



KY FACE #97KY016

Date: 1 May 1997

Subject: Farmer Killed When Tractor Turns Over

SUMMARY

A 56-year-old farmer was killed when the tricycle tractor he was operating on a hillside overturned. He had been going up and down the hill to bring loads of dirt in the tractor's front-end loader in order to bury a calf. The hillside was relatively steep, and the ground was wet from recent rains. As he attempted to turn with the loader filled and raised, the tractor rolled over several times, crushing the victim. He died at the scene. In order to prevent similar incidents, the FACE investigator recommends:

- Older tractors should be retrofitted with rollover protective structures (ROPS) and seatbelts.
- Tractor tires should be fluid-filled, and front-end counterweights should be used, to lower the center of gravity and improve traction and stability.
- Front-end loaders should be kept in as low a position as possible; when lifted too high, they change the balance and handling properties of the tractor.
- Tractor operators should take into consideration environmental conditions and terrain, and make adjustments as necessary to accommodate to them.

INTRODUCTION

On 7 February 1997, a 56-year-old male was killed when he was crushed in a tractor rollover incident. KY FACE was notified of the incident on February 28 by the coroner who handled the case, and an investigation was initiated. A FACE investigator traveled to the site of the incident on March 6, 1997. Interviews were conducted with the county coroner and the emergency medical service (EMS) personnel who were present at the scene. Photographs of the scene and the equipment involved in the incident were obtained, and information from the death certificate, the coroner's report, and the EMS run report was shared.

INVESTIGATION

The victim in this case was a 56-year-old male who had been a full-time farmer for most of his life. He raised beef cattle and tobacco on the farm where he lived with his wife, who was recovering from surgery at the time this incident occurred. He was in good health, and did not have a history of previous injury incidents.

The tractor was a John Deere Model 40-T, manufactured between 1953 and 1955. It was a tricycle tractor with attached front-end loader. The two-cylinder engine was gasoline powered. Its total weight was 2941 pounds. The tractor was not equipped with a rollover protective structure (ROPS) or a seatbelt. There were no front-end counterweights, and the tires were not fluid-filled.

The weather was cold and clear on the day of the incident, although recent rains had left the ground wet. The steep hillside was covered with mud and patchy grass. A calf had recently died, and the victim was burying it on the hillside, using dirt from a pile near the barn at the top of the hill. Although there were no witnesses, it appeared that he had made one trip and was bringing the second load of dirt down the hill when the incident occurred. The front-end loader was elevated and fully loaded. When the victim attempted to make the turn toward the calf, the tractor flipped over, spilling the load of dirt, and then rolled over several more times.

The victim's wife became concerned after he had been out longer than she expected, so when her home health nurse arrived, she asked her to check on him. The nurse found the victim lying beside the overturned tractor, and came back to the house to call 911. EMS personnel, including the county coroner, arrived at 1:31 pm.

They checked and found no vital signs. The coroner pronounced the victim dead at the scene as of approximately 1:00 pm.

CAUSE OF DEATH

The cause of death as listed on the death certificate was multiple chest injuries. No autopsy was performed.

RECOMMENDATIONS/DISCUSSION

Recommendation #1: Older tractors should be retrofitted with rollover protective structures (ROPS) and seatbelts.

Discussion: In this case, the John Deere Model 40-T tractor was manufactured between 1953 and 1955; a commercial ROPS kit is available for it from Saf-T-Cab for less than \$500.00. ROPS and seatbelts protect a tractor operator by creating a "zone of protection." Whenever possible, operators should reserve the use of non-ROPS-equipped tractors for safer work areas and/or activities. Since 1985, as a result of voluntary agreements among tractor manufacturers, virtually all new tractors sold in the US have been equipped with ROPS and seatbelts. Many tractor manufacturers are currently offering ROPS retrofit kits at cost to encourage owners of non-ROPS-equipped tractors to have them installed.

Recommendation #2: Tractor tires should be fluid-filled, and front-end counterweights should be used, to lower the tractor's center of gravity and improve traction and stability.

Discussion: Such measures can improve tractor stability. While it is not possible to say that they would have prevented a rollover, especially in this particular case with the combination of factors - the tricycle tractor, the raised front-end loader, the steep hill and wet ground - they are always worthwhile safeguards.

Recommendation #3: Front-end loaders should be kept in as low a position as possible; when lifted, they change the balance and handling properties of the tractor.

Discussion: Lifting the front-end loader to maximum height changes the tractor's center of gravity. It is not designed to be used in an extended upright position during transport. In this case, the victim was travelling downhill with the loaded bucket raised; the attempt to turn the tractor in this situation upset the balance and caused the tractor to roll over several times.

Recommendation #4: Tractor operators should take into consideration environmental conditions and terrain, and make adjustments as necessary to accommodate to them.

Discussion: In this case, the hill was both steep and wet. Since the grass was patchy, some areas were

covered by wet grass, and others were muddy. Any one of these factors can lessen the traction of a tractor. The combination of steepness, slick grass and mud would make maneuvering difficult, and a tricycle tractor is especially vulnerable to such conditions.