FINAL KY FACE #95KY01501

Date: 24 April 1995

Subject: Prison Employee Killed in Tractor Rollover

SUMMARY

A 36-year-old male prison recreation director was killed in a tractor rollover incident. The victim was driving the tractor down a sloping, S-curved driveway when he lost control. The tractor went over an embankment, rolled one-half turn, and came to rest on the victim. It was not equipped with a Rollover Protective Structure (ROPS) or a seatbelt. The victim was pronounced dead at the scene by the county coroner. In order to prevent similar incidents, the KY FACE investigators concluded that:

- Tractors should be retrofitted with Roll Over Protective Structures and seatbelts.
- Employers should provide tractor operation training by safety professionals.
- Equipment should be kept in good working condition.

Additionally, county officials should initiate a 911 emergency calling service.

INTRODUCTION

On 23 March 1995, KY FACE investigators learned of the death on 22 March 1995 of a prison recreation director. An investigation was immediately initiated. The case was discussed by telephone with a prison administrator and the county coroner. On 20 April 1995, two KY FACE investigators traveled to the scene to continue the investigation. The two eyewitnesses were interviewed, measurements and photographs of the scene were taken, and copies of the coroner, police, emergency medical service, and toxicology reports, as well as the death certificate, were obtained and reviewed. Additionally, a copy of the mechanic's report concerning the tractor involved in the incident was obtained. Telephone interviews were conducted with the shop foreman of the company which inspected the tractor and the human resources manager of the prison management contracting company.

INVESTIGATION

At approximately 11:00 am on 22 March 1995, the victim, who had been the prison recreation director for about ten months, and two maintenance workers left the prison compound to pick up some plastic to be used underneath the sand of the volleyball court. The day was clear and warm (about 65 degrees). After picking up the plastic, it was suggested that they should also retrieve the correctional facility's tractor, which had been borrowed by an employee over the weekend to prepare a gravesite at that employee's parents' home, which was about one mile from the prison grounds. The tractor was equipped with a rear-mounted scraper blade, which would be useful in spreading the sand over the plastic. The three drove the truck up a curving, single-lane driveway to a house on top of a hill, where, on the level, hard-packed gravel parking area adjacent to a

private residence, they got out of the truck and jump-started the tractor. The victim, although the least experienced of the three, insisted on driving the tractor down the hill and back to the correctional facility. From the level surface he proceeded down an 11-degree slope approximately 77 feet, where the road curved about 90 degrees to the left and continued on a 9-degree slope. He proceeded another 91 feet. On his left was a steep earthen embankment, on his right a one-foot high rock berm. Beyond the berm was a 30-degree slope of approximately 26 feet. A five-foot tall chain link fence was at the bottom of this slope. The road continued about 60 more feet and then curved to the right, around another private residence at the base of the hill, leading to the public road. Witnesses report that the tractor was traveling at a high rate of speed. It veered to the left into the embankment, then came back across the road and over the rock berm, rolling one-half turn, ejecting the driver, crushing the chain-link fence and coming to rest on top of the victim at the bottom of the slope. The witnesses reported that the tractor was still in first gear following the incident. They concluded that the victim had panicked, pressed the clutch instead of the brake, and accelerated down the slope.

The witnesses, who had traveled ahead in the pick-up truck, had stopped and were waiting for the victim at the bottom of the driveway. One of the witnesses saw the tractor go over the hill. The other witness saw the victim be thrown from the tractor and land on the chain link fence; he saw the tractor roll one-half turn to the right and come to rest on the victim. One witness ran to the victim, recognized that help would be needed to extricate him, and ran about 20 feet to the nearest house to call a wrecker, then returned to the victim. The wrecker arrived in 4-5 minutes, at about the same time that two nurses who lived in the neighborhood arrived to render aid. CPR was initiated and continued until the arrival of the emergency medical service (EMS), who checked for vital signs and found none. The coroner was notified and arrived at 12:55 PM; he pronounced the victim dead at the scene.

The victim was a 36-year-old single man, approximately six feet tall and 200 pounds. Co-workers reported that he was very well suited to the position of recreation director, as he had a cheerful nature and was popular with everyone. His work duties and hours varied according to the sports being played at particular times. On the day of the incident he had started his work day a little before 11:00 am. His plan was to get the plastic and the tractor, and then spread sand over the plastic with the tractor, to create a volleyball court. This type of work on the tractor was part of his routine job responsibilities. Although he had no formal safety training on the tractor, he had used it previously in his work on the flat surface of the prison grounds. His co-workers reported that he had never had occasion to drive the tractor on sloping ground.

The employer is an employee-owned corporation which contracts to manage correctional institutions. At the time of this incident, a total of eight institutions of various types, in four states, are under its management. Seven of these employ a recreation director, and five of them own a tractor. (The institutions which are located within cities do not have a need for tractors.) The corporation provides a safety orientation program for new employees, as well as an ongoing emphasis on safety; however, there is no safety training specific to tractor operation. This particular facility is a 300-bed "restricted minimum" facility completed in October 1993. It usually houses from 230 to 270 inmates, and has 80 employees on site.

The tractor involved in the incident had been at the facility since it opened in 1993. Following this incident, however, it was removed for examination and then transferred to another facility, and thus was unavailable for examination by FACE investigators. The investigators were able to procure and review the photographs taken by the coroner at the scene, as well as the written report of the mechanic who inspected the tractor following the incident. This was a low-profile standard Farm all utility tractor, 1955 model IH300, 40 horsepower PTO, gasoline engine, with a gross weight of 4800 pounds. A three-point-hitch-mounted scraper was attached. It was not equipped with a Roll Over Protective Structure (ROPS) or a seatbelt. Maintenance workers at the correctional facility used the tractor as part of their routine duties. The individual who had borrowed it the previous weekend reported that it had worked fine at that time, but that the brakes had been marginal for some time. Following this incident, a prison administrator sent the tractor to a qualified mechanic for inspection of its transmission and brakes; the mechanic's report stated in part as follows:

We were unable to get the tractor to disengage or jump out of gear;

The brakes were not good but we were able to stop the tractor at any point on the incline.

We disassembled the brakes and found them to be in very much need of repair with lots of rust and dirt.

CAUSE OF DEATH

Cause of death as stated on the death certificate was massive internal injuries/chest crushed/farm tractor turned over on victim. No autopsy was performed. Toxicology reports were negative.

RECOMMENDATIONS/DISCUSSION

Recommendation #1: Tractor owners should contact their county extension agent, equipment dealer or equipment manufacturer to see if retrofit rollover protection and operator restraint systems are available for their equipment.

Discussion #1: The tractor involved in this incident, manufactured in 1955, was not equipped with ROPS or a seatbelt, which protect the operator in the event of a rollover, and in the instant case might have prevented the operator being thrown from the tractor. ROPS first became available as optional equipment on farm tractors in 1971. These safety features were not required on tractors, however, until 1976, when OSHA Standard 29 CFR 1928.51 went into effect. This standard states in part:

A roll-over protective structure (ROPS) shall be provided by theemployer for each tractor operated by an employee. Where ROPS are required by this section, the employer shall: (A) Provide each tractor with a seatbelt...; (B) Ensure that each employee tightens the seatbelt sufficiently to confine the employee to the protected area provided by the ROPS. Although this standard does not apply to tractors manufactured prior to 1976, and thus would not apply to the 1955 model tractor in this case, it is possible to retrofit older tractors with ROPS and seatbelts, and it is strongly recommended that this be done whenever possible. Tractor owners should

contact dealers, manufacturers, or county extension agents for information on sources of retrofit ROPS and operator restraint systems.

Recommendation #2: Employees who operate tractors as part of their job duties should be required to undergo formal safety training in tractor operation.

Discussion #2: Employees who operate tractors should attend safety courses and receive materials to enable them to identify hazards, evaluate risks, and develop safe operating procedures. This information should remain easily accessible to operators. This is an avenue by which county extension agents could be effective in intervention and prevention.

Recommendation #3: Equipment should be kept in good working condition.

Discussion #3: The brakes on this tractor were in need of repair. Although it is not known whether it would have changed the outcome in the instant case, proper preventive and routine maintenance can reduce risk and minimize injury due to equipment failures.

Although it would not have made a difference in this case, since 911 telephone service is universally recognized by the public as the number to call in the event of an emergency, it should be implemented countywide.

REFERENCES

Effectiveness of Roll Over Protective Structures for Preventing Injuries Associated with Agricultural Tractors. MMWR 42(03); 57-59.

Standard Number 1928.51, Subpart C, US Department of Labor, Occupational Safety and Health Administration, OSHA CD-ROM (OSHA A94-2), February 1994.

US Department of Health and Human Services, PHS Centers for Disease Control and Prevention, NIOSH UPDATE, January 29, 1993.