DATE: February 19, 1997

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

SUBJECT: MN FACE Investigation 96MN08701
Farmer Dies Of Injuries Sustained After Falling 20 Feet From Silo

SUMMARY

A 62-year-old male farmer (victim) died from injuries he sustained when he fell from a silo. On the day of the incident, the victim and two other workers used a silo blower to blow silage into the silo. After the first wagon load of silage was emptied, the coworkers drove a tractor from the silo area to a field where another worker used a silage chopper to fill empty wagons. The victim remained at the silo and apparently climbed the ladder rungs of several previously installed silo doors while he carried another door to install in the next available door opening. He was wearing a pair of general purpose "tennis" type shoes at the time. He apparently lost his footing near the height of the opening where he intended to install the door, fell down the chute and landed on the concrete floor. When the coworkers returned with another wagon filled with silage, one of them entered the silo room and found the victim lying on the concrete floor. He immediately ran outside and told the other worker. He then ran to the farm house and told the victim's daughter to call emergency medical personnel. Rescue personnel arrived shortly after being notified and administered resuscitation efforts that were unsuccessful. The victim was pronounced dead at the scene a short time later. MN FACE investigators concluded that, in order to reduce the likelihood of similar occurrences, the following guidelines should be followed:

- whenever work is performed at an elevation where the potential for a fall exists, fall protection equipment should be used;
- workers should ensure that devices used for climbing are stable and secure; and
- workers should always wear footwear that is appropriate for the work environment.

INTRODUCTION

On December 12, 1996, MN FACE investigators were notified of a work-related fatality that

occurred on September 10, 1996. The county sheriff's department was contacted and releasable information obtained. Information obtained included a copy of their report and copies of their photos of the incident site. A site investigation was not conducted by MN FACE investigators. 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 and two other workers used a silo blower to fill a farm silo with fresh cut silage. The concrete silo was connected to a barn by an enclosed silo room that extended from the barn to one side of the silo. A solid versus caged metal chute extended through the roof of the silo room to the top of the silo. The silo had a series of removable doors that were uniformly spaced from the base to the top of the silo and were located in the area enclosed by the silo chute. The chute provided an enclosed area to climb the silo door ladder rungs from the ground to the top of the silo. Prior to starting to fill the silo, doors had been inserted beginning at the silo base and continuing up to a height of approximately twenty feet. The doors were inserted into the door openings from the inside of the silo. They were held in place when the silo was empty by a metal latch. The doors were rigidly held in position by the pressure of the silage against the doors when the silo was full.

The victim and his coworkers used the silo blower to blow one wagon load of silage into the silo. The two coworkers then drove a tractor pulling the empty wagon from the farm yard to a field where another worker used a silage chopper to fill empty wagons. The victim remained at the silo and may have decided to insert additional doors into it. He apparently climbed the silo door ladder rungs while he carried another door to install in the next available door opening. When he reached the door opening at a height of approximately twenty feet, he probably had his feet on the ladder rungs of the nearest door below the opening. While he attempted to insert the door into the silo, he lost his footing, fell down the chute and landed on the concrete floor of the silo room. He may have lost his footing when the door that contained the ladder rungs that he was standing on slipped free and fell into the silo. This scenario of events is supported by the fact that two silo doors were found inside the silo. Both doors were lying on top of the silage that had been blown into the silo shortly before the incident occurred.

When the two coworkers returned with another wagon load of silage, they stopped the tractor and

wagon near the silo blower. Before they began to unload the wagon, one of them entered the silo room and found the victim lying on the concrete floor. He immediately ran outside and told the other worker. He then ran to the farm house and told the victim's daughter to call emergency medical personnel. Rescue personnel arrived shortly after being notified and administered resuscitation efforts that were unsuccessful. The victim was pronounced dead at the scene a short time later.

CAUSE OF DEATH

The cause of death listed on the death certificate was basilar skull fractures, cerebral contusions and edema due to fall from silo.

RECOMMENDATIONS/DISCUSSION

Recommendation #1: Whenever work is performed at an elevation where the potential for a fall exists, fall protection equipment should be used.

Discussion: The victim was working without using any type of fall protection at an elevation where the potential for a fall of more than 10 feet existed. Adequate fall protection equipment, such as lifelines, safety harnesses or belts and lanyards, should always be used whenever the potential for a fall exists. If the victim had been using adequate fall protection equipment (i.e., lifeline, safety harness or belt, and lanyard), this fatality probably would have been prevented.

Recommendation #2: Workers should ensure that devices used for climbing are stable and secure.

Discussion: Non-permanent climbing devices such as general purpose portable ladders or in this case the silo door rungs, provide an increased risk that workers may fall if the climbing device itself suddenly moves or collapses. When this happens, unsuspecting workers may loose their grip and fall or they will definitely fall if their basis of support collapses and falls when they are not using fall protection equipment. In this case, the presence of two doors on top of the silage inside the silo indicate that the victim's basis of support collapsed and caused the worker to fall to the floor. Workers can reduce the risk of falling if they insure that all climbing devices are stable and secure before the devices are used.

Recommendation #3: Workers should always wear footwear that is appropriate for the work

environment.

Discussion: In this case, the victim was wearing a pair of general purpose "tennis" type shoes. Although they may have provided adequate traction throughout most of the victim's work area, they may not have been appropriate for climbing the silo door ladder rungs. Shoes with non-skid soles that are designed to reduce the risk of slipping should be worn whenever workers are required to walk, stand or climb on surfaces where there may be an increased danger of slipping and falling.

George Wahl, M.S.
Senior Safety Investigator
MN FACE

David L. Parker, M.D., M.P.H.
Principal Investigator
MN FACE