

DATE: August 30, 1996

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

SUBJECT: MN FACE Investigation 96MN04001
Farmer Dies After Being Struck By A Chain Used To Pull A Machine
From A Field

SUMMARY

A 45-year-old male farmer (victim) died from injuries sustained when he was struck by a chain that was being used to pull a piece of equipment from a field. Earlier that day a tractor was driven, pulling a field cultivator to a farm field. While the cultivator was being pulled toward the field it's wheels cut into wet ground and the tractor and cultivator became stuck. The field cultivator was unhooked from the tractor and the victim was able to drive the tractor from the mud. He drove around the cultivator and backed the tractor toward it to attempt to pull it from where it was stuck. He hooked one end of a chain to the field cultivator. He also hooked one end of a stretchable "snap strap"¹ to the chain and the other end of the strap to the tractor. On one attempt to pull the cultivator free, the chain slipped free from where it was hooked to the cultivator. The chain was propelled toward the tractor and the victim seated in the enclosed cab. It shattered the rear and front windows of the tractor cab, struck the victim and caused him to lose control of the tractor.

The tractor traveled several hundred feet and entered a ditch along a public road. When it traveled through the ditch, the cab door opened and the victim fell from the tractor. He was run over by the left rear dual wheels and the tractor continued across the road and into a field on the other side of the road. The victim's son who was sitting nearby in a pickup, drove to the location where his father had fallen from the tractor and used a two-way radio in the pick-up to call for assistance. Emergency medical personnel arrived shortly after they were notified and immediately transported the victim to a local hospital where he was pronounced dead shortly after he arrived. MN FACE investigators concluded that, in order to reduce the likelihood of

¹ Snap Strap: A strong flexible fabric band used for towing that is several inches wide and varies in length up to 75 feet or more.

similar occurrences, the following guidelines should be followed:

- workers using snap straps should connect them in configurations that reduce the risk of injury from thrown objects; and
- workers should hitch towed loads only to the tractor drawbar.

INTRODUCTION

On June 5, 1996, MN FACE investigators were notified of a farm work-related fatality which occurred on June 4, 1996. 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 equipment involved in this incident. A site investigation was not conducted by a MN FACE investigator. 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 day of the incident, the victim used a four wheel drive tractor to pull a field cultivator² from a wet grass covered area of a field where it was stuck. The tractor was approximately 25 years old and was equipped with a general purpose enclosed cab. It was equipped with dual wheels on all four axles. Earlier that day, the tractor was driven pulling the field cultivator, to a field to prepare the field for planting. Access to the field was gained by driving across a wet grass covered area that was adjacent to the field that was going to be tilled. While the cultivator was being pulled toward the field, its wheels cut into wet ground and the tractor and cultivator became stuck.

The field cultivator was unhooked from the tractor and the victim was able to drive the tractor away. He drove the tractor around the field cultivator and backed toward it to attempt to pull the cultivator backward from where it was stuck. He hooked a chain that was approximately 20 feet long to the field cultivator. He also hooked one end of a 4 inch wide by 20 feet long stretchable fabric "snap strap" to the end of the chain and the other end of the strap to the four wheel drive tractor. He moved the tractor forward and backward and made several attempts at slightly different angles to pull the cultivator free. On one attempt while the chain and strap were under tension, the chain slipped free from where it was hooked to the cultivator. Due to the energy stored in the snap strap as it stretched under tension, the chain was propelled toward the tractor and the victim seated in the cab. The chain

² Field Cultivator: A machine used to till and level soil prior to the planting of crops.

shattered the rear and front windows of the tractor cab, struck the victim and caused him to lose control of the tractor.

The victim's son was sitting nearby in a pickup and saw the incident occur. The tractor traveled several hundred feet and entered a ditch along a public road. It traveled through the ditch where the cab door opened and the victim fell from the tractor. He was run over by the left rear wheels and the tractor continued across the road and into a field on the other side of the road. The victim's son drove the pickup to the location where his father had fallen from the tractor and used a two-way radio in the pick-up to call for assistance. The tractor continued to travel in a large circle slowly turning to the left. After turning 180 degrees it crossed the road again and continued to travel in a circle until the right-side wheels collided with and drove onto the field cultivator where it also became stuck. The victim's son ran to the tractor, entered the cab and stopped it. Shortly after the victim's son called for assistance, emergency medical personnel arrived. They transported the victim to a local hospital where he was pronounced dead shortly after he arrived.

CAUSE OF DEATH

The cause of death listed on the death certificate was cardiac electro-mechanical disassociation due to severe closed head trauma.

RECOMMENDATIONS/DISCUSSION

Recommendation #1: Workers using snap straps should connect them in configurations that reduce the risk of injury from thrown objects.

Discussion: The risk of injury from objects that may be thrown or propelled by a stretchable snap strap can be reduced by properly connecting the strap. In this incident, the strap and a steel chain were connected between the tractor and the field cultivator with the chain connected to the cultivator and the strap hooked to the tractor. If the strap had been securely hooked to the cultivator and the chain to the tractor, stored energy in the strap while under tension would have thrown the chain away from the tractor if the chain broke or became unhooked. Whenever a stretchable strap is used to pull a machine or object it should be connected such that if any type of failure occurs while the strap is under tension, the stored energy in the strap will not cause objects to be thrown or propelled toward workers.

Recommendation #2: Workers should hitch towed loads only to the tractor drawbar.

Discussion: The drawbar of a tractor is the safest point on a tractor for pulling towed loads. If a

load is connected either directly or indirectly via a chain or other device to other locations on a tractor, dangerous situations may be created. In particular, the potential for a tractor to tip rearward is much greater if a load is hitched to a point above the height of the drawbar. Also, if chains and snap straps are only hooked to the tractor drawbar, thrown objects caused by a breakage or unhooking of a chain or strap will be more likely to remain close to the ground and not travel up toward the operator of the tractor. Although it could not be determined where the snap strap was hooked to the tractor in this incident, a general safe work practice to follow is to always hitch towed loads to the drawbar.

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