TO: Director, National Institute for Occupational Safety and Health

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

SUBJECT: Truck driver dies when crushed by forklift in California

SUMMARY
California FACE Report #96CA001

A 39-year old male truck driver (victim) died after being crushed between a forklift and a flat-bed trailer. The victim was exchanging a repaired forklift for a loaner forklift. He had driven the loaner to where his tractor/trailer rig was parked. He had removed the blades of the loaner forklift and placed them under pallets on the trailer. The victim was in the process of straightening the pallets when the forklift rolled forward across a sidewalk and partially over a curb with the mast pinning the victim against the side of the trailer. The forklift parking brake had not been set nor had the wheels been chocked. The company had no formal forklift inspection program. The CA/FACE investigator concluded that, in order to prevent future occurrences, employers should:

- Ensure that forklift operators, when dismounting, always set the parking brake, lower the forks/mast, and neutralize the controls when the forklift is attended (i.e. running forklift within 25 feet and in view of the operator).
- Develop and implement an inspection, reporting, and out-of-service program so operators can document the safety of their forklifts at least once a shift, report any unsafe conditions, and remove the forklift from service for repairs if unsafe.
- Disallow the practice of operators standing between the forklift pointed in a direction of travel and fixed objects when the forklift is on a slope.
- Enforce the company's forklift operating rules.

INTRODUCTION

On January 15, 1996 at 2:35 p.m., a 39-year old male truck driver was crushed by a forklift when it pinned him against a flat-bed trailer at a retail nursery. The victim was declared dead at 3:05 p.m. The CA/FACE investigator learned of the fatality on January 30, 1996 from the California Division of Occupational Safety and Health (Cal/OSHA) Bureau of Investigations office. The CA/FACE investigator responded to the site of the incident on February 1, 1996 and to the employer's main facility on February 5, 1996. He met with the nursery manager at the site and the nursery supply company transportation manager at the main facility. The CA/FACE investigator obtained copies of the coroner's report, death certificate, police report, Cal/OSHA form 36 and paramedic's report.

The nursery supply company has been in business for 26 years and has 35 employees.

The victim worked for the company for 10 years and had been a truck driver during that entire time. He was at the site of the incident for a short period to make the exchange of a repaired forklift for the loaner forklift. The nursery employed 12 workers, some of them on a part-time basis. The employee had specific forklift training through the forklift manufacturer when he began with this employer. The employer also had their own forklift training program, but the decedent had not attended since he was considered an experienced forklift operator. Monthly safety meetings, which the decedent would normally attend, covering general topics, including forklift safety, were also held. Forklift rules of safe operation were prominently displayed at the main site.

INVESTIGATION

The site was a sidewalk, about ten feet wide, which abutted the nursery's chain link fence on the north and ended at the curb and gutter on the south. The sidewalk had a slope toward the curb and gutter for water runoff. The slope was less than two percent. A few feet east of the site, but located on the south side of the sidewalk, was a telephone connector box, a bush and a street light standard. The west side of the sidewalk at the site was clear for about six feet where a small tree was located. The clear area of the sidewalk, east to west, was about ten feet wide. The sidewalk was also clear back to the nursery's fence. The gutter connected to the right-hand, west bound lane of a busy six-lane street (**Exhibit 1**).

On Sunday, the day before the incident, the manager of the nursery called in an order to the nursery supply company. He left a voice message since nobody was working there at the time. The following morning, after 9:00 a.m., he received a call from the nursery supply company informing him that his delivery of supplies was to be made later that day and that the nursery's forklift would also be returned that afternoon. The decedent had left the nursery supply company's main yard earlier in the day. One of his jobs on the day of the incident was to load the forklift belonging to the retail nursery onto the trailer so it could be returned. The retail nursery and the nursery supply company were coincidentally owned by the same persons. The nursery supply company had a mechanic on staff who was capable of repairing forklifts. He had repaired the brakes on the forklift for the nursery and it was ready to be returned. The decedent, after loading the materials and the forklift, left to make his deliveries.

When the decedent arrived at the retail nursery, he parked his tractor and two trailers facing east in the west bound lanes of the six-lane street. The rig was parked two and one-half feet from the curb. The decedent pulled the two ramps out from the rear trailer and set them up so the forklift could be driven from the low-bed portion of the trailer (**Exhibit 2**) onto the sidewalk. When he reached the sidewalk, he made a ninety-degree turn to the east and proceeded 160 feet to the nursery's entrance. He drove into the nursery, parked the repaired forklift and walked over to inform a nursery worker that he was going to make the exchange of forklifts. A male nursery worker drove the loaner forklift (**Exhibit 3**) to the nursery entrance. The decedent then retrieved the loaner forklift and drove it out of the nursery entrance and 160 feet west on the sidewalk to the site of his parked tractor/trailer rig. He made a ninety-degree turn with the forklift facing south, towards the front trailer. The forks were then raised to the height of the trailer, five feet, and the forklift was moved forward so the forks were on the bed of the trailer, under several pallets. The decedent got off the forklift, unlatched the forks, and lifted them off the mast so they rested on the bed of the trailer. The mast was tilted forward to

facilitate the removal of the forks.

This method of detaching the forks was used because the forks weighed 60 to 70 pounds and would be unwieldy to lift from the ground to the trailer. The forks could not remain on the forklift during transportation because they would protrude too far. When the forks had been detached and placed on the bed of the trailer, the decedent got back onto the forklift. He backed the forklift away from the trailer, across the sidewalk. He got off the forklift, without setting the parking brake or lowering the mast, and walked back to the trailer to straighten the pallets and secure the forks. As the decedent was working with his back to the forklift, it began to roll toward him. The right front wheel went over the curb and the left front wheel went partially over the curb. This caused the protective bars of the raised mast to pin the decedent against the side of the bed of the trailer at the neck and shoulder level.

It is unknown exactly how long the decedent was pinned against the trailer. A nursery worker was watering plants inside the nursery when he noticed the forklift tilted at an odd angle. He moved over to look more closely, but did not see the decedent. A few minutes later, he noticed the forklift was still in the tilted position with the front wheels off the sidewalk and over the curb. He moved over more to get a better look and noticed the decedent pinned between the forklift and the trailer. He ran out of the nursery along with another nursery worker and a second truck driver for the nursery supply company who was making a concurrent delivery to the nursery. The second nursery supply company truck driver got into the operator's seat of the forklift and tilted the mast away from the decedent. This caused the decedent to fall to street level. It was then noted that the decedent's right foot was pinned by the right front tire. The second driver tilted the mast against the trailer to lift the tire off the decedent's foot. Several of the rescuers pulled the forklift back so the operator could back it up. The second driver set the parking brake and got off the forklift to assist with the decedent.

While the rescue was going on, another nursery worker phoned 911 to request paramedics. Before the paramedics arrived, the rescuers lifted the victim out of the street and placed him on the sidewalk. At this time he was still alive according to witness statements. The paramedics were dispatched and arrived at the scene at 3:02 p.m. The paramedics, after examining the decedent, indicated that he no longer had any vital signs and pronounced him dead at 3:05 p.m. The CA/FACE investigator also held an initial meeting with the transportation manager for the nursery supply company at the main yard. The CA/FACE investigator inspected the trailers and forklift involved in the incident. The incident took place about five feet from the head of the front trailer and was evident by a vertical mark along the trailer's bed rail (**Exhibit 4**). After the incident, the forklift had been brought to the vehicle repair area. It was discovered that the brakes, including the parking brake, did not operate properly at the time of the incident. The mechanic stated that he had found worn brake linings and that he had replaced them. He also replaced the master cylinder for safety. Although the brakes worked to some degree at the time of the incident, it is uncertain whether or not the parking brake would have held on a slope of less than two percent because the forklift was not subjected to a test simulating the incident conditions. The forklift was propane powered and had a load rating of 3725 pounds. This rating appeared in two places on the mast in large stenciled letters and on the identification tag located on the dash (**Exhibit 5**). The forklift appeared to be in sound condition and met the requirements of Title 8 of the California Code of Regulations. The company's Injury and Illness Prevention Plan (IIPP) was complete and met state requirements. The forklift training program

that the decedent attended could not be documented for content, only for attendance. Daily forklift inspections were not documented. When asked if any discipline for safety violations were documented, the employer stated that they were not, but that the procedure was in place.

CAUSE OF DEATH

The coroner's report indicated the cause of death to be compression of neck and chest.

RECOMMENDATIONS/DISCUSSION:

Recommendation #1: Employers should ensure that forklift operators, when dismounting, always set the parking brake, lower the forks/mast, and neutralize the controls when the forklift is attended (i.e. running forklift within 25 feet and in view of the operator).

Discussion: When the decedent dismounted the forklift and went to the trailer to straighten the forks and pallets, he neglected to set the parking brake and lower the mast. In a normal situation, both of these actions would prevent the forklift from running away. Although he did turn off the engine and neutralize the controls, he failed to put the mast back into a vertical position. When the operator of an industrial truck is dismounted and within 25 feet (7.6 meters) of the truck which remains in the operator's view, the load engaging means must be fully lowered, controls neutralized, and the brakes set to prevent movement. If the operator had performed all of these actions, this incident most likely would not have happened.

Recommendation #2: Employers should develop and implement an inspection, reporting, and out-of-service program so operators can document the safety of their forklifts at least once a shift, report any unsafe conditions, and remove the forklift from service for repairs if unsafe.

Discussion: Although it was indicated to the CA/FACE investigator that the nursery supply company's forklifts were inspected by the operators, no documentation could be provided. It was unknown if anybody at the company or the nursery had recently inspected the forklift involved in the incident. Drivers must check the vehicle at least once per shift, and if it is found to be unsafe, the matter must be reported immediately to a foreman or mechanic, and the vehicle must not be put in service again until it has been made safe. If the company had a formal program of inspection which included a reporting mechanism and mandatory removal from service of a forklift found to be unsafe, the parking brake deficiency would have been discovered, reported, and the forklift would have been removed from service. If proper repairs had been made before returning the forklift to service, this fatality may not have happened.

Recommendation #3: Employers should disallow the practice of operators standing between the forklift pointed in a direction of travel and fixed objects when the forklift is on a slope.

Discussion: It is a very dangerous practice to allow an employee to stand between a forklift in a direction it normally travels and any fixed object, especially on a slope. A runaway forklift could crush the employee between itself and the fixed object. Industrial trucks (i.e. forklifts) must not be placed facing anyone standing in front of a bench or other fixed object of such size that the person could be caught between the truck and object. Had the operator turned the forklift ninety degrees in the direction he had to travel to drive the forklift onto the low-bed

before he dismounted, the forklift most likely would not have runaway and he would not have been in a danger zone.

Recommendation #4: Employers should enforce the company's forklift operating rules. Discussion: Although the company had a set of forklift operating rules posted at the main location, enforcement was lacking. The decedent did not set the parking brake before dismounting his forklift. The second driver for the company who helped in the rescue of the decedent, stated that he also did not set his parking brake when it appeared he was on level ground. It was unknown if daily inspections of the forklifts were carried out. However, a company representative stated that discipline for safety violations had never been given because it had never become necessary. Every employer using industrial trucks or industrial tow tractors, must post and enforce a set of operating rules. Had a stricter enforcement of the rules been adhered to, the omissions in this incident most likely would not have occurred, and the incident most likely would not have happened.

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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.

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

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