Fatality Assessment and Control Evaluation Project

Public Health

KY FACE #96KY105

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To: Carl Spurlock, PhD, Director, Kentucky Injury Prevention and Research Center

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Subject: Hunting Preserve Operator Crushed By Rotary Cutter

Summary

A 36-year-old male was killed while he was attempting to remove barbed wire that had become entangled in the blades of a rotary mower. Although he was a full-time pharmaceutical sales representative, he leased 1,000 acres of farmland to rent to others for hunting purposes. Just prior to the incident he had purchased half of the property. As he was mowing the property using a tractor and rotary mower, the blades became entangled with barbed wire. He stopped working for the day and returned the next afternoon about 2:00 pm to remove the wire. The victim had shut off the tractor, gotten underneath the center deck of the mower, and attempted to remove the wire with wirecutters, when the mower came down and entrapped him. There were no witnesses to the incident. A visiting neighbor discovered the victim lying underneath the mower at 3:30 pm. An oil well attendant who was also on the property called 911 with his cellular phone.

In order to prevent similar incidents from occurring in the future, the FACE investigator recommends that:

- operators of older equipment should not rely on hydraulic systems for support, and should either use cylinder stops or hold the equipment up with solid blocks

- operators should be familiar with farm equipment maintenance procedures before attempting maintenance work

Introduction

On October 11, 1996, a CPHF nurse was notified by a coroner of an agricultural fatality. An investigation was initiated to determine contributing factors and prevention strategies. On December 13, 1996, interviews were conducted with the coroner and emergency medical service (EMS) personnel who responded to the call. Local implement dealers were interviewed on December 16 and 17. An interview was also conducted with the farm owner, who had previously been employed by an implement dealership. The coroner's office provided information regarding the condition of the tractor and hydraulic system, and photographs of the equipment taken at the scene.

The 36-year-old victim was a full-time pharmaceutical sales representative. He leased 1,000 acres of farmland for hunting purposes and allowed others to hunt on the property for a fee. Shortly before his death he had purchased half of the farm. He had helped out on this particular farm for five years, but it was not his normal job to mow the property. Reportedly, he was not familiar with the operation of hydraulic equipment.

The victim and farm proprietor jointly owned the tractor involved in the incident. It was a used John Deere diesel tractor, Model 4320, manufactured in 1971-72, which they had purchased from an implement dealer one week prior to the incident. The day of the incident was the second time the victim had used it, although he had mowed the property two weeks earlier with a different tractor. A Woods Batwing Rotary Cutter, model MD 315, a medium-duty mower, was used for mowing the property. The mower had a 15-foot cutting swath in three 5-foot hinged sections. It was equipped with a fixed PTO shield, but this did not extend all the way to the tractor; about three feet of the shaft were exposed. The mower was not equipped with cylinder stops. Wing sections locked in the "up" position for transport. They were raised and lowered by a ratchet device. The unit's mowing height was adjusted by means of a hydraulic system. An insurance investigation did not reveal problems with the rotary cutter. This size tractor was appropriate for this mower.

Investigation

One day prior to the incident, the victim had been mowing the property using the John Deere tractor with the rotary mower attached. As he was mowing, the blades of the mower became entangled with barbed wire. He shut down the equipment and returned home for the evening. On the following day, the victim reported to his wife that he was going back to the farm to remove the wire that had become entangled. Upon arriving at the farm at 2:00 pm, he returned to the field where the tractor had been left overnight. He started the tractor's engine, raised the mower up, then shut off the ignition. The two wings on the sides of the rotary mower were suspended at 90-degree angles. He got under the central portion of the mower deck to remove the barbed wire. Apparently, as he was attempting to remove the wire with wirecutters, the mower came down and entrapped him. A visiting neighbor discovered the victim at 3:30 pm while searching for her dog. There was also an oil well worker on the property who called for help with his cellular phone. The 911 call was received at 3:41 pm, and the EMS (including a farm-medic instructor) arrived on the scene at 3:55 pm. A volunteer firefighter who was already on the scene assisted the EMS personnel with extrication. The central portion of the mower was lifted with cribbing, and the victim was dragged from beneath the equipment. At 4:02 pm the victim was found by EMS to be without a pulse and asystole was reported per the EKG monitor. Bystanders had reported

discovering the victim 30 minutes prior to EMS arrival. Time of death was recorded as 3:30 pm by the county coroner.

Shortly after the fatal incident occurred, an insurance company investigated the incident. After starting the engine, the ignition was shut off and the external hydraulic system was observed. It took five minutes for the mower to descend to ground level. No leaks were detected in the external hydraulic system. The insurance investigation revealed a maladjusted selector control valve on the left rear of the tractor, at the point where the hydraulic hose connects. The insurance investigation did not reveal any problems with the mower.

Cause of Death

Cause of death was listed as traumatic suffocation. Toxicology reports were negative. No autopsy was performed.

Recommendations/Discussion

Recommendation #1: Operators of older equipment should not rely on hydraulic systems for support, and should either use cylinder stops or hold the equipment up with solid blocks.

Discussion: The tractor was purchased from an implement dealer; however, it is not routine for them to check for internal leaks prior to resale of equipment. In this case, the vehicle was 25 years old and most authorities agree that the hydraulic system on a tractor of this age can be unreliable. Using blocks to hold up the mower during maintenance could have prevented this fatal incident. A possible explanation for hydraulic failure is that the one-way cylinder hose on the mower O-rings might have been worn and pressure on the blades caused by pulling the wire could have caused the equipment to descend suddenly on the victim. The previous owners of the tractor used it for purposes other than mowing and the problem may have gone unnoticed for some time. Leaks in the external hydraulic system on the tractor were not observed during the investigation by the insurance company.

Recommendation #2: Operators should be familiar with farm equipment maintenance procedures before attempting maintenance work.

Discussion: The victim had performed this task several times before with a different tractor. Woods Batwing Rotary Cutters are now manufactured with a transport bar to hold the rotary cutter up during transport or while performing maintenance work. Models without this bar should be supported with blocks while maintenance work is being performed.