DATE: March 23, 1994

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

SUBJECT: MN FACE Investigation 93MN07501
Farmer Dies From Severe Burn Injuries

SUMMARY

An 82-year-old male farmer (victim) died from severe burn injuries after he caught on fire as he was removing the sediment bowl housing from a tractor. It was approximately 4:30 p.m., and he was alone at the time of the incident. The gasoline powered tractor began missing as it was used to move large round hay bales. To alleviate the problem, the victim stopped the tractor, dismounted, and removed the tractor's glass sediment bowl for cleaning. Gasoline spilled onto the tractor, ground, and victim when he removed the bowl. The starter and battery cable connection was located about five inches below the bowl. He had not, as was his usual procedure during bowl cleaning, disconnected the battery cable. As he used a wrench to remove the bowl's housing, it contacted the battery cable at the point where it was connected to the starter, sparked, and he and the tractor caught on fire. He attempted to extinguish himself with water inside his home but, perhaps realizing the house was beginning to burn, was found by first responders exiting it with his hands and boots on fire. He suffered second and third degree burns over approximately 50 percent of his body and died five days after the incident. MN FACE investigators concluded that, in order to minimize the occurrence of similar incidents, the following guidelines should be followed:

> disconnect tractor battery cables before performing maintenance near them, especially when gasoline or other flammable substances are in proximity and capable of igniting in the event of sparking; and

> place protective rubber boots over battery cable connections to eliminate the possibility of sparking on impact with tools during routine maintenance.

INTRODUCTION

MN FACE was notified of a November 20, 1993 farm work-related death on November 23, 1993. The fatal incident occurred on November 15, 1993. Information from first responders, a funeral director, a deputy state fire marshall, and the victim's son was obtained. A site investigation was conducted on

December 7, 1993, with assistance of a National Institute for Occupational Safety and Health, Division of Safety Research, investigator.

The victim lived alone at the farm where the incident took place; his son helped him work the property. The incident was unwitnessed, but the victim was able to relate some of the events to his son before his death.

INVESTIGATION

An 82-year-old male farmer (victim) was using a 30- to 35-year-old tractor equipped with a fork lift on its front end to move large round hay bales. A sediment bowl assembly, consisting of a three to four ounce glass bowl and a metal housing connecting it to the tractor, was located near the tractor's engine on the left front (driver's) side. The sediment bowl is a collection point for gasoline sediment, and its purpose is similar to in-line fuel gasoline filters on newer tractor models. The tractor's starter was located just below the sediment bowl. Cables from the battery on the opposite side of the tractor connected to the starter approximately five inches from the bowl.

According to the victim's son, routine cleaning of the tractor's sediment bowl and gas line was necessary to ensure smooth, efficient operation and occurred about six to twelve times per year. Usually after disconnecting the ignition's battery cable, the bowl alone was removed and cleaned. At most, this process required only the use of a pair of pliers. Typically, gasoline spilled onto the tractor, ground, and person removing the bowl during the process.

The incident occurred at 4:40 p.m. As the victim proceeded up a small incline with a bale of hay, the tractor's engine began missing. To alleviate the problem, he turned the engine off, dismounted, and began the process of cleaning the bowl and gas line. He did not, however, disconnect the battery cable from the ignition system. There was gasoline on the tractor, ground, and victim after he removed the bowl. For unknown reasons, he then began to remove the metal housing from the tractor with a metal wrench. The wrench handle hit the battery cable at the point where it was connected to the starter, sparked, and the victim and tractor caught on fire.

Three deer hunters in the area, one of whom was a trained first responder, saw dark smoke originating at the farm. When they arrived they found the burning tractor about 15 feet from a barn. As they investigated further, they discovered the victim exiting the house with his hands and boots on fire. He had entered the house after the incident in an effort to extinguish himself but, perhaps realizing the house itself was beginning to burn, was returning outside.

The victim was given immediate assistance, 911 was called, and he was transported to a hospital. He suffered second and third degree burns over approximately 50 percent of his body; he died five days after the incident as a result of the severe burns.

CAUSE OF DEATH

The cause of death reported by a local funeral director was deterioration and infection due to severe body burns.

RECOMMENDATIONS/DISCUSSION

Recommendation #1: Disconnect tractor battery cables before performing maintenance near them, especially when gasoline or other flammable substances are in proximity and capable of igniting in the event of sparking.

Discussion: The ignition system battery connection and the sediment bowl location was similar on two other tractors on the victim's property. It is not known if similar fire incidents have occurred to farmers while cleaning sediment bowls, but the potential for injury exists if metal tools are being used and there is failure to disconnect the battery cable. Because of stray sparks which may occur while using tools to remove tractor sediment bowls, disconnecting battery cables is necessary to avoid injury.

Recommendation #2: Place protective rubber boots over battery cable connections to eliminate the possibility of sparking on impact with tools during routine maintenance.

Discussion: Rubber boots placed over automobile battery connections are commonplace. Such devices can be purchased from auto part stores and could be placed over connections on tractors to minimize the occurrence of stray sparks.

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