

TO: Director, National Institute for Occupational Safety and Health

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

SUBJECT: Truck driver run over by tractor-trailer at trash transfer station and dies in California

SUMMARY

California FACE Report # 99CA001

A 43-year old truck driver (decedent) died when he was run over by the rear wheels of the trailer of a tractor-trailer rig. The decedent's tractor-trailer rig had been loaded with trash to be transferred to a landfill. He had moved his rig to the scales to ensure the weight of the rig was appropriate. He moved his rig forward after weighing and got out of the cab. He had waved to a second tractor-trailer rig to indicate that it was okay to back into the trash pit. As he was walking near his rig the second tractor-trailer rig was backing up along side. The decedent stepped too far away from his rig and was run over by the trailer of the backing rig. The backing rig's backup alarm, located on the tractor, was not functional. The trailer did not have a backup alarm. None of the three spotters on site were able to react in time to prevent the incident. The CA/FACE investigator determined that, in order to prevent future occurrences, employers should as part of their Illness and Injury Prevention Program (IIPP):

- . ensure no one walks near tractor-trailer rigs when they are moving in close quarters.
- . install backup alarms on the trailers of tractor-trailer rigs.
- . ensure pre-trip inspections include checking whether or not backup alarms are functional.
- . stop moving traffic when pedestrians enter an area of danger.

INTRODUCTION

On February 26, 1999 at 1:00 p.m. a 43-year-old male truck driver was run over by a backing tractor-trailer rig at a trash transfer station and died shortly afterward at a local hospital. The CA/FACE investigator learned of this incident on March 10, 1999 from the local legal office of the California Department of Industrial Relations, Division of Occupational Safety & Health (Cal/OSHA). On March 18, 1999 the CA/FACE investigator traveled to the incident site where he met with the administration manager who was interviewed along with two employees who acted as spotters at the time of the incident. On March 26, 1999, the CA/FACE investigator traveled to the main office of the transportation company, who employed the decedent, and

interviewed the terminal manager.

The employer, a bulk commodities transporter, had been in business for 13 months at the time of the incident, but had been in business for 40 years prior under a different company name. The number of employees in the company is 600 nationwide with 60 in California. They had 2 employees working on site at the time of the incident. The decedent had most recently worked for the company for approximately 7 days and had worked on and off for the company for a total of approximately 5 months. On the day of the incident the decedent was making his twelfth trip, which occurred over the one-week period, to the site.

The company had a written Injury and Illness Prevention Program (IIPP) and a code of safe practices. According to documents provided by the employer, the decedent was trained in the operation of the particular type of tractor-trailer rig he was driving at the time of the incident. The documents did not specifically address walking around or near moving tractor-trailer rigs. New employees received orientation training upon hire, and subsequently; comprehensive safety training given by the vice president in charge of safety. Regularly scheduled safety meetings occurred bi-monthly.

INVESTIGATION

The scene of the incident is a trash transfer station. Trucks that pick up waste from residential and commercial customers dump the waste at the transfer station. The trash is then loaded into larger trucks for transport to the local dump. There is a large area where the trash is dumped. Adjacent to the dump area is a sloped pit divided by a concrete wall into which the tractor-trailer rigs back in order to be filled (**exhibit 1**). They can either be filled from the top of the trailer with loose trash on the south side of the dividing wall, or, on the north side of the wall, be loaded with baled trash (**exhibit 2**).

On the day of the incident, the decedent had backed his tractor-trailer rig into the south side pit to be loaded with loose trash. Loading is accomplished with a front-end loader that scoops up the trash and empties it into the open trailer (**exhibit 3**). In this incident the decedent's trailer had been loaded. He pulled his rig out of the pit and positioned it on the scales located in front of the adjacent (baler) pit.

He weighed his rig by positioning his rear tractor axles on the front scale and the rear axles of the trailer on the rear scale. From this position he could see the scale readouts on a digital display (**exhibit 4**). When he was done he pulled his rig forward so the rear axles of the trailer were located on the front scale (**exhibit 5**).

Another tractor-trailer rig was waiting in the staging area to back into the pit in which his trailer would be loaded with loose trash. The decedent waved to the waiting driver to indicate that it was okay to back up (**exhibit 6**).

As the second rig was backing up, the decedent, who was wearing a hardhat and high visibility vest, got out of the cab of his truck. It is uncertain what his intentions were, but it was stated by the site's administration manager and the employer's terminal manager that he may have been checking the position of his trailer axles or may have been walking to the rear of his trailer to close a rear door.

As the decedent walked along the length of his rig, the second driver continued to back

up. The administration manager and the terminal manager stated that the distance between the two tractor-trailer rigs at the time of the incident was approximately five (5) feet (**exhibit 7**). That space is considered normal. The second rig's trailer had no backup alarm and the backup alarm on its tractor was not functioning. The decedent walked too close to the rear of the backing trailer and was struck by the trailer and run over by the right, rear wheels of the trailer.

The vehicle inspection sheet, dated February 26, 1999 (the day of the incident) indicated that the backup alarm on the tractor was not functional. It is not known whether or not this document was completed before or after the incident.

Additionally, the suspension support bracket, commonly called elephant ear, had been replaced two days prior to the incident. In replacing this part, the wire to the tractor's backup alarm had been inadvertently severed, resulting in an inoperative alarm.

CAUSE OF DEATH

The certificate of death stated the cause of death to be blunt force chest trauma.

RECOMMENDATION/DISCUSSION

Recommendation #1: Employers should ensure no one walks near tractor-trailer rigs when they are moving in close quarters.

Discussion: The space between the stationary and backing tractor-trailer rigs involved in this incident was estimated by the administration manager and terminal manager to be approximately five feet just prior to the incident. A re-enactment at the site of the incident confirmed this estimate. The space between rigs does not allow much room for error on the part of any pedestrian if either rig is moving. Drivers of stationary rigs should remain in their cabs. If a driver is out of his/her cab when another rig begins to move past their rig, they should remain in, or go to, a safe area until the moving rig (backing in this case) is past. Safe areas should be delineated (pavement marking, e.g.). If the decedent had remained in his cab or gone to a safe area until the backing tractor-trailer rig was safely past, this incident would not have happened.

Recommendation #2: Employers should install backup alarms on the trailers of tractor-trailer rigs.

Discussion: In this incident, the tractor had an inoperative backup alarm and the trailer had none. The trailer used in this incident was 48 feet long. If the tractor's backup alarm had been working, it may not have provided a sufficient warning because of its distance from the back of the trailer. Pedestrians could be fooled into thinking that the alarm was not really coming from the backing rig. In addition, its loudness would be muted by the bulk of the trailer and other noises at the site. A better warning to pedestrians would be achieved by placing an alarm at the rear of the trailer. A backup alarm located at the rear of the backing trailer may have prevented this incident from happening.

Recommendation #3: Employers should ensure pre-trip inspections include whether or not backup alarms are functional.

Discussion: The employer had a vehicle inspection form for the drivers to complete. Pre-trip inspections of the tractor-trailer rigs are required prior to beginning a trip. An inspection form dated the day of the incident had noted that the tractor's backup alarm was not functional. It is unknown if this form had been completed prior to or after the incident. The pre-trip inspection should include whether or not the backup alarm is functional. In addition, if the backup alarm is found to be inoperative during the pre-trip inspection, the vehicle should not be driven until it is repaired. Procedures should be in place for reporting and repairing equipment that is not functioning properly.

Recommendation #4: Employers should develop a plan to stop moving traffic when pedestrians are walking in an area of danger.

Discussion: None of the three spotters on site during this incident, and who were not involved in the backing procedure, were able to react quickly enough to prevent the fatality. A plan should be developed between, and implemented by, the trash transfer station and waste haulers. The plan should include a method to signal moving traffic to stop immediately if a pedestrian is noted by the spotters to be in an area of danger. During the re-enactment, those acting as spotters used hand signals to stop the backing tractor-trailer rig. This may not provide sufficient warning. A warning horn or other device that could be activated remotely by any spotter, if loud enough to be heard, could signal moving traffic to stop immediately. If moving traffic were able to be immediately halted, this incident may not have happened.

References:

Barclays Official California Code of Regulations, Vol. 9, Title 8, Industrial Relations, South San Francisco, 1998

For general information regarding backup alarms; pre-trip inspection; pedestrians; and signalers, spotters and flaggers refer to: <http://www.dir.ca.gov/title8/1592.html>; [/1593.html](http://www.dir.ca.gov/title8/1593.html)

Richard W. Tibben, CSP
FACE Investigator

Robert Harrison, MD, MPH
FACE Project Officer

Laura Styles, MPH
Research Scientist

September 7, 1999

FATALITY ASSESSMENT AND CONTROL EVALUATION PROGRAM

The California Department of Health Services, in cooperation with the California Public Health Institute, and the National Institute for Occupational Safety and Health (NIOSH), conducts investigations on 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, Maryland, Massachusetts, Maryland, Minnesota, Missouri, Nebraska, New Jersey, Ohio, Oklahoma, Texas, Washington, West Virginia, and Wisconsin.

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

California FACE Program
California Department of Health Services
Occupational Health Branch
850 Marina Bay Parkway, Building P, Third Floor
Richmond, CA 94804

