The National Institute for Occupational Safety and Health (NIOSH)

Farm Youth Dies After Being Crushed by a "run away" Chopper Wagon

MN FACE Investigation 94MN03001

DATE: September 12, 1994

SUMMARY

A 13-year-old male (victim) died from injuries sustained when he was either struck by a “run away” chopper wagon or crushed between the wagon and a farm building. Several minutes before being injured, he hooked the empty chopper wagon to a forage chopper equipped with a quick latch/quick release hitch. The chopper was backed to the chopper wagon by the operator of a farm tractor. After he hooked the wagon to the chopper, the victim moved away from the machinery. The tractor operator drove forward, turning the tractor, chopper, and chopper wagon to the left. A rope attached to the tractor cab extended from the cab to a spring-loaded release lever on the chopper hitch. The rope tightened, as the tractor turned, because it was caught on a bolt head in the upper right corner of the tractor’s hydraulic lift. When it tightened, the quick release hitch was activated, unhooking the chopper wagon. The chopper wagon was not equipped with any type of braking system and began rolling forward. The tractor operator realized the wagon became unhooked and stopped the forward motion of the tractor. The wagon rolled forward and came to a stop when it struck the chopper discharge chute. The operator pulled the tractor and chopper forward to rehook the chopper wagon. Since the wagon was on an incline and the operator was turning the tractor and chopper in a semi-circular path, the wagon began rolling and cleared the chopper discharge chute. The victim turned and saw the “run away” chopper wagon rolling toward a two-stall garage. He ran in front of the wagon and attempted to pick up the hitch to steer the wagon away from the garage. He may have slipped or stumbled when he attempted to pick up the wagon hitch. He sustained severe chest injuries when he was either struck by the left front corner of the “run away” chopper wagon and thrown against the wall of the two-stall garage, or he was crushed between the garage and the left front corner of the chopper wagon. MN FACE investigators concluded that, in order to reduce the likelihood of similar occurrences, the following guidelines should be followed:

- farm operators should not attach quick release hitch ropes to a fixed point on tractors or tractor cabs;
- farm equipment manufacturers should design and develop passive brake systems for all pull-type equipment; and
- farm workers and farm family members should be trained to stay clear of and move away from all “run away” tractors, vehicles, and machinery.

INTRODUCTION

On June 6, 1994, MN FACE investigators were notified of a farm work-related fatality which occurred on June 3, 1994. The county sheriff's department was contacted, and a releasable copy of their report was obtained. A site investigation was conducted by a MN FACE investigator on June 24, 1994. During the site investigation, information concerning the incident was provided by the victim's father.

INVESTIGATION

A 13-year-old male (victim) hooked an empty forage chopper wagon to a forage chopper. The forage chopper was equipped with a quick latch/quick release hitch which enabled the tractor operator to unhook the chopper wagon without leaving the tractor. This was done by the tractor operator pulling a rope which extended from the tractor cab, through a series of loops on the forage chopper, to a spring-loaded release lever on the chopper hitch.

The chopper was backed to the chopper wagon by a farm tractor. After the victim hooked the wagon to the chopper, he walked away from the machinery. The victim walked approximately 40-60 feet across the farm yard toward a lawn mower to begin mowing the farmhouse lawn. The tractor operator drove forward, turning the tractor, chopper, and chopper wagon in a semi-circular path to the left. As the operator drove the tractor forward, the rope used to activate the quick release hitch tightened. The rope tightened because it was hooked on a bolt head in the upper right corner of the tractor's three-point "quick-attach" hydraulic lift. This caused the quick latch chopper hitch to release, unhooking the chopper wagon. The wagon, which was not equipped with any type of braking system, began rolling across the farm yard down a slight incline. The tractor operator stopped the tractor and the chopper wagon came to a stop when it struck the forage chopper discharge chute.

The tractor operator drove forward to re-hook the chopper box. Since the tractor and chopper were still positioned in an arc as a result of turning left, when he pulled the chopper forward, the chopper wagon cleared the discharge chute and began rolling across the farm yard.

According to his father, the victim apparently turned and saw the "run away" chopper wagon rolling toward a two-stall garage approximately 40-50 feet across the farm yard. The victim ran in front of the box and attempted to pick up the wagon hitch to steer the wagon away from the garage. He may have slipped or stumbled while attempting to pick up the wagon hitch. As a result, he was either struck by the left front corner of the wagon and thrown against the two-stall garage or he was crushed between the garage and the left front corner of the wagon.

After being injured, he was able to run approximately 35-40 feet towards the farmhouse before he collapsed in a driveway area. Emergency medical service personnel arrived at the scene within several minutes. They performed resuscitation efforts on the victim at the scene and as he was transported to a local community to be air lifted to a nearby medical center. The resuscitation efforts were unsuccessful, and the victim was pronounced dead at the air lift landing site.

CAUSE OF DEATH

The cause of death listed on the death certificate was massive chest trauma.

RECOMMENDATIONS/DISCUSSION

Recommendation #1: Farm operators should not attach quick release hitch ropes to a fixed point on tractors or tractor cabs.

Discussion: The quick release hitch rope involved in this incident was attached to a fixed point on the tractor cab. When the rope is attached to the tractor or tractor cab, tension may be applied to the rope whenever the tractor is turned either left or right. The amount of tension depends on factors such as the sharpness of the turn and the distance from the center

line of the tractor to the point where the rope is attached. If the rope is attached far to the right of the tractor center line, the tension will increase when the tractor is turned to the left, and vice versa if it is attached to the left of the center line. If the rope inadvertently becomes caught on bolts or other components of the tractor or machinery, even greater tension may be applied during a turn. Either farm operators or machinery manufacturers should develop brackets for pull-type machinery which would allow quick release ropes to be held within reach of the tractor operator. This would eliminate the potential for accidental activation of a quick release hitch when tractors are pulling equipment during turns. If the release rope had not been attached to the tractor but instead attached to a bracket on the forage chopper involved in this incident, this fatality might have been prevented.

Recommendation #2: Farm equipment manufacturers should design and develop a passive brake system for all pull-type equipment.

Discussion: The chopper wagon involved in this incident did not have a brake system to stop the unit after it became unhooked from the forage chopper. A system should be designed which would be activated whenever a pull-type unit was not being towed. When the system sensed that a unit was not in tow, a brake should be activated and one or more of the wheels locked. This would bring the equipment to a stop and allow farm workers to adequately chock its wheels before rehooking the equipment. If the chopper wagon involved in this incident had a passive brake system which would have been activated when the wagon became unhooked, this fatality might have been prevented.

Recommendation #3: Farm workers and farm family members should be trained to stay clear of and move away from all "run away" tractors, vehicles, and machinery.

Discussion: Sloping terrain on many farms and farm yards can increase the potential for "run away" tractors, vehicles, and machinery. In addition, machinery which is not self-propelled does not have any type of steering or breaking mechanism. These factors increase the risk of injury and death to farm workers and family members who may instinctively run in front of a unit to attempt to stop it or change it's direction of travel. The risk is increased further if a unit is traveling across a farm yard toward a building, creating the potential for the individual to be pinned or crushed between the unit and the building. Through farm safety training and safety warnings published in farm journals, farm workers and family members should be made aware of the dangers of "run away" equipment. Farm workers and family members should be taught to stay clear of and move away from all "run away" tractors, vehicles, and machinery, even if the unit is likely to collide with farm buildings or other machinery. If the victim had been trained to avoid all "run away" units, this fatality might have been prevented.

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