

Public Health
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Subject: Retiree dies in Tractor Rollover

SUMMARY

A 63-year-old retired bus driver was pinned underneath a rear tractor tire after it overturned while he was bushhogging. The 40-year-old tricycle tractor, not equipped with a ROPS or a seatbelt, had a bushhog attached. On the morning of the incident, the operator and his brother were mowing a portion of a pasture. At about 9:30 am, the victim started mowing at the bottom of a steep slope, and then progressed toward the top of the ridge. In order to make turns he had to circle around three dogwood trees at the top of the ridge. His brother was mowing in a neighboring pasture at the time of the incident. When he noticed that he no longer heard the victim's tractor running, he went to check and discovered the victim pinned underneath the rear wheel of the tractor. He called the EMS\coroner's office at 4:10 pm. The victim was pronounced dead at 4:30 pm due to cervical fracture 4,5,6. Investigators conclude, in order to prevent future fatalities, tractor owners and operators should:

- * Retrofit tractors with Roll Over Protective Structures (ROPS) and seatbelts;
- * Avoid operating tricycle tractors on steep terrain;
- * Avoid operating tractors on slick terrain;
- * Operators should be trained in tractor safety.

INTRODUCTION

On Saturday, May 27, 1995, a 63-year-old male retiree was pinned underneath the rear tire of his overturned tractor. On June 2, 1995, the FACE investigator learned of the fatality from an Occupational Health Nurses in Agricultural Community (OHNAC) nurse. On June 23, 1995, the FACE investigator and the OHNAC nurse traveled to the scene to continue the investigation. The EMS\coroner and a family member were interviewed. The victim's brother was interviewed by telephone.

Measurements, photographs and a video were taken of the scene. Photos taken by the coroner and the coroner's report were reviewed. Toxicology reports were negative. An autopsy was not done.

One and a half years ago, the victim had retired from driving a bus, which he had done for 30 years in a large city 5 hours away. He and his brother owned the 303-acre farm that was used primarily to raise cattle. Most of the year the victim's brother maintained the farm. According to a family member, the victim visited about four weeks every year to help out on routine farm work. He enjoyed mowing the pasture on his spring and summer visits. He had arrived at his brother's house the night before the incident and intended to mow for a week before returning home with his wife. As a hobby, the victim bought and had restored old Oliver tricycle tractors. He owned two 1958 Model 770 Olivers. He had bought the used tractor involved in the incident eight years ago. He had a previous farm accident several years ago when his tractor slid into a farm pond. He had no history of medical problems and his occupation as a bus driver had required that he pass an annual physical exam.

INVESTIGATION

On Friday, May 26, 1995, the victim drove five hours from his home to begin a week of work on the farm he jointly owned with his brother. On Saturday morning, May 27, the victim and his brother started mowing a hilly pasture. This was the first time this pasture was to have been mowed this season. Each was on a tractor in adjacent fields. About 11:00 am they stopped due to a flat tire on the drag type, seven-foot-wide bushhog attached to the victim's 1958 Oliver tricycle tractor. The brother reported a scratch on the victim's face and said that he had run under a dogwood earlier that morning and knocked his glasses off. After going to town to repair the tire, they continued to mow the pasture in a light drizzle.

The 1958 Oliver 770 tractor (42 hp draw bar, 4899 lbs. gross weight) which the victim had owned 8 years and had commissioned to be restored at a local equipment repair shop, was equipped with front end weights (450 lbs). The tractor was a tricycle type with rear wheels spread to 70 inches and an 8 foot wheel base. It had 60-inch, 1/3 fluid-filled rear tires, and 26-inch front tires. The six-cylinder gas engine and frame were in excellent condition for a tractor of this age. The tractor was not equipped with a ROPS or a seatbelt. There was no SMV emblem. The exhaust was broken off and the fenders were bent. The brakes functioned properly. The drag-behind bushhog rolled over with the tractor and sustained minor damage. The PTO drive shaft broke free from the tractor.

The week prior to the incident the victim had done no farm work. It was his routine to come to the farm a few times a year to mow and do other farm chores. As a hobby, he bought and had restored old tractors. He had no formal training in farm work.

About two years prior to this time the victim was involved in an incident on this same tractor. In the previous incident, he was mowing near a pond and the tractor slid into the water. He was not injured.

The 60-acre pasture was bordered on the south side by a steep grass slope terminating in dense old-growth hardwood trees. A ridge paralleled the edge about 150 feet above the ravine. A few trees spotted the otherwise clear mixed-grass pasture. About 60 head of cattle roamed the field. It was the practice to mow the field at least once each year. Sometimes the grass was baled for winter feed.

Mowing began that morning by laying out the land. Even though the victim's brother had warned the victim to stay off the slope with the tricycle tractor, the victim began mowing the perimeter along the ravine edge (parallel to the ridge top and the ravine edge in an easterly direction). The slope of the hillside measured 20 degrees (36% grade). After 12-16 passes around the circumference of the pasture the victim had mowed about 100 feet toward the ridge top. Traveling in an easterly direction, the right tractor wheel was on the low side of the hill.

Near the top of the ridge stood two small maple trees whose lower branches angled six feet above the ground. As the victim made successive passes parallel to the ridge top it became necessary to maneuver around the maples. He turned to the left, going uphill, leaving the maple tree on the right on the 15-degree slope. Then he turned back right to get on the mowing path and it appears the tractor began sliding down the wet hill as he turned the wheel back to the left to straighten out the tractor. Evidence at the scene such as skid marks on the surface suggest the tractor slid 80 feet toward the ravine. It appears the victim was attempting to regain control by turning the tractor downhill, then veering to the right. As he turned the wheel to the right, in a westerly direction, the tractor rolled over to the left and came to rest upside down on the rear fenders and the hood. The victim was partially under the left rear wheel (the low side of the hill).

The brother, who was mowing in an adjacent field, went to check on the victim after turning off his own tractor and listening for the sound of the other tractor. From the top of the ridge, he peered toward the ravine and saw the overturned tractor. He parked his tractor and ran down the hill to the victim. Recognizing that he needed immediate help, the brother went to a nearby house to call 911.

EMS received the call at 4:10pm and arrived at the scene at 4:30. The coroner, being a member of the EMS team, responded to the call and pronounced the victim dead at 4:30 pm. Lines were attached to the maple tree at the top of the ridge and used to extricate the victim. He was then transferred to the funeral home. An autopsy was not done.

CAUSE OF DEATH

The coroner ruled the cause of death as fracture of the 4th, 5th and 6th cervical vertebrae. Death occurred within minutes.

RECOMMENDATIONS/DISCUSSION

Recommendation #1: Tractor owners should contact their county extension agent, equipment dealer, or equipment manufacturer to find out if retrofit

ROPS and seatbelts are available for their equipment.

Discussion: The tractor involved in this incident, manufactured in 1958, was not equipped with ROPS or a seatbelt, which protect the operator in the event of a rollover. ROPS first became available as optional equipment on farm tractors in 1971, but were not required on tractors until 1976, when OSHA Standard 29 CFR 1928.51 went into effect. Although this standard does not apply to tractors manufactured prior to 1976, and thus would not apply to the 1958 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.

Recommendation #2: Avoid operating tricycle tractors on steep terrain.

Discussion: The steepness of the slope (20 degrees) is excessive for a tractor. The hazard is increased due to the configuration of the tricycle tractor. Tractors should not be operated on steep slopes. The centrifugal force caused by turning the tractor combined with the speed of the tractor and the slope of the hill caused the tractor to roll over. This type of tractor should not be operated on steep hills.

Recommendation #3: Avoid operating tractors on slick terrain and when conditions might place the operator at increased risk of injury.

Discussion: In this case it had been raining the morning of the incident. The damp grass-covered hillside reduced the wheel traction which affected tractor handling and ability to stop on the slope. Evidence at the scene suggests the tractor slid for 80 feet before turning over sideways. Operators should exercise caution when conditions alter normal tractor capabilities.

Recommendation #4: Operators should be trained in tractor safety.

Discussion: In this case the victim farmed 2-3 weeks per year. His lifelong farming experience was limited. More importantly, the amount of time spent on the tractor in the week prior to the incident was minimal. Because of this, his familiarity with the tractor and its capabilities may have been a factor in the incident.