

DATE: September 28, 1995

FROM: Minnesota Fatality Assessment and Control Evaluation (MN FACE) Program
Minnesota Department of Health

SUBJECT: MN FACE Investigation 95MN03901
Farmer Dies After Tractor He was Driving Rolled Over on Him

SUMMARY

The victim was alone at the time that the incident occurred. This report is based upon a review of a written sheriff's department report, a review of copies of their photos of the incident and a telephone interview with a sheriff's deputy who responded to the scene.

A 47-year-old part-time farmer (victim) died of injuries sustained when the tractor he was driving overturned. He used a farm tractor and loader to move a large round hay bale into a steel feed bunk located in a farm pasture. The tractor was not equipped with a general purpose enclosed cab or a rollover protective structure. A front-end loader, equipped with a general purpose bucket was mounted on the tractor. The victim loaded a large round hay bale into the loader bucket and drove the tractor through the pasture. Scattered throughout the sod pasture were numerous rocks of varying sizes that were partially exposed. While the victim drove the tractor across inclined terrain that sloped to the tractor's right, the left rear wheel drove over an exposed rock. The additional tilt of the tractor when the wheel traveled over the rock caused the tractor to overturn. It overturned 180 degrees to the right and came to rest upside down. The victim was pinned to the ground beneath the right side loader frame. The victim's wife and another woman observed the tractor overturn from a farm house window. They immediately called emergency medical personnel who arrived at the scene shortly after being notified. The victim was removed from under the tractor and pronounced dead at the scene. 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 June 29, 1995, MN FACE investigators were notified of a farm work-related fatality that occurred on April 21, 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 not conducted by MN FACE investigators.

INVESTIGATION

The victim used a farm tractor and loader to move a large round hay bale into a steel feed bunk. The feed bunk was located in a pasture that bordered a pond on the farm. 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 wide front wheel configuration and did not have dual wheels on either rear axle. The tractor was equipped with tire chains and wheel weights on both rear wheels. A front-end loader, equipped with a general purpose bucket was mounted on the tractor.

The victim loaded a large round hay bale into the loader bucket and drove the tractor through the pasture. The bale was approximately 5 feet long, 6 feet in diameter and weighed approximately 700 to 900 pounds. Photos of the overturned tractor indicated that the loader was raised to a height of more than six feet. This resulted in the bucket and bale being above the height of the hood of the tractor. The victim drove across inclined terrain that sloped to the operator's right. The terrain sloped approximately 10 degrees or 18 percent, based on an estimated vertical drop of 1.5 feet over a horizontal distance of 8 feet. Throughout the sod pasture, numerous rocks of varying sizes were scattered. These rocks were not lying on the pasture surface but were naturally occurring rocks that were partially exposed.

While the victim drove the tractor through the pasture, the left rear wheel drove over one of the larger exposed rocks. The additional tilt of the tractor when the wheel traveled over the rock caused the tractor to overturn. It overturned 180 degrees to the right and came to rest upside down. The victim was pinned to the ground beneath the right side loader frame. The victim's wife and another woman observed the tractor overturn from a farm house window. They immediately called emergency medical personnel who arrived at the scene shortly after being notified. The victim was removed from under the tractor and pronounced dead at the scene.

CAUSE OF DEATH

The cause of death listed on the death certificate was traumatic head injury with skull fracture and intracranial hemorrhage.

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. Raising the center of gravity increases the potential of a side rollover, especially if the tractor is driven across inclined terrain. Therefore, it is recommended that a front-end loader be kept as low as possible whenever a tractor is in use or in motion. This is particularly important if the tractor is on inclined terrain. If the loader involved in this incident had been lower to the ground, this rollover and 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.

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