



The National Institute for Occupational Safety and Health (NIOSH)

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Farmer Dies After Being Struck By A Field Drag Section

DATE: December 14, 1994

MN FACE Investigation 94MN05201

SUMMARY

A 74-year-old male farmer (victim) died from injuries sustained when he was struck by a field drag section which stuck to a rear tire of the tractor he was driving. The tractor was not equipped with either a rollover protective structure or a general purpose cab. A front-end loader, equipped with a general purpose bucket, was mounted on the tractor. He was assembling sections of a field drag in an open area near his farm grove. He placed the sections in the loader bucket to haul them from the farm grove. While hauling a section of the drag from the grove, the section fell from the bucket. Apparently he didn't notice it fall from the bucket. As he drove forward, the left front and left rear tractor tires drove over the section. The drag tines punctured the rear tire and apparently the drag section stuck to the rear tire. As he continued driving forward, the drag section was carried up and around the rear tire and struck the victim in the back of the head. He was knocked from the tractor and was found dead in the area where he was assembling the drag sections. MN FACE investigators concluded that, in order to reduce the likelihood of similar occurrences, the following guidelines should be followed:

- all items, such as equipment, machines, construction material, rocks, etc., hauled in loader buckets should be tied or chained securely to the bucket; and
- tractors equipped with loaders should also be equipped with an enclosed rollover protective structure or a general purpose cab.

INTRODUCTION

On September 21, 1994, MN FACE investigators were notified of a farm work-related fatality which occurred on July 6, 1994. The county sheriff's department was contacted and releasable information obtained. Information obtained included a copy of their report of the incident. A site investigation was not conducted by a MN FACE investigator. A county deputy sheriff provided additional information during a telephone interview with a MN FACE investigator.

INVESTIGATION

The victim used a tractor equipped with a front-end loader to haul sections of a field drag from his farm grove. The tractor was approximately 30 to 35 years old and was not equipped with any type of rollover protective structure or a general purpose enclosed cab. The front-end loader was equipped with a general purpose bucket.

The victim worked alone, assembling sections of a field drag in an open area near the farm grove. Older style field drags like the one being assembled typically consisted of four to six individual sections. Each section consisted of five or six pipes approximately 4 feet long. Each pipe was fitted with six or seven tines which were 4 to 5 inches long. The tines were equally spaced along the length of the pipe. The pipes were arranged parallel to each other and were held together in a flexible rectangular arrangement by steel rods approximately 8 inches long.

The victim hauled sections of the drag from the grove and then assembled them in an open farmyard area. He had completed the assembly of several sections of the drag which was hooked to a second tractor. While hauling another section of the drag in the loader bucket, the section fell from the bucket. Apparently he didn't notice it fall from the bucket. As he drove the tractor forward, the left front and left rear tractor tires drove over the section. The drag tines punctured the rear tire and apparently the entire section stuck to the rear tire. As he continued driving forward, the drag section was carried up and around the rear tire and struck the victim in the back of the head.

A neighbor, whose telephone wasn't working, stopped at the farm to inquire whether the victim's telephone was working. He discovered the victim lying on the ground a short distance from the tractor and loader. The tractor was found a short distance from the victim. It was going in circles as a result of both left tires being punctured.

The neighbor called local emergency medical personnel who arrived at the scene a short time later. The victim was pronounced dead at the scene. It was estimated that the incident occurred sometime between 8:00 a.m. to 10:55 a.m. on the day the victim was discovered.

CAUSE OF DEATH

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

RECOMMENDATIONS/DISCUSSION

Recommendation #1: All items, such as equipment, machines, construction material, rocks, etc., hauled in loader buckets should be tied or chained securely to the bucket.

Discussion: The design of most general purpose loader buckets is such that they are well suited for hauling materials such as dirt, gravel, animal feeds, snow, etc. These types of materials are easily contained and carried in a loader bucket. Although they may spill from the bucket in small quantities during transport, large quantities of these items are unlikely to fall from a raised bucket and injure a tractor operator unless the material is frozen. This is not the case for large irregular shaped objects such as the drag sections involved in this incident. Large irregular shaped items may extend beyond the sides or edges of the bucket. In addition, they may not stand or rest in a stable position inside the loader bucket. As the loader is raised and the relative angle and position of the bucket relative to the ground changes, these items may slide, tip, turn in the bucket, or they may fall from the bucket. If the load is transported over rough ground at high speeds, the likelihood of the items falling from the bucket may be increased. Although the exact reason why the section fell from the bucket is unknown, it apparently was not adequately tied into the bucket. If the drag section had been securely tied or chained into the bucket, this fatality might have been prevented.

Recommendation #2: Tractors equipped with loaders should also be equipped with an enclosed rollover protective structure or a general purpose cab.

Discussion: The tractor used during this incident was not equipped with any type of enclosed protective structure. If it had been equipped with either an enclosed rollover protective structure or a general purpose cab, the drag section probably would have been deflected away from the operator after it stuck into the rear tire. If it had been deflected, this fatality might have been prevented. Although the drag section apparently fell out of the front of the bucket, unsecured items may fall over the back edge of a loader bucket. The potential of this happening is increased as a loader bucket is raised. If a loader bucket is raised high enough, an unsecured item may fall over the back of the bucket. It might then tumble down the raised loader

and strike the tractor operator. If tractors equipped with a loader were also equipped with an enclosed rollover protective structure or a general purpose cab, items which fall from the loader might be prevented from striking and seriously injuring the operator.

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