FINAL KY FACE #94KY09001

Date: 2 December 1994

Subject: Farm Worker is Killed in Tractor Rollover

SUMMARY

A 42-year-old farm worker was killed when the tractor he was operating rolled over on him. The tractor was not equipped with Roll Over Protective Structures (ROPS) or a seat belt. The victim had been bush hogging alone in a field the morning of the incident. Having completed a lower pasture, he proceeded up a single lane loose gravel road carved in the side of the hill. The left side going up the hill was covered with trees and brush. The right side fell quickly off to form a steep embankment. As the victim maneuvered the tractor up the hill, the right rear wheel began sliding off the road. Braking did not stop the tractor. It rolled over onto the victim, crushed him and continued to roll three more times. The victim was discovered about six hours after the incident. The FACE investigator recommends in order to prevent future fatalities owners and operators should:

- Equip tractors with rollover protective structures and seat belts.
- Keep equipment in good working order.
- Plan ahead, anticipate problems, thoroughly evaluate the scene and address hazards.

Additionally, county officials should activate a 911 emergency call system.

INTRODUCTION

On Thursday, August 4, 1994, a farm worker was killed when the tractor he was operating rolled over. On Monday, August 8, the FACE investigator learned of the incident from a nurse at the Southeast Center for Agriculture Health and Injury Prevention at the University of Kentucky. An investigation was immediately initiated. On Monday, August 22, 1994, the FACE investigator traveled to the scene. Interviews with the county coroner and the deputy coroner who handled the case were conducted. Two neighbors and the farmer who pulled the tractor from the scene were also interviewed. The scene and tractor were photographed and measurements were taken. EMS personnel who responded to the incident were interviewed by phone on August 28. Phone interviews with the owner of the farm were conducted. The coroner's notes and report and the medical examiner's report were obtained.

The owner of the farm and tractor, an 88-year-old widow, lives in a city about 3 hours from the farm. She is driven to the farm by her son about 2-3 weekends per month. The 110 acre farm has several buildings, two homes, and a 3700 pound tobacco base. One home is abandoned, one is used weekends and the tobacco base is leased out. Additional income from the land use is not known. The owner has owned the farm for over 30 years. She has been coming to the farm weekends since her husband died 7 years ago. Prior to that time they lived together on the farm.

The victim was hired to mow several fields for the farm owner. He had done farm work all his life, primarily being hired by local land holders for various jobs. He had over 20 years' experience operating farm equipment. He had worked for this particular farm owner for several years keeping the farmstead maintained in the owner's absence. Although grossly overweight (350+ lbs), he was in moderately good physical health. It is not known whether he had any formal safety training. Injury history is not known. He was not the owner of the tractor.

INVESTIGATION

On the morning of the incident, the victim began work at 7:00 am. He was going to mow bottom land 4 tenths of a mile from the farm residence and main highway, and then meet a friend at 1:00 pm to complete work at another farm. Access to the bottom land was via a narrow single lane road carved down the side of a hill. The road begins as grass and becomes mixed gravel as it proceeds down the 11 degree slope. One side is a 45 degree upward slope and the other side drops off at a 37 degree angle. Dense hardwoods cover the hillside creating a canopy overhead. The day of the investigation followed a rainy weekend and parts of the road were eroded, making automobile travel extremely difficult. After 1500 feet the hill side forest opens to a flat meadow.

The victim, driving a 1975 Case 990 (52 horse power pto) tractor with a three point hitch type bush hog attachment, finished the 20 acre bottom and began up the single lane road. The left side of the road was a tree covered hillside, to the right a steep drop off. About 40 feet up the road, a 2 inch maple branch protruded from the left side perpendicular to the road. It extended halfway across the road. It was multi-branched with dense foliage suspended about 6 feet above the road surface. Evidence suggests the victim attempted to minimize the obstacle effect by cutting slightly to the right. As he did the right rear wheel began to slide on the loose gravel. He tried to turn back left but it was too late. The tractor rolled off the edge to the right and onto the victim. It continued to roll three more times as evidenced by gouges in the earth from the bush hog. It came to rest upright with a broken water hose and engine still running. It had jumped out of gear. Its engine continued to run until it locked up. The tractor was found with the key on and power take off disengaged.

The victim lay Trendelenburg, parallel with the road, nearly 40 feet from the tractor and 13 feet from the road surface. He sustained several crushing injuries to the ribs and fifth thoracic vertebra. Lacerations and contusions to the fatty tissue on his chest and extremities were noted on the autopsy. It is not known if the victim attempted to leap clear of the tractor.

The victim was found at 7:30 pm by his brother-in-law and sister-in-law with whom he was scheduled to meet earlier in the day. They went to a neighboring farm about 3/4 mile away to call the Emergency Medical Service (EMS). Local EMS received the call through a central dispatch at 8:01 and left for the scene at 8:04. They arrived at the scene at 8:25 pm. The deputy coroner was called and arrived at the scene at 8:45 and pronounced the victim dead at 8:56 pm. No first aid was administered. The EMS were able to drive a Suburban with roof lights down the hill in order to illuminate the scene. The victim was loaded into the back of a pick up truck and taken to the top of the hill where he was transferred to another vehicle and to the funeral home.

CAUSE OF DEATH

Cause of death was listed as acute cardiopulmonary failure due to blunt force (crush) injury of trunk. Toxicology results were negative for drugs.

RECOMMENDATIONS/DISCUSSION

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

Discussion #1: The tractor in this incident, manufactured in 1975, was not equipped with a ROPS or an operator restraint system, which protects the operator in the event of a rollover. ROPS first became available as optional equipment on farm tractors in 1971. These safety features were not required on tractors until 1976, when OSHA Standard 29CFR 1928.51 went into effect. This standard required employers to provide ROPS and safety belts for all employee-operated tractors manufactured after October 25, 1976. However, this standard does not apply to family farms or farms employing fewer than 11 employees. Since 1985, as a result of voluntary agreements by tractor manufacturers, all new tractors sold in the US have been equipped with ROPS and safety belts. (MMWR Jan.29, 1993) On this 1975 tractor, retro-fit ROPS and operator restraint systems are available at a cost of $475.00. Tractor owners should contact dealers, manufacturers or county extension agents for information on sources of retro-fit ROPS and operator restraint systems.

Recommendation #2: Equipment should be kept in good working condition.

Discussion #2: The tractor did not have functioning brakes when inspected. Both brake pedals met no resistance when pushed. To stop the tractor while being towed from the scene following the incident, the clutch was released and the tires skidded. This was the only way to slow the tractor in tow. The tires were not equally fluid filled. The right rear tire had only 25% of the recommended fluid. Proper preventive and routine maintenance can reduce risk and minimize injury due to equipment failures.

Recommendation #3: Operators should evaluate the terrain, address potential hazards and remove obstacles before beginning a procedure.

Discussion #3: Evidence suggests the victim swerved to the right to avoid being hit by the maple branch. By evaluating the scene and removing potential obstacles, operators reduce risk of injury. The victim did not cut down the protruding branch which covered over half the road. Its removal prior to beginning the ascent may have prevented the rollover by keeping the tractor centered on the 10 foot wide, single lane, ascending road.

Additionally, county officials should initiate 911 emergency calling service. EMS is currently dispatched from a neighboring county. Although response time was not a factor in this case, 911 recognition by the population simplifies communication to EMS and other emergency personnel.

This service should be initiated as soon as possible.

REFERENCES

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

Effectiveness of Roll Over Protective Structures for Preventing Injuries Associated with Agricultural Tractors. MMWR 42(03); 7-59

National Safety Council (1978). "Tractor Operation and Roll-Over Protective Structures." Occupational Safety & Health Data Sheets. I-622-Reaf. 85.

National Institute for Occupational Safety and Health (Jan 29, 1993). "NIOSH Reports on the Preventability of Tractor Rollovers." Centers for Disease Control and Prevention. DHHS(NIOSH) publication No. 93-119.