

DATE: November 26, 1996

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

SUBJECT: MN FACE Investigation 96MN07101
Farmer Dies After Tractor He was Driving Rolled Over on Him

SUMMARY

A 59-year-old 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 cattle lot. The tractor was not equipped with a rollover protective structure and a seat belt. The victim picked up a large round hay bale with the loader and drove the tractor into a cattle lot. Since the incident occurred after dark, the victim may have raised the loader and bale to a height above the top of the tractor hood so the bale did not interfere with the illumination provided by the tractor lights. While the victim drove through the cattle lot, the tractor overturned 180 degrees to the right and came to rest upside down. The victim was pinned to the ground beneath the left side loader frame and the left rear wheel of the tractor. The following morning, a passing motorist discovered the overturned tractor and called emergency medical personnel. Rescue personnel arrived at the scene shortly after being notified. They removed the victim from under the tractor and pronounced him 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 October 23, 1996, MN FACE investigators were notified of a farm work-related fatality that occurred on February 29, 1996. 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. During MN FACE investigations, incident information is obtained from a variety of sources such as law enforcement agencies, county coroners and medical examiners, employers, coworkers and family members.

INVESTIGATION

On the evening of the incident, the victim used a farm tractor and loader to move a large round hay bale into a cattle lot. The tractor and loader were approximately 35-40 years old. The tractor was not equipped with a rollover protective structure and a seat belt. It had a narrow front wheel configuration and did not have dual wheels on either rear axle. A front-end loader was mounted on the tractor.

The victim picked up a large round hay bale with the loader and drove the tractor into a cattle lot. Photos of the equipment and the bale indicated that the bale was approximately 5 feet long and 6 feet in diameter. It's weight, based on other cases involving large round bales was estimated at approximately 700 to 900 pounds. Since the incident occurred after dark, the victim may have raised the loader and bale to a height above the top of the tractor hood so the bale did not interfere with the illumination provided by the tractor lights. While the victim drove through the cattle lot, the tractor overturned 180 degrees to the right and came to rest upside down. The victim was pinned to the ground beneath the left side loader frame and the left rear wheel of the tractor. The following morning, a passing motorist discovered the overturned tractor and called emergency medical personnel. Rescue personnel arrived at the scene shortly after being notified. They removed the victim from under the tractor and pronounced him dead at the scene.

CAUSE OF DEATH

The cause of death listed on the death certificate was crush injury 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 an object being lifted by the loader increases. 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 heavy items are being carried by the loader and 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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