

Construction Laborer Crushed by Unattended Rolling Street Sweeper at Asphalt Plant in Massachusetts

Investigation: # 96-MA-031-01

Release Date:

SUMMARY

On June 19, 1996 a 13 year old male occasional construction laborer was fatally injured when he was crushed beneath an unattended rolling street sweeper at an asphalt plant, owned by his father. The victim was walking away from the sweeper at the time of the incident. The vehicle had been parked at the top of an incline and rolled approximately 140 feet striking the victim and running over him. Nobody on the site saw the incident occur, but found the boy lying beneath the sweeper. Emergency response personnel were immediately called. The sweeper was lifted off the victim with a front end loader. The victim was unresponsive at the scene. He was transported to a nearby regional hospital where he was pronounced dead on arrival. The MA FACE Director concluded that to prevent similar occurrences in the future, employers should:

- c ensure that all defective vehicles be removed from service until repaired.**
- c ensure that only trained employees operate all vehicles.**
- c design, develop and implement a comprehensive safety program that includes, but is not limited to analysis and control of vehicle related hazards through use of a daily checklist.**

And also that:

- c owners should not allow their children under 16 years of age on industrial or construction worksites.**
- c government agencies should increase their efforts to inform the public about child labor laws.**

INTRODUCTION

On July 25, 1996, the MA FACE Program was notified through the Division of Vital Records of the Department of Public Health, that on June 19, 1996, a 13 year old male was fatally injured when he was crushed beneath a truck at a workplace. The clerk at Vital Records routinely checks death certificates for a positive response to the "Injury at

Work?" question on death certificates and forwards those with a positive response to the FACE program. An investigation was immediately initiated. Since the victim was a minor and the son of the plant owner, the MA FACE Program Director did not interview the employer, but traveled to the job site where the victim's co-workers were interviewed on August 5, 1996. The local police report, the State Police investigation report, death certificate, corporate information, OSHA interview and witness interviews were obtained during the course of the investigation.

The employer was a paving contractor for approximately 14 years and also operated an asphalt manufacturing facility for the last 2 1/2 years. Four full-time employees worked at the plant and were on the site at the time of the incident. Their job titles were plant operator, operating engineer, laborer and quality control engineer. The victim was a full-time high school student who had helped around the plant during off-school hours and during vacations. The operating engineer was a member of a trade union.

INVESTIGATION

The incident occurred at an asphalt manufacturing plant, where asphalt was mixed from gravel, stone, sand and recycled asphalt. The facility consisted of massive piles of these materials, a number of outdoor conveyor belts and large, noisy mixing machinery. The operation was monitored and controlled at an operation station in the middle of the site. Materials were loaded into the mixers by a front end loader which moved materials to hoppers which then fed into the mixers by conveyors. The finished asphalt was then conveyed to silos under which trucks would drive. The truck beds would be filled from the overhead silos. The amount of material was determined by weighing the truck using underground scales.

On Wednesday, June 19, 1996, the plant operator arrived at about 5:30 am and proceeded to begin his work. He noticed the street sweeper parked by the office at that time. The vehicle was a 1976 Elgin Pelican Sweeper, Model "S" which had been brought to the facility the previous day from another plant or job site.

Later in the morning, members of the crew noticed the owner's son at the facility. He had been there many times before, performing some tasks and had "played with" some of the equipment in the past. Nobody was sure how or exactly when he had arrived at the plant. It was later speculated that he had come to do some painting.

According to the state police report, the laborer ran the sweeper around the yard with the victim as passenger and then both went to lunch, leaving the sweeper near the operation booth on an inclined roadway. After lunch, the laborer was shoveling in the area when he heard a cry. Upon investigation, he saw the sweeper rolling and the victim under the sweeper. He ran in front of the sweeper to impede its motion and it did stop. He called others over to try to push the machine, weighing over 16,000 lbs., off the victim, but they were unsuccessful at moving the vehicle. Another worker radioed to the operating engineer working on the front end loader at the other end of the plant. The operating engineer drove over and lifted the sweeper with the bucket of his vehicle. The

victim was then removed. Emergency medical personnel then arrived and began working on the victim who was unresponsive. The victim was taken by ambulance to a nearby regional hospital where he was pronounced dead on arrival.

The laborer who had been operating the sweeper left the site after the incident and was not available for interview. Other employees stated that he had not been specifically trained in the operation of the vehicle.

The investigation revealed that the vehicle had rolled down the incline approximately 140 feet when it struck the victim. The police report indicated that the slope of the roadway varied from 1 degree to 4 degrees over its length.

The sweeper was impounded and examined by the State Police and experts that they enlisted for that purpose. Their examination at the site revealed that at the time of the incident the key was in the ignition, turned to the "OFF" position. The power-take-off (PTO) was engaged in "low" gear and the parking brake was not engaged. The hydrostatic pedal mechanism appeared to be in neutral. This hydrostatic pedal, when pushed upward forward, causes the vehicle to move forward. When it is pushed downward forward, it causes the vehicle to operate in reverse. This pedal should return to neutral when released.

In an examination made later by the experts at the State Police barracks, the hydrostatic pedal appeared to favor remaining in the "forward" position. They also noted that the vehicle was very difficult to stop using the foot hydraulic brake, which appeared to be out of adjustment. The hand-activated parking brake was also found to be out of adjustment and not capable of holding the vehicle. The handbrake lock was missing and the accumulator was frozen in the "off" position. The accumulator is another form of a parking brake. Given all of these problems, the inspectors gave the opinion that the vehicle was in a condition of mechanical neglect.

CAUSE OF DEATH

The medical examiner listed the cause of death as fracture/dislocation of cervical spine.

RECOMMENDATIONS/DISCUSSION

Recommendation #1: Employers should ensure that all defective vehicles be removed from service until repaired.

Discussion: OSHA regulations require that employers provide their employees a workplace free of recognized hazards. Vehicles that are seriously defective should be removed from service until they are repaired. Any vehicle purchased or newly brought onto a site should be checked for deficiencies by a qualified mechanic before being put into service. Had the defective vehicle been taken out of service, the incident may not have occurred.

Recommendation #2: Employers should ensure that only trained employees operate all vehicles.

Discussion: Operators of industrial and construction vehicles should be specifically trained in their safe operation. Persons should not be expected to operate equipment for which they have not received adequate training. A well-trained operator would have recognized the hazard of parking this vehicle on an incline.

Operators should be trained not only to operate the vehicle, but also to identify mechanical problems affecting the safe operation of the vehicle. An untrained operator may not recognize defects in the equipment because of their lack of experience. In this case, the operator may not have realized that the braking system should have worked better; the parking brake was not sufficiently engaged and that leaving the vehicle's power take off engaged would not hold the vehicle.

Recommendation #3: Employers should design, develop and implement a comprehensive safety program that includes, but is not limited to analysis and control of vehicle related hazards through use of a daily checklist.

Discussion: In order to provide a workplace free from recognized hazards, employers should develop a safety program that involves all employees in the recognition and reporting of all hazardous conditions. Beyond reporting these conditions, employers must institute systems for correcting hazards as they are identified. Preventive maintenance should be considered as integral to a comprehensive safety program.

Employers should ensure that all vehicles in use be checked at the beginning of each shift to assure that components that affect safe operation are in proper operating condition. A vehicle defect checklist should be developed by a qualified person. Operators should be trained to understand the checklist and use it before each shift. This checklist should include all components which affect the safe operation of the vehicle, including, but not limited to, brakes, mirrors, seat belts, steps and rails, hydraulics, back-up alarms, horns, tires and connecting hoses for propane-driven equipment. Equipment manufacturers can provide guidance in this area. In this case, if the operator had checked the vehicle before using, this incident may not have occurred.

Recommendation #4: Owners should not allow their children under 16 years of age on industrial or construction worksites.

Discussion: Federal and state child labor laws are intended to protect children from hazardous working conditions. The federal law prohibits children under age 16 from working in manufacturing or construction. While federal child labor laws do not extend to children in family run businesses, some state laws do apply. In Massachusetts, there is no exemption for family businesses; all children under age 16 are prohibited from working in either

manufacturing or construction. The list of prohibited occupations constitutes a list of tasks deemed too risky for children. Owners should become familiar with these laws and not allow their children to work in these occupations and industries until they reach the appropriate age. In states where family run businesses are excluded from the law, owners should be encouraged to consider the list of prohibited occupations as guidelines to be followed.

Recommendation #5: Government agencies should increase their efforts to inform the public about child labor laws.

Discussion: It is not known if the employer in this incident was aware that children under 16 are not allowed to work in manufacturing in Massachusetts. It has been reported, however, that employers, parents and teens are often unaware of child labor laws. Increased efforts to inform the public of these laws are essential to protect children from dangerous working conditions.

REFERENCES

American National Standards Institute, Powered Industrial Trucks - safety requirements, ANSI B56.1-1988

Children's Safety Network at Education Development Center, Inc., and Massachusetts Occupational Health Surveillance Program, (1995), *Protecting Working Teens: A Public Health Resource Guide*, Newton, MA: Education Development Center, Inc.

Code of Federal Regulations, 29 CFR 1926.601, Motor vehicles, Government Printing Office