



The National Institute for Occupational Safety and Health (NIOSH)



Farmer Dies After Being Crushed Beneath The Header Of A Combine

MN FACE Investigation 01MN054

Date: February 25, 2002

SUMMARY

A 49-year-old male farmer (victim) died after he was crushed beneath the header of a combine. The combine was equipped with hydraulic cylinders to raise and lower the header. The front of the combine was equipped with a quick-connect coupling mechanism that enabled an operator to easily change from one header to another. It was also equipped with locking mechanisms which could be manually set to lock the header in place.

Tire tracks near a storage building indicated that the victim drove the combine from the building to an outside location where the header was setting. He drove the combine up to the header and activated the hydraulic cylinders to attach and raise the header. He then drove the combine back inside the storage building to complete the attachment of the header. Before leaving the cab of the combine, he apparently left the header in a raised position. After dismounting from the combine cab he began to work on something that required him to crawl underneath the raised header. After he crawled under the header, it fell from the combine and he was pinned beneath it.

A truck driver arrived at the victim's farm with a load of feed. He stopped the truck near the storage building and started an auger to unload the feed. While the feed was being unloaded, the truck driver entered the storage building and found the victim under the header. He ran to the nearby farm house and notified the victim's son. The son placed a call to emergency personnel and then went to the storage building with the truck driver. They used a tractor that was equipped with a front-end loader to lift one end of the header. As they began to lift the header, rescue personnel arrived at the scene. After the victim was freed, rescue personnel checked him for vital signs but did not find any. A county coroner arrived a short time later and pronounced the victim dead. MN FACE investigators concluded that to reduce the likelihood of similar occurrences, the following guidelines should be followed:

- all raised equipment should be blocked if workers are required to crawl underneath it; and
- all equipment locking devices should be properly set before the equipment is used.

INTRODUCTION

On January 15, 2002, the MN FACE program was notified of a farm work-related fatality that occurred on August 13, 2001. The county sheriff's department was contacted and a copy of their report of the incident was obtained. Due to the length of time between the date of the incident and the MN FACE program being notified of the incident, a site investigation was not conducted. However, on January 31, 2002 a MN FACE investigator meet with personnel from the county sheriff's

department and obtain a copy of their report of the incident. Photographs of the incident taken by personnel of the sheriff's department who were at the scene were examined and provided additional details of the incident. 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 was working on the header of a modern self-propelled combine to get it ready to harvest a field of barley. The combine was approximately 12-15 years old and was in good mechanical condition. Modern combines like the one associated with this incident are designed to accommodate various removable units known as headers that are attached to the front of the combine. The header that the victim was working on was approximately 20 feet long and was estimated to weigh about 1000 pounds. Headers are designed for harvesting different types of farm crops. Although the headers are designed for specific crops they all perform the same basic functions which is the initial cutting of the crop from the field and the transfer of it to the feeder and harvesting portions of the combine. The feeder portion of the combine was equipped with hydraulic cylinders to raise and lower the feeder and header during harvest and transport operations. The hydraulic cylinders were manually controlled by a lever located in the operator's cab of the combine.

The front of the combine feeder was equipped with a quick-connect coupling mechanism similar to that shown in Figure 1. The quick-connect coupling mechanism enabled an operator to easily change from one header to another. Attached to the back of the header were two (left and right of center) quick connect latches. Attachment of the header was accomplished by lowering the combine feeder and driving the combine forward until the quick-connect yokes at the front of the feeder contacted the back of the header. When the hydraulic cylinders were extended to raise the feeder, the quick-connect yokes slid up and against the quick-connect latches on the header and raised the header. As the feeder was raised, its weight held it in place against the quick-connect yokes. On each side near the bottom of the feeder was a locking mechanism which could be manually set by the operator to lock the header in place. When these mechanisms are set to their locked position, the header cannot unhook and fall from the combine feeder.

The victim's wife last saw her husband around 10:30 a.m. on the day of the incident when she left their residence to go to her job at a local business. After she left the farm, the victim began to work on the combine. Tire tracks near a large storage building indicated that he drove the combine from the building to a nearby outside location where the header was setting on the ground. He drove the combine up to the header and activated the hydraulic cylinders that raised the combine's feeder and the header as described above. He then drove the combine back inside the large storage building apparently to complete the attachment of the header by connecting various drive belts and chains that are necessary for the header to operate. Before dismounting from the cab of the combine, the victim apparently left the header in a raised position such that it was at least 15-18 inches off the ground.

After dismounting from the cab of the combine the victim, for unknown reasons he crawled underneath the raised header. Rescue personnel found a large steel bar and several wrenches on a piece of cardboard near the victim. The presence of the bar indicates that the header may not have been properly connected by the quick-connect coupling mechanism. This would have prevented the locking mechanism from being set to secure the header to the combine. After the victim crawled under the header, for unknown reasons it fell from the combine and pinned the victim beneath it.

At approximately 12:30 p.m., a feed truck driver arrived at the victim's farm with a load of animal feed. The driver stopped his truck near the large storage building and started an auger on the truck which unloaded the feed into a grinder/mixer. While the feed was being transferred to the grinder/mixer, the truck driver carried a container of fly spray that the victim had also ordered into the storage building. After entering the building, he heard the combine engine running and noticed the victim underneath the header. He called the victim's name but the victim did not respond. He ran to the nearby farm house and notified the victim's son of the situation. The victim's son placed a call to emergency personnel and then went to the storage building with the truck driver. The victim's son started a farm tractor that was equipped with a front-end loader and drove it into the building. They attached several chains from the loader bucket to one end of the header and

were beginning to raise it when the first rescue personnel arrived. The rescue squad also used several air bags to assist in raising the header off of the victim. After the victim was freed, rescue personnel checked him for vital signs but did not find any. A county coroner arrived at the scene a short time later and pronounced the victim deceased.

CAUSE OF DEATH

The cause of death listed on the death certificate was crushing injury to chest, lungs and heart due to farm accident.

RECOMMENDATIONS/DISCUSSION

Recommendation #1: All raised equipment should be blocked if workers are required to crawl underneath it.

Discussion: If it is necessary for workers to crawl under any raised equipment or other item, the equipment or item should first be blocked. The unit should be blocked with wood or other material which will not crush under the weight of the unit. The blocks should be high enough to contact the frame of the unit and minimize the distance the unit can fall. The blocks should be of sufficient size to provide a stable basis of support that will not tip or fall if the unit being supported fall onto the blocks. In this case, the header of the combine was being held in a raised position by the combine's hydraulic cylinders which are designed to lift and support it. However, whenever anyone is required to crawl under a unit like the header in this incident to perform any maintenance or repair, a stable arrangement of blocks should be positioned at multiple locations under the unit to prevent it from falling on a worker. If the header involved in this incident had been adequately blocked prior to the victim crawling under it, this fatality would have been prevented.

Recommendation #2: All equipment locking devices should be properly set before the equipment is used.

Discussion: Many types of farm machines and equipment are designed to allow an operator to quickly change the unit from one configuration to another. These changes range from the switching of attachments on a piece of equipment to the complete removal of equipment from a farm tractor. In most cases, these rapid changes are possible because of connection designs that include some type of quick-connect system in combination with one or more locking devices. The quick-connect system properly positions and connects the equipment or attachment. The locking devices provide a method of securing the equipment or attachment in it's proper and safe mounting position. Whenever locking devices are not set, workers may be exposed to injury by equipment that becomes unattached and falls. In this incident, the setting of two locking mechanisms would have prevented the header from falling from the feeder of the combine and this fatality might have been prevented.

To contact [Minnesota State FACE program personnel](#) regarding State-based FACE reports, please use information listed on the Contact Sheet on the NIOSH FACE web site Please contact [In-house FACE program personnel](#) regarding In-house FACE reports and to gain assistance when State-FACE program personnel cannot be reached.

[Back to Minnesota FACE reports](#)

[Back to NIOSH FACE Web](#)