

**TO:** Director, National Institute for Occupational Safety and Health

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

**SUBJECT:** A maintenance worker is killed when backed over by a bucket loader at a glass recycling center.

**SUMMARY**  
**California FACE Report #01CA005**

A 48-year-old maintenance worker died when backed over by a bucket loader at a glass-recycling center. The victim was performing maintenance on a sprinkler system at the time of the incident. The victim was standing on a mound of glass repairing a sprinkler system that was mounted on a retainer wall, which separated different bins of colored glass. The loader was scooping up glass out of the bin the maintenance worker was in and emptying the glass in a hopper which was located on the opposite side and end of the work area. The loader was making repeated trips to load and unload glass. According to the Deputy Sheriff who initially investigated the incident, the back-up alarm on the loader was not operational when checked immediately after the incident. The Deputy also stated that when the loader was powered on in order to check the back-up alarm, the radio in the cab automatically came on and was extremely loud.

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 that back-up alarms are operational when required on vehicles.
- Ensure that operators of heavy equipment have minimal extraneous distractions such as radios.
- Ensure employees remain out of areas where heavy equipment is operating.
- Ensure employees are adequately trained and that worker's achievement of skills is verified through a testing program.

**INTRODUCTION**

On April 18, 2001, at approximately 8:30 a.m., a 48-year-old maintenance worker was killed when backed over by a 28,750-pound articulating bucket loader. The CA/FACE investigator learned of this incident on April 22, 2001, through the Legal Unit of the California Department of Industrial Relations, Division of Occupational Safety and Health (Cal/OSHA).

The victim's employer was contacted on May 22, 2001. On June 21, 2001, the CA/FACE investigator traveled to the victim's place of employment and interviewed the company's manager and attorney. The loader operator and witnesses were not available to be interviewed. The company's safety policies, procedures, and records were reviewed and pictures of the equipment involved and incident scene were taken.

The employer of the victim was a glass-recycling yard. The company had been in business for over five years and had approximately 26 employees working at the time of the incident. There were 18 employees at the site when the incident occurred. The victim had been with the company for five years but had over 10 years experience as a maintenance worker. The company had a safety program and a written Injury and Illness Prevention Program (IIPP) with all the required elements. There were written task safe work procedures for some of the jobs in the facility including emptying glass into the hopper. There was no written task procedure for the maintenance of the sprinkler system because it was a new system. Safety meetings were held weekly and documented. The company had no lost time work injuries over the past few years.

The company provided training for the employees. The type of training made available included on-the-job-training (OJT), classroom, and video. The company did not require specific operator certification or licensing to operate the loader. The victim received in-house training on the proper procedures to follow when working around heavy equipment. The operator of the loader was trained on the job on how to operate the loader and was deemed qualified by the employer.

## **INVESTIGATION**

The site of the incident was a glass recycling plant. Several bins of different colored glass were stored on the premises, separated by 10-foot retaining walls. The mounds of glass in each bin varied in height, some as high as 20 feet. The piece of equipment involved in this incident was a 28,750-pound articulating rubber tire, front-end bucket loader with a 3.25 cubic yard bucket capacity. The loader was approximately 24 feet long, 8 feet wide, and 11 feet high. The operator's cab was fully enclosed with glass windows for unrestricted viewing in all directions. The cab also was equipped with two adjustable rear-view mirrors.

On the day of the incident, the victim, who was also the maintenance supervisor, was working on a sprinkler system recently installed on top of the retaining wall that separated the bins of colored glass. The victim was wearing a hard hat and a reflective colored vest. The sprinkler system was used to keep the glass mounds wet and to reduce the dust. Two witnesses were loading their truck at the hopper when the incident occurred. According to their statements given to the police, they saw the victim on the mound nearest the retaining wall as the loader went past him to get a load of glass. The loader scooped up a bucket of glass and then backed to the hopper, approximately 150 feet away. As it passed the spot where the victim had been working, the witnesses stated the victim was not on the glass mound but lying on the ground approximately 10 feet from the retaining wall, directly in the path the loader had just taken.

According to the statement made by the loader operator to the police, he was operating the loader to pick up a load of glass just north of where the victim was working. After scooping up a load of glass, he backed the loader past the mound where the victim was standing and felt a bump on the right side of the loader, but kept backing because he thought he had run over some of the material from the mound. The loader operator stated he was approximately 30 feet from the victim before he realized he had ran over him because the tractor bucket blocked his front

view. The loader operator stated he continued to dump his load into the hopper and then parked the tractor because he did not want to leave it loaded. The operator stated he did not hear any shouts or see the victim when he was backing the loader. Police and paramedics were immediately called and responded accordingly. The paramedics pronounced the victim dead at the scene.

The police officer that conducted the initial investigation stated that there was no working reverse audible alarm on the loader when it was checked immediately after the incident. There was no daily checklist available to determine if the alarm was working at the beginning of the shift. He also stated that when the loader was turned on to check for an alarm, the AM/FM radio in the cab automatically came on and was extremely loud.

### **CAUSE OF DEATH**

The cause of death, according to the death certificate, was multiple blunt force traumatic injuries.

### **RECOMMENDATIONS / DISCUSSION**

#### **Recommendation #1: Ensure that back-up alarms are operational when required on vehicles.**

Discussion: The loader involved in this incident was required to be equipped with a warning device that operates automatically while it is backing. According to the police officer that did the initial investigation on the day of the incident, the back-up alarm was not working when he checked it. The loader involved in this incident should have been checked at the beginning of the shift to assure that all equipment and accessories were in safe operating condition and free of apparent damage that could cause failure while in use. All defects affecting the safe operation of the loader should have been corrected before the loader was placed into service. Had the loader been properly checked and serviced before being put into operation, this incident might have been prevented.

#### **Recommendation #2: Ensure that operators of heavy equipment have minimal extraneous distractions such as radios.**

Discussion: The operation of heavy equipment is considered by the industry to be a high hazard profession. All hazardous professions require the fullest attention in order to maintain the skill level necessary to ensure a safe work environment. Any distraction might interfere with the necessary concentration needed especially when working conditions change. In this particular case, the work environment was frequently repetitive and might have become all too familiar to those who worked it day after day. The use of a radio in the cab probably helped pass the time and boredom of the job; however, it also could have been a distraction to any change in the work environment that needed the operator's undivided attention. The repetitiveness of a daily routine combined with the external distraction of a radio might have led to overconfidence and a false sense of security, which might have replaced the undistracted attention needed to do the job safely. Had the operator of the loader not been listening to the radio while operating the loader, this incident might have been prevented.

#### **Recommendation #3: Ensure employees remain out of areas where heavy equipment is operating.**

Discussion: According to the employer's manager the company policy was to stay out of the yard when heavy equipment was being operated. The operators were also aware of the policy

and therefore, would not ordinarily be looking for people walking through the yard when operating the equipment. The victim, who was also the maintenance supervisor, was trained on this procedure, yet was in the yard the same time the tractor was being operated. The victim had a choice of when to perform the maintenance on the sprinkler system, and could have scheduled it at another time when the tractor was not operating in the yard. Employers can ensure worker compliance with safe work practices through programs of training, supervision, safe work recognition, and progressive disciplinary measures.

**Recommendation #4: Ensure employees are adequately trained and that worker's achievement of skills is verified through a testing program.**

Discussion: Although modern heavy equipment may be simple to operate, it still requires operators to have a certain skill level that recognizes situations and demonstrates the ability to maneuver the equipment when in precarious situations. Just because an employee may be able to complete a task with a piece of heavy equipment doesn't necessarily make that employee a qualified operator. Formalized testing should be a part of all testing programs. Employers can ensure worker compliance with safe work practices through programs of training, supervision, safe work recognition, and progressive disciplinary measures.

**References:**

California Code of Regulations, Vol. 9, Title 8, Subchapter 4, Article 10, Sections 1511(a), 1592(a), 1593(d).

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**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, Nebraska, New Jersey, New York, Ohio, Oklahoma, Texas, Washington, West Virginia, and Wisconsin.

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

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Richmond, CA 94804**