

Farmer Dies After Tractor He was Driving Rolled Over on Him

SUMMARY

The victim was alone at the time that this incident occurred. This report is based on a MN FACE site investigation and a review of a sheriff's department report and photographs of the incident.

A 65-year-old farmer (victim) died of injuries sustained when the tractor he was driving overturned. During the late afternoon hours, on the day of the incident, he used a farm tractor equipped with a front-end loader and a large round bale spear to haul large round hay bales from a field to his farmyard. The tractor was not equipped with a general purpose enclosed cab or a rollover protective structure. After he had hauled two bales from the field and as darkness fell, he drove from the farmyard to get a third bale of hay. He arrived at the field and used the loader and bale spear to pick up another large round bale. Since it was no longer daylight, family members believed that he raised the loader to a height where the bottom of the bale was approximately five feet above the ground. This had been done on other occasions so the bale did not interfere with the illumination provided by the tractor lights.

While he drove from the field toward the farmyard, the left rear tractor wheel gradually left the driveway surface and entered the ditch on the west side of the driveway. The tractor overturned 180 degrees to the left side and came to rest upside down in a field along the west side of the driveway. The victim was found by his son approximately 30 minutes after he had left the farmyard for the bale of hay. The victim's son immediately returned to the farm house and called emergency medical personnel. They arrived at the scene shortly after being notified and removed the victim from under the tractor. The victim was transferred to a local hospital where he was pronounced dead on arrival by the county coroner. MN FACE investigators concluded that 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; and**
- **while in motion, tractors with loaders should be operated with the loader in the lowest possible position.**

INTRODUCTION

On December 28, 1995, MN FACE investigators were notified of a farm work-related fatality that occurred on November 24, 1995. The county sheriff's department was contacted and releasable information obtained. Information obtained included a copy of their report of the incident and copies of their photos of the incident site. A site investigation was conducted by a MN FACE investigator on March 3, 1996. During the site investigation, information concerning the incident was provided by family members of the victim.

INVESTIGATION

During the late afternoon hours, on the day of the incident, the victim used a farm tractor equipped with a front-end loader to move several large round hay bales from a farm field. The tractor and loader were approximately 35 years old. The tractor was not equipped with a general purpose enclosed cab or a rollover protective structure. It had a narrow front wheel configuration and did not have dual wheels on either rear axle. The tractor was equipped with two wheel weights on each rear wheel. The front-end loader was equipped with a general purpose bucket and a large round bale spear. The removable bale spear was attached to the leading edge of the loader bucket. It was rigidly secured to the bucket with a chain and a chain tension binder. The tractor was equipped with three lights (two front and one rear) that were turned on at the time of the incident.

The hay bales were stored outside in a field near the end of the farm driveway. Each bale was five feet in diameter and weighed approximately 1500 pounds. The victim used the tractor and loader to haul one bale at a time from the field to the farmyard. While driving between the farmyard and the field, the victim drove the tractor on the driveway. He had hauled two bales to the farmyard and placed them near a barn where they were cut open and the hay was placed in a cattle lot hay feeder. After he had moved two bales and as darkness fell, he drove from the farmyard to get a third bale of hay. He arrived at the field and used the loader and bale spear to pick up another large round hay bale. Since it was no longer daylight, family members believed that he raised the loader to a height where the bottom of the bale was approximately five feet above the ground. This had been done on other occasions so the bale did not interfere with the illumination provided by the tractor lights. While he drove from the field toward the farmyard, the left rear tractor wheel gradually left the driveway surface and entered the ditch on the west side of the driveway. The slope of the ditch was approximately 18 percent or 10 degrees. This was determined from the measured vertical drop of the ditch (1.3 feet) over a measured horizontal distance of 7 feet. Because of the tilt of the tractor as the left tire travelled into the ditch and the height of the loader and bale, the tractor overturned 180 degrees to the left side. It came to rest upside down in the field along the west side of the driveway.

When the victim did not return to the farmyard with the tractor and loader, one of his sons began to look for him. The victim was found pinned beneath the overturned tractor approximately 30 minutes after he had left the farmyard for the third bale of hay. The victim's son immediately returned to the farm house and called emergency medical personnel. They arrived at the scene shortly after being notified and removed the victim from under the tractor. The victim was transferred to a local hospital where he was pronounced dead on arrival by the county coroner.

CAUSE OF DEATH

The cause of death listed on the death certificate was crushed chest due to tractor rollover.

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 must 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 a 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: While in motion, tractors with loaders should be operated with the loader in the lowest possible position.

Discussion: A front-end loader mounted on a tractor raises the tractor's center of gravity. In addition, the center of gravity rises further as the height of the loader is increased and as the weight of items carried by the loader increases. Raising the center of gravity of a tractor increases the potential of a side rollover. The potential of a side rollover also increases if the wheels on one side of the tractor travel through holes, ruts, and depressions that cause the tractor to tilt to one side. Whenever a tractor equipped with a front-end loader is used and the tractor is in motion, the loader should be kept as low as possible. This is particularly important to reduce the risk of a rollover to the side if heavy items are being transported and if the tractor is driven across inclined terrain.

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.

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