FACE 98IA017

TO: Director, National Institute for Occupational Safety and Health

FROM: Iowa FACE Program

SUBJECT: Salesman killed while lifting portable elevator that had tipped over in street.

SUMMARY

In March of 1998 a seed salesman and hobby farmer from out-of-state was killed while trying to upright a new portable elevator that had tipped over in a residential street. He had purchased the 27-foot elevator from a machinery dealership the day before, attached it to the bumper of his pickup truck, and was in process of hauling the machine home. He parked the elevator overnight in the residential driveway of a relative. When leaving in the morning, he turned too sharply and drove one wheel of the elevator over a small snowbank causing the machine to tip over in the street. The salesman, his son, and some neighbors tried to lift the machine by hand, but it was too heavy. Then they tied a nylon clothesline-type rope to the elevator with its other end tied to a 4-wheel-drive vehicle sitting in a driveway. While pulling with the rope and lifting by hand, the men managed to get the end of the elevator above their heads, but then the rope suddenly broke and the elevator immediately fell to the ground, striking the victim on the head. His head injury was severe with significant bleeding, and he was pronounced dead shortly after arrival in the hospital.

RECOMMENDATIONS based on our investigation are as follows:

1. *Farmers and others who routinely pull trailing equipment must be made aware of the driving limitations inherent with their equipment.*

2. *A careful and thorough site assessment must be conducted and safe procedures must be selected prior to uprighting an overturned machine.*

INTRODUCTION

During March of 1998 a 50-year-old male seed salesman from out-of-state was killed while trying to upright a 2-wheeled transportable elevator that had tipped over. The Iowa FACE program was notified of the incident the next day by an EMS responder via our 800 hotline number. We gathered evidence from EMS, the County Sheriff, the elevator manufacturer, and interviews with family members. The Sheriff provided excellent photographs and the elevator manufacturing company provided diagrams and specifications of the machine. Since the elevator was new and had been removed immediately after the incident, and since we received excellent photographs of the scene from the County Sheriff, we could not justify a site visit.

The victim was self-employed, selling seed corn as an independent agent. He had 15 years experience working for a seed corn company, but had been selling independently only since the fall of 1997. The man normally worked alone, and was accustomed to loading bags of seed corn by hand. There was no safety program in place, nor written policies / training for this small business. The man lived on a small hobby farm, which also produced sheep, chickens, and cattle, primarily for 4-H work.

INVESTIGATION

The portable elevator was 27 feet long, weighed 1060 pounds, and had two wheels with a wheelbase of six feet. It was positioned by the distributor at its lowest point for optimum towing safety. No trailer hitch was used, for one end of the elevator was simply a flattened tube which was bolted to the bumper of a pickup truck (see photo).

The farmer and his son arranged to meet with an elevator manufacturer's representative who delivered the new elevator to a location in Iowa. The farmer had relatives who lived nearby, and stayed the night with them, pulling his truck with the attached elevator into the driveway for the night. The next morning the victim backed the elevator into a driveway across the street and proceeded to turn left onto the residential street to leave. He turned too sharply and the left wheel of the elevator rode over a snowbank adjacent to the driveway, causing the elevator to tip over on its right side in the residential street.

The victim's relative and a neighbor heard the noise and came out to help, but the combined effort of four men was not sufficient to right the machine. The victim then produced a yellow nylon rope, and his relative supplied another white nylon rope (clothesline type), which were tied together and attached to the elevator at the upper junction with the left wheel strut. A 4-wheel drive sport utility vehicle was positioned in the driveway to the left of the elevator and the rope was attached to the rear hitch. The plan was to use the rope to assist lifting the elevator, pulling from the left side.

This next attempt to upright the machine failed because the rope simply pulled the elevator along the ground, sliding on the right wheel. Then a section of 2 x 4 lumber was placed between the right wheel of the machine and the curb to stop this sliding, hoping it would act as a fulcrum to upright the machine. On the last attempt one man was driving the utility vehicle while the victim, his son, and the other man were lifting the end of the elevator above their heads. When the elevator was almost upright, suddenly the nylon rope broke and the elevator fell back to the street, hitting the victim on the head. The other men managed to dodge the falling elevator and received no injuries.

The metal tube hitched to the bumper of the pickup had twisted when the elevator initially fell. This may have provided resistance during the attempt t raise the elevator by hand. An attached photograph shows the bent metal tube.

There was significant bleeding from the victim's head and he was having difficulty

breathing. CPR was initiated by the relative and a neighbor, who was an EMT. Several other neighbors witnessed the event, one of which called 911. An ambulance arrived within five minutes, and CPR was continued, however the man never regained consciousness and was pronounced dead in the hospital approximately **1 hour later. The County Sheriff called for a wrecker service, who uprighted the elevator using their wrecker truck. Detailed photographs of the scene were taken by the County Sheriff before the elevator was moved. The photographs clearly show the positions of the vehicles, the rope attachments and other details mentioned in this report.**

CAUSE OF DEATH

The official cause of death from the Medical Examiner's report was, *"blunt trauma to head and neck due to accident."* There was no autopsy performed.

RECOMMENDATIONS / DISCUSSION

Recommendation #1 *Farmers and others who routinely pull trailing equipment must be made aware of the driving limitations inherent with their equipment.*

Discussion: The single axle of this portable elevator was located 15 ½ feet from the rear of the pickup truck. This distance is not long compared to many other trailers, but it is long enough to increase the turning radius of the towing vehicle. All drivers must be constantly aware of this and take wide corners, especially in tight situations, as in this case. The driveway that the elevator was backed into was sufficiently wide that adjustments could have been made prior to making the left turn. Turning sharply with trailers should always be done slowly with careful attention to rear view mirrors. Many farm machines, like this elevator, do not have suspension systems and can easily be damaged by running over curbs or off the roadway.

Recommendation #2 *A careful site assessment must be conducted and safe procedures must be selected prior to uprighting an overturned machine.*

Discussion: The overturned elevator was fairly light and it appeared possible to lift it by hand or with the help of the other vehicle. While the elevator was still attached to the truck bumper and the tube used as a draw bar had been bent, this may have provided significant additional resistance in trying to raise the elevator to the upright position. Essentially the tube had to be bent back close to the original shape while lifting the elevator and this takes considerable force. It may have been safer to remove the rigid bolt connection and use a loose connection, such as a chain, during the time the elevator was raised. The nylon rope used for pulling the elevator was obviously not strong enough for the task. Also, the method of having several men lifting the elevator, being under it while the vehicle was pulling, was an unsafe method. In any rescue or emergency situation it is important to make sure no one is placed in danger of injury. Remember "Murphy's Law as a guideline: *If something can go wrong, it will go wrong*." In this case, if the machine can fall, it will fall. Therefore no one

should be placed under the machine since the machine may fall and crush the rescuer. If no safe alternative can be found with the available resources, it is necessary to call for additional help, such as a towing service in this case.

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Fatality Assessment
&
Control Evaluation Program
(FACE)

FACE is an occupational fatality investigation and surveillance program of the *National Institute for Occupational Safety and Health* (NIOSH). In the state of Iowa, *The University of Iowa*, in conjunction with the *Iowa Department of Public Health* carries out the FACE program. The NIOSH head office in Morgantown, West Virginia, carries out an intramural FACE program and funds state based programs in Alaska, California, Iowa, Kentucky, Maryland, Massachusetts, Minnesota, Missouri, Nebraska, New Jersey, Ohio, Oklahoma, Texas, Wisconsin, Washington, and Wyoming.

The purpose of FACE is to identify all occupational fatalities in the participating states, conduct in-depth investigations on specific types of fatalities, and make recommendations regarding prevention. NIOSH collects this information nationally and publishes reports and Alerts, which are disseminated widely to the involved industries. NIOSH FACE publications are available from the NIOSH Distribution Center (1-800-35NIOSH).

Iowa FACE publishes case reports, one page Warnings, and articles in trade journals. Most of this information is posted on our web site listed below. Copies of the reports and Warnings are available by contacting our offices in Iowa City, IA.

The Iowa FACE team consists of the following: Craig Zwerling, MD, PhD, MPH, Principle Investigator; Wayne Johnson, MD, Chief Investigator; John Lundell, MS, Coordinator; Lois Etre, PhD, CIH, Co-Investigator; Risto Rautiainen, MS, Co-Investigator.

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