stand made available for these trucks was triangular in shape and fitted firmly between the truck frame and truck bed when the bed was in the raised position (Exhibit 4).

On the day of the incident, the victim was working the day shift and was alone in the shop. A driver brought his truck into the shop because he was having problems with the hydraulic system. The truck had on its bed an empty compaction system container (Exhibit 2). The driver drove his truck, with the container on it, into one of the shop's service bays, and then raised the bed of the truck. According to the other mechanics, there was a routine that most mechanics followed when working on trucks. Usually, the mechanic, not the truck driver, would bring the truck into the service bay and raise the truck bed and then place the safety device that holds the truck bed in a raised position in its proper place.

In this case, the driver showed the victim where he thought the hydraulic problem existed. Neither the victim nor the driver positioned the safety jack stands on the truck to hold the bed in the raised position. The driver then left the shop to go to lunch. The victim climbed into the space between the bottom of the container and the top of the truck frame, and then he disconnected the hose attached to the hydraulic ram that held up the container rails and container. The hydraulic system for the truck bed was pressurized

because the bed was in the raised position, and the hydraulic system was holding it in that position. When the victim disconnected the hydraulic line, it released the pressure in the system causing the bed of the truck to come down and crush him.

Another mechanic who was on a road call came back to the shop and saw a massive oil spill around the truck the victim was working on. When he went to investigate, he found the victim and immediately yelled for help. Other employees got forklifts on each side of the truck to lift the truck bed off the victim. The fire department and paramedics responded within minutes and performed CPR, but the victim did not respond. The victim was pronounced dead at the scene by the coroner.

CAUSE OF DEATH

The cause of death, according to the death certificate, was mechanical asphyxiation.

RECOMMENDATIONS / DISCUSSION

Recommendation #1: Ensure lift beds of trucks are properly supported before performing maintenance or repairs.

Discussion: The roll-off trash truck involved in this incident was not equipped with a safety bar to hold the bed of the truck in a raised position. Safety jack stands were readily available for use in the shop. The safety jack stands were leaning against the wall of the service bay the truck was in. Neither the driver nor the victim placed the safety jack stands in place after the bed of the truck was raised. The company policy stated that the safety jack stands were to be used whenever the truck bed was raised for the purpose of maintenance or repair. Most work routines and patterns are designed to ensure all the necessary steps are being followed when performing certain procedures. Whenever work routines or patterns are disrupted, there is a chance that something might get omitted. In this case, the work routine that was usually followed when a truck is to be serviced or repaired was not followed. The driver, instead of the mechanic, drove the truck into the service bay and then raised the bed of the truck. When a mechanic performs this task, the next step in the routine would be to put into place the safety device that would hold the bed of the truck in a raised position. Supporting elevated objects with jack stands or cribbing ensures stability of the object, especially when work has to be performed under the object. Had the truck been equipped with a bed lock or the safety jack stands been put in place, this incident might have been prevented.

Recommendation #2: Ensure mechanics release pressure in hydraulic systems that are supporting loads or otherwise under pressure before beginning maintenance or repairs.

Discussion: When the trash truck bed with the container on it was raised, it was being held in place solely by the hydraulic pressure in the system. Hydraulic systems are usually designed to be lifting or pushing devices, not holding devices. When the victim disconnected one of the hydraulic lines, this released the pressure in the system. This sudden release of pressure, coupled with the fact that the load was not blocked in place,

caused the bed of the truck to come down upon the victim. Even when there is no load on the hydraulic system, it is important to release any residual pressure that may be stored to prevent injury. Employers can enhance worker compliance with safe work practices through programs of task-specific training, supervision, recognition, and progressive disciplinary measures.

Recommendation #3: Develop and implement a job hazard check sheet that all mechanics fill out and supervisors check and verify prior to starting each work assignment.

Discussion: The development of a job hazard check sheet would outline all the safety requirements needed before a job could be started. The employee would be required to fill this sheet out and have it approved by a supervisor before starting a new assignment. In a situation where one or two employees are working alone and unsupervised, the check sheet might be the reminder an employee needs to ensure all safety precautions have been taken prior to starting the job. It might also make the difference in preventing such an occurrence from happening again.

Reference:

California Code of Regulations, Vol. 9, Title 8, Sections 1595

EXHIBITS:



Exhibit 1: A picture of a roll-off truck similar to the one involved in the incident.



Exhibit 2: A picture of a container similar to the one that was on the truck when the incident occurred.



Exhibit 3: A picture of a roll-off trash truck with the bed in the raised position looking rear to front.



Exhibit 4: A picture of the safety jack stands used to support the bed of a roll-off trash truck in the raised position.

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April 4, 2006

FATALITY ASSESSMENT AND CONTROL EVALUATION PROGRAM

The California Department of Health Services, in cooperation with the Public Health Institute and the National Institute for Occupational Safety and Health (NIOSH), conducts investigations of work-related fatalities. The goal of this program, known as the California Fatality Assessment and Control Evaluation (CA/FACE), is to prevent fatal work injuries in the future. CA/FACE aims to achieve this goal by studying the work 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. NIOSH-funded, state-based FACE programs include: Alaska, California, Iowa, Kentucky, Massachusetts, Michigan, Minnesota, Nebraska, New Jersey, New York, Oklahoma, Oregon, Washington, West Virginia, and Wisconsin.

Additional information regarding the CA/FACE program is available from:

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