TO: Director, National Institute for Occupational Safety and Health

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

SUBJECT: Truck driver dies when run over by heavy equipment in California.

SUMMARY
California FACE Report #95CA020

A 45-year old white, male owner/operator truck driver (victim) died after being run over by the front wheel of a grader at a construction dump site. The victim was attempting to dump the dirt from his double trailer rig. His rear trailer failed to dump so that when the front trailer dumped, he became stuck in his own windrow (mound of dirt). The victim got out of his tractor to attempt to make a field repair of the rear bottom-dump trailer which had failed to open. While working on his rig, a grader pulled up behind the tractor/trailer combination to push it out of the way. The grader operator did not see the truck driver who was hidden behind the full-width mud flaps along the back of the rear trailer. The truck driver had failed to set his parking brakes, so the grader operator was able to push the tractor trailer rig about 250 yards. A laborer noticed the body of the victim lying in the dirt well behind the grader. The CA/FACE investigator concluded that, in order to prevent future occurrences, employers should:

- Assure that truck drivers stay in their trucks when stuck at a dump site and wait to be pushed clear of the danger area.
- Make certain that operators of heavy construction equipment locate the driver of trucks or other equipment to be sure they are clear of the danger area before attempting a pushing operation.
- Require truck drivers or equipment operators to wear high visibility garments when they get out of or off of their vehicles in hazardous traffic areas.

INTRODUCTION

On December 21, 1995 at 12:35 p.m., a 45-year old white male truck driver was run over by the front wheel of a grader and was declared dead at 2:08 p.m. The victim had gotten out of his tractor at the dump site when his rear trailer failed to dump its load. He was attempting to perform a field repair of the rear bottom-dump trailer when the grader pulled up behind his rig and began to push it out of the way of incoming rigs. The CA/FACE investigator learned of the incident on December 22, 1995 through a local Cal/OSHA office. The CA/FACE investigator responded to the site of the incident on December 27, 1995 and met with the project manager and project superintendent for the general contractor. A copy of the Cal/OSHA form 36, police death investigation, police report, coroner's report, and death certificate were obtained by the CA/FACE investigator.

The construction company, acting as the general contractor for the job, had been in business for 26 years. They had been working at the site for 11 months. The decedent, an independent owner/operator of his own transportation business, had worked at the site

intermittently since May 29, 1995.

INVESTIGATION

The site is a large municipal airport. The major project was to reconstruct airport runways and taxiways. There were seven parts to the project. The taxiway being rebuilt at the time of the incident was the final job, beginning on December 4, 1995**.** The dump site where the incident occurred is located adjacent to a service road at the west end of the airport. It is a long, narrow strip of below-grade land which was being filled-in by the haulage of material from other locations on the airport grounds. A haulage route began at a taxiway, which was being rebuilt, and extended around the perimeter of the airport to the on-site dump and then back to the taxiway.

The municipality involved had contracted with the general contractor to complete all seven jobs. As part of the project, the general contractor had contracted with a broker to supply tractors and bottom-dump trailers to haul excavated material from the runways and taxiways to the dump site. The broker, in turn, contracted with the decedent to perform the subhaul as needed. The decedent provided his own tractor and he rented two bottom-dump trailers for the job. The decedent possessed a permit to operate as a dump truck carrier, with a hazardous materials/waste exclusion, from the Public Utilities Commission. According to the decedent's girlfriend, the decedent would call in to the broker everyday to see if work was available.

On the day of the incident, the decedent appeared on the job with his tractor and the two rented bottom-dump trailers. He was part of a fleet of 18 to 20 similar rigs whose job was to move material excavated from a taxiway to the airport dump site. The excavation was done by a rented backhoe/excavator. The taxiway was being excavated to a depth of about 5 feet. The tractor-trailer rigs would circle and approach the load-out site from the west. The backhoe/excavator would load the trailers and the rigs would proceed east, escorted by a pilot car, on a specifically marked route to the perimeter road that circles the airport. If necessary, drivers could be taken to a "dead area" to check their rigs before proceeding to the dump site.

The airport had established very specific rules regarding movement of any traffic. A pilot car always escorted the rigs from the load-out area to the dump site. No more than two rigs were to be escorted at any one time by a pilot car. The speed limit was generally 20 miles per hour or less. The haul road was about 7 miles from the load-out area to the dump site and back. The round trip took about 45 minutes. The haul road is paved from the load-out site until the access to the dump site. The decedent's truck was loaded at the load-out site and escorted by a pilot car to the dump site. He drove down a dirt ramp and onto the dump site which was several feet below grade. The dump site was somewhat muddy, partly from watering down the dirt to help keep it packed.

Normally, a driver would dump his rear trailer and then his front trailer. The decedent had dumped three times successfully during the day. When the decedent attempted to dump his trailers a fourth time, the rear trailer failed to dump. When the front trailer dumped, the rig became stuck as the rear trailer tried to drive over the windrow left by the front trailer. Also, the weight had been taken away from the drive wheels of the tractor by the unloading of the front trailer. The decedent got out of his tractor, walked to the back trailer with a pair of channel lock pliers in his hand and attempted a field repair of the rear trailer in order to make it dump its load. He was observed by a worker eating lunch to proceed to the rear trailer and was working on the right hand side at the rear of the trailer.

It was not unusual for tractor/trailers to become stuck at the dump. It was stated to the CA/FACE investigator that it happened about 25 per cent of the time. The general contractor kept a grader at the dump site to level the dumped material. One of the grader operator's additional jobs was to push stuck rigs out of the dump site and off to the side (**Exhibit 1**). As the decedent was working on his rear trailer, the grader operator noticed that the rig was stuck. The operator positioned his grader behind the rear trailer lining up his push pad with the push pad on the rear trailer. He began to push the rig out of the dump site. Witnesses nearby noticed that the grader was pushing the rig and that the right front wheel of the grader had run over the decedent. They ran to the grader and had the operator stop its movement.

The grader operator had not seen the decedent prior to pushing his rig. The decedent was not visible to the grader operator because he was hidden behind the full-width mud flaps along the back of the rear trailer (**Exhibit 2**). The grader operator's view of the area around the front tire of the grader was obscured by the hydraulic assembly for raising and lowering the front blade (**Exhibit 3**). The grader operator noted that the tractor's engine was running because smoke was coming from the exhaust stack. The parking brake on the tractor had not been set which allowed the grader to easily push the rig. The decedent was hard of hearing and had cotton in both ears, making it more difficult for the decedent to hear the noise of the grader.

The grader's scraper apparently caught the decedent and dragged him 83 feet in addition to running over him. The grader operator indicated that he pushed the rig a total of about 250 yards from where it was stuck before the witnesses halted his movement. The decedent was found wearing a sweat suit and flip flop sandals. He was not wearing any high visibility garments or protective equipment such as a hardhat, steel toe caps or shoes. A municipal fire department engine and rescue ambulance stationed at the airport responded to the scene. The paramedics initiated cardiopulmonary resuscitation. He was transported in full cardiac arrest to a local hospital by the paramedic ambulance and was pronounced dead at 2:08 p.m.

CAUSE OF DEATH

The coroner's report indicated the cause of death to be severe abdominal/pelvic trauma.

RECOMMENDATIONS/DISCUSSION

Recommendation #1: Assure that truck drivers stay in their trucks when stuck at a dump site and wait to be pushed clear of the danger area.

Discussion: When the rear bottom-dump trailer failed to dump its load, the driver got out to perform a field repair of the dump mechanism. He left the engine running but did not set the parking brakes. The driver proceeded to the rear trailer where he was hidden by the full-width mud flaps. The grader arrived to push the stuck tractor-trailer out of the area. The decedent apparently did not hear the grader because he was somewhat hearing impaired and had cotton in both ears. The tractor-trailer driver should have stayed in his cab. It is common practice at dump sites that drivers do not leave the cab of their truck when they become stuck. Drivers are supposed to wait to be pushed to a "dead" area so they can repair their rig. Had the driver stayed in the cab of his tractor, this incident would not have occurred.

Recommendation #2: Make certain that operators of heavy construction equipment locate

the driver of trucks or other equipment to be sure they are clear of the danger area before attempting a pushing operation.
Discussion: Although the driver of the tractor-trailer was hidden from the grader operator's view by the full width mud flaps and further obscured by the hydraulic assembly for the grader blade, the grader operator should have attempted to make contact with the driver before beginning a pushing operation. Such communication could be accomplished by providing the tractor-trailer driver with a flag which he could wave or display to signal the approaching push vehicle to perform the pushing operation. If the operator of the grader had noted through positive communication that he had the driver's permission to perform the pushing operation, this incident may not have happened.

Recommendation #3: Require truck drivers or equipment operators to wear high visibility garments when they get out of or off of their vehicles in hazardous traffic areas.
Discussion: The tractor-trailer driver was wearing a sweat suit, flip flop sandals, and no personal protective equipment. It is common practice to require employees on a construction site to wear high visibility garments when in or near traffic areas. Often employees are required to wear such garments at all times on construction sites where there is moving traffic. Had the tractor-trailer driver been wearing a high visibility garment, the grader operator may have noted him getting out of his cab and walking to the rear of his rig or saw him upon his approach through the small vertical slits between the mud flaps of the rear trailer. Other employees at the site may have noted the driver, if he was wearing a high visibility garment, and waved off the grader operator before he began the pushing operation.

References
Barclays Official Code of Regulations, Vol. 9., Title 8, Industrial Relations. South San Francisco, CA, 1990.

Richard Tibben, CSP
FACE Investigator

Robert Harrison, MD, MPH
FACE Project Officer

Marion Gillen, RN, MPH
Research Scientist

June 10, 1996

****

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:

California FACE Program
California Department of Health Services
Occupational Health Branch
850 Marina Bay Parkway, Building P, 3rd Floor
Richmond, CA 94804