DATE: June 9, 1993

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

SUBJECT: MN FACE Investigation 93MN00201
Male Farmer/Handyman Dies After Falling From an Unstable Ladder

SUMMARY

A 57-year-old male farmer/handyman (victim) died of complications from injuries he received after falling approximately 18 feet from an unstable ladder. The victim was connecting a stir auger apparatus to electrical power in an empty, newly-constructed 30-foot diameter grain storage bin. The apparatus consisted of a 15-foot long auger arm and three down augers. The base of the auger arm was connected to a track at the 18-foot high bin eave and, when operational, traveled on this track around the bin for complete mixing of grain. The electrical box the apparatus was being wired to was also at this level. A fiberglass extension ladder, supported against the auger arm, was used by the victim to attain his work position. The apparatus was not operational at this time, but the arm was not secured against movement on the track. As the victim ascended the ladder the arm moved on the track, the ladder became unstable, and he fell to the metal floor of the bin. He sustained a vertebral fracture and died six days later from complications arising from his injury. MN FACE investigators concluded that, in order to prevent similar occurrences, the following guidelines should be followed:

> structures used for supporting ladders should be solid and blocked against motion; and

> manufacturers of equipment like that described in this report should place warning signs in prominent locations on it cautioning workers to secure parts against movement before installation.

INTRODUCTION

While reviewing death certificates in February 1993, MN FACE learned of an October 30, 1992, occupational fall incident which resulted in death six days later. A county sheriff report was obtained, and both the county coroner and victim's spouse were interviewed via telephone. A site investigation was conducted on March 17, 1993.

The victim, a vegetable farmer for the last 12 years, was self-employed as a general handyman. The incident took place in a grain storage bin at a neighboring dairy farm. The victim's nephew, in the bin at the time of the fall, could not be reached for interview.

INVESTIGATION

A general handyman and his nephew were in the process of connecting a stir auger apparatus to electrical power in an empty, newly-constructed grain storage bin. The bin was 30 feet in diameter and 18.5 feet high, ground to eave.

The auger apparatus consisted of three down augers mounted on an arm approximately 15 feet long. The base of the arm was mounted on a track around the bin's perimeter, at its 18.5-foot high eave. The arm extended from the track towards the center of the bin, and the three augers were perpendicular to it. During operation the arm traveled around the track, allowing complete stirring of the grain by the augers. The apparatus was being wired to an electrical box, also at the eave level, at the time of the incident.

The victim used a fiberglass extension ladder to attain a work position for connecting the apparatus to the electrical box. He propped the ladder against the auger arm so that it was positioned between the box and the down auger motors. Though the auger apparatus was not operational at this time, the arm had not been secured against movement on the track. As the victim ascended the ladder the auger arm moved on the track, the ladder became unstable, and he fell to the metal floor of the bin.

The victim landed on his heels and then fell to his pelvic area. An ambulance was summoned by the farm owner and he was transported to a nearby hospital; he was conscious and alert at this time. The victim was later moved to another hospital for further testing. Six days after the incident he died suddenly in the hospital from

complications arising from his injury.

CAUSE OF DEATH

The cause of death listed on the death certificate was pulmonary embolism due to or as a consequence of vertebral fracture due to or a consequence of a fall.

RECOMMENDATIONS/DISCUSSION

Recommendation #1: Structures used for supporting ladders should be solid and blocked against motion.

Discussion: The ladder in this incident was propped against an auger arm which was not secured against motion. The unanticipated movement of the arm and ladder caused the victim to lose his balance and fall to the floor. When positioning ladders, it is important to ensure that the supporting structure is stable and strong enough to hold the weight that will be placed on it. Under no circumstances should ladders be supported by structures that may inadvertently cause movement of the ladder. In this incident the ladder could have perhaps been propped up against the side of the bin instead of the auger arm, a steadier and stronger support. Further, after ascending ladders, workers can tie off near or at the top of the work position for extra stability.

Recommendation #2: Manufacturers of equipment like that described in this report should place warning signs in prominent locations on it cautioning workers to secure parts against movement before installation.

Discussion: As the owner of the farm where this incident took place suggested, warning decals on the apparatus informing and cautioning workers about hazards associated with failure to adequately secure moving parts during installation may help to minimize the chances of incidents like this from occurring. Manufacturers can assume that the use of ladders will be necessary for equipment installation. Placing warnings directly on the apparatus may remind workers to ensure the stability of their work position.

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