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Farm Youth Dies After Tractor He was Driving Rolled Over on Him

DATE: November 4, 1994
MN FACE Investigation 94MN04101

SUMMARY

A 10-year-old male (victim) died from injuries sustained when the tractor he was driving overturned. The victim was driving the tractor on a public highway, pulling a baler and a hayrack loaded with bales of hay. He was driving east on the public highway and attempted to make a right turn onto a gravel road. When the rear wheels of the tractor left the asphalt surface and contacted the gravel road, the tractor began to slide. The momentum of the baler, hayrack, and the load of hay apparently caused the tractor to slide to the edge of the road and overturn. The tractor rolled 180 degrees to the side and came to rest in an inverted position at the edge of the road. The victim was pinned underneath the tractor as a result of the rollover. MN FACE investigators concluded that, in order to reduce the likelihood of similar occurrences, the following guidelines should be followed:

- all tractors should be equipped with a rollover protective structure and a seat belt;
- operators of tractors should maintain safe operating speeds at all times; and
- operators of tractors should tow only one machine or equipment while driving on roadways.

INTRODUCTION

On August 2, 1994, MN FACE investigators were notified of a farm work-related fatality which occurred on July 30, 1994. The county sheriff's department was contacted and releasable information obtained. Information obtained included a copy of their report and copies of photos of the incident site. A deputy sheriff provided additional information during a telephone interview with a MN FACE investigator. A site investigation was not conducted by MN FACE investigators.

INVESTIGATION

This investigation is based on a review by MN FACE investigators of a written sheriff's report of the incident and a telephone interview of a deputy sheriff. Also reviewed were three photos of the incident taken by a deputy sheriff.

The victim was driving a farm tractor on a public highway, pulling a baler and a hayrack loaded with bales of hay. The tractor was approximately 25-30 years old and was not equipped with any type of rollover protective structure or a general purpose enclosed cab. It had a narrow front wheel configuration and did not have dual rear wheels. The tractor was capable of a maximum speed of approximately 16-18 miles per hour. The baler produced small square bales. The hayrack had a capacity of approximately 80-90 bales and was apparently nearly full of hay bales.

The victim drove east on an asphalt surfaced public highway and attempted to make a right turn onto a gravel road. No information was provided concerning the approximate speed the victim was driving as he turned the tractor onto the gravel road. The road surfaces were dry at the time of the incident. The intersection of the highway and gravel road was essentially flat with only a slight downhill slope from the highway to the gravel road.

While the victim made a right turn, the rear wheels of the tractor drove off the asphalt surface and onto the gravel road. When the rear wheels contacted the gravel, the momentum of the baler, hayrack, and the load of hay caused the tractor to slide. The tractor continued to slide to the edge of the road and then overturned. The tractor rolled 180 degrees to the side and came to rest in an inverted position at the edge of the road. The victim was pinned underneath the tractor. The baler remained hooked to the tractor. It also overturned and came to rest in the ditch of the gravel road. The hayrack apparently broke loose from the baler and did not overturn. It stopped near the back of the baler with its front wheels near the bottom of the ditch and with its rear wheels on the edge of the gravel road.

Emergency medical personnel arrived at the scene within minutes after the accident occurred. They removed the victim from underneath the tractor and he was pronounced dead at the scene.

The deputy sheriff who responded to the scene reported the victim's father was following his son and witnessed the incident. The father was too distressed to provide the deputy any information concerning the possible cause of the incident. The deputy reported that excessive speed during the turn may have been a primary cause of the rollover.

CAUSE OF DEATH

The cause of death listed on the death certificate was acute lacerations of the brain with multiple skull fractures.

RECOMMENDATIONS/DISCUSSION

Recommendation #1: All tractors should be equipped with a rollover protective structure and a seat belt.

Discussion: Preventing death and serious injury to tractor operators during tractor rollovers requires the use of a rollover protective structure and a seat belt. These structures, either a roll-bar frame or an enclosed roll-protective cab, are designed to withstand the dynamic forces acting on them during a rollover. In addition, seat belt use is necessary to ensure that the operator remains within the "zone of protection" provided by the rollover protective structure. Government regulations require that all tractors built after October 25, 1976, and used by employees of a farm owner be equipped with a rollover protective structure and a seat belt. Many older tractors are in use on family farms and do not have, nor are they required by government regulation to have, such structures to protect their operators in case of rollover. All older tractors should be fitted with a properly designed, manufactured, and installed rollover protective structure and seat belt. If the tractor involved in this incident had been fitted with a rollover protective structure and a seat belt, and the seat belt had been in use, this fatality might have been prevented.

Recommendation #2: Operators of tractors should maintain safe operating speeds at all times.

Discussion: Tractors should always be driven at speeds which allow the operator to maintain complete control. This is especially important when turning and when pulling heavy loads. Apparently, the victim in this incident may have been driving too fast while both making a right turn and pulling two units with the tractor. As the victim attempted to make the

turn, the momentum of the baler, hayrack, and the load of bales exerted a force in a straight line with the direction of travel. As the tractor proceeded through the turn, the momentum of the towed units exerted force against the tractor hitch. This force essentially pushed the tractor through the turn and caused it to slide on the gravel road. The momentum of the towed units, in combination with the forces acting on the tractor during the turn, apparently caused the tractor to overturn. If the victim in this incident had slowed to a safe speed prior to reaching the intersection and proceeded at a speed which required the tractor engine to pull the load through the turn, this fatality might have been prevented.

Recommendation #3: Operators of tractors should tow only one machine or equipment while driving on roadways.

Discussion: The victim was towing a baler and a hayrack loaded with hay bales when the tractor overturned. The combined weight of the baler, hayrack, and the hay bales may have exceeded the weight of the tractor. If the total weight of towed units exceeds the weight of a tractor pulling them, dangerous situations may be created, especially at high speeds and while turning. All of these factors either were or may have been present and contributed to the occurrence of this incident. If the victim had been towing either only the baler or the hayrack loaded with bales, this fatality might have been prevented.

REFERENCES

1. Office of the Federal Register: Code of Federal Regulations, Labor, 29 CFR Part 1928.51 (b), U.S. Department of Labor, Occupational Safety and Health Administration, Washington, D.C., April 25, 1975.

2. Agriculture Safety, Fundamentals of Machine Operation, 1987, Deere & Company, Moline, Illinois, Third Edition.

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