

## **FINAL KY FACE #96KY00901**

Date: 9 May 1996

### **Subject: Farmer Strangled by Jacket Caught on Exposed Auger Shaft**

#### **SUMMARY**

A 44-year-old farmer was killed when his jacket became entangled on the protruding metal shaft of a feed bin auger. The victim was atop the feed bin, trying to unclog feed from the auger by beating on the tin cylinder through which the feed passed into the bin. (See Figure 1.) The feed had become clogged at this point several times in the past, and the victim had performed this task on those occasions without injury. There were no witnesses to this incident. It was a rainy day, and the victim was wearing leather-soled boots, so it is possible that his foot slipped on the wet grain bin roof, causing him to grasp or fall against the auger shaft. His nylon jacket was found with its front sections shredded, and nylon threads were embedded in the victim's neck. He was pronounced dead at the scene. The KY FACE investigators concluded that, to prevent similar occurrences, the following precautions should be taken:

- Before attempting to unclog an auger, power should be turned off
- Auger shaft ends should always have protective covers or shields
- Handrails should be installed on tops of grain bins
- Slip-resistant paint should be used on tops of grain bins, or a flat platform should be installed, in order to provide a safer surface on which to stand
- Shoes or boots worn when working on tops of grain bins should have slip-resistant soles, and other clothing should be well-fitting and zipped or buttoned

#### **INTRODUCTION**

On February 8, 1996, a 44-year-old male was killed when the nylon jacket he was wearing became entangled in an exposed auger shaft. KY FACE was notified of the incident on February 9 by a nurse from the Occupational Health Nurses in Agricultural Communities (OHNAC) Project. An investigation was immediately initiated, although upon the advice of the nurse, whose brother was acquainted with the victim's family, the site visit was postponed. On March 12 two FACE investigators traveled to the scene with the nurse. The investigators obtained further information from the OHNAC nurse. No site visit was possible, but the deputy coronor who handled this case was interviewed, as well as the emergency medical services (EMS) and volunteer fire department (VFD) personnel who had responded. Copies were obtained of the death certificate, the EMS report, the VFD report, the coroner's report, and the coroner's photographs of the scene.

#### **INVESTIGATION**

The victim was a college graduate and a full-time, lifetime farmer. He and his wife worked together to operate their over-200-acre farm, on which they raised up to 3,000 hogs as well as a

few crops. They were members of the Kentucky Partnership for Farm Family Health and Safety. Prior to this incident the victim had never been ill nor suffered any serious injury.

The day of the incident was cold and rainy. The victim had climbed to the top (approximately 20-25 feet) of the grain bin to unclog the 10-inch diameter tin pipe through which the ground feed mixture was supposed to drop into the grain bin from the auger. This had happened many times in the past, and he was always able to unclog it by beating on it with his hand. His wife was in the kitchen of their home, and could see him from the window. After seeing him atop the grain bin, she went about her work for approximately 45 minutes before she looked out again and noticed that he was still in the same position. She went outside to check on him, saw that he needed help, and ran back into the house, where she called a neighbor to summon emergency workers. She then took a butcher knife from the kitchen to try and cut him free, but was unsuccessful. The front of his nylon jacket had caught on the protruding metal auger shaft, which was approximately one to two inches in diameter and five inches long. The shaft was rotating and uncovered. The front of the jacket was shredded, and nylon threads were embedded in the victim's neck.

EMS received the call at 2:41 pm, and arrived at the scene (a 13-mile trip) at 2:57 pm. The VFD received their call at 2:53 pm, and arrived at 3:14. The victim's wife and a neighbor had secured the victim with a rope, and had untangled his jacket from the auger shaft by the time these workers arrived. A tractor with a bucket-lift was available at the farm, so the VFD worker used it to lower the victim and the EMS workers from the grain bin roof. On the ground, EMS personnel checked for vital signs; finding none, they notified the coroner's office, the state police and the sheriff's office. The deputy coroner arrived at the scene at 3:25 pm, and placed the victim's time of death at 2:57 pm.

Although there were no eyewitnesses to this incident, the consensus of expert opinion is that the victim, wearing leather-soled boots, probably slipped on the wet, slanted metal surface of the grain bin roof. It is believed that he then either fell against the rotating auger shaft or grabbed for it to keep from falling.

## **CAUSE OF DEATH**

The cause of death as stated on the death certificate was suffocation due to strangulation by coat (coat caught in auger shaft). No autopsy was performed.

## **RECOMMENDATIONS/DISCUSSION**

**Recommendation #1:** Before attempting to service an auger, power should be turned off.

**Discussion:** It should be a habit to shut off the power before attempting to unclog or service an auger. No service activities should be commenced until all rotating parts have stopped. In this case an attempt was made to free the clogged tube. Having performed this procedure several times before, he proceeded in the same manner. Had the shaft not been rotating, he could not have become entangled.

**Recommendation #2:** Auger shafts should always have protective covers or shields.

**Discussion:** In this case the protruding auger shaft had no shield. If there had been a shield in place, it probably would have prevented the entanglement of the victim's coat. Moreover, the auger shaft in this case was approximately five inches long, which is unusual. According to a manufacturer, the usual length is no more than one-quarter inch. It was not clear if the equipment had been modified by the farmer. Had a protective shield been added, the rotating shaft would not have been exposed.

**Recommendation #3:** Handrails should be installed on tops of grain bins.

**Discussion:** If the victim slipped and grabbed, or fell against, the auger shaft, as suspected, handrails could have prevented this by supplying a more stable and safer means of regaining balance.

**Recommendation #4:** Slip-resistant paint, or a flat surface, should be used on tops of grain bins in order to provide safer surfaces on which to stand.

**Discussion:** In this case the metal grain bin roof was slanted (approximately 45 degrees), posing a hazard at any time, but especially when wet, as it was on the day of this incident. Slip-resistant paint provides a gritty surface which would not be as slippery as the tin alone. Also, a level "floor" or platform can be built atop grain bins and silos to provide safer footing.

**Recommendation #5:** Shoes or boots worn when working on tops of grain bins should have slip-resistant soles, and other clothing should be well-fitting and zipped or buttoned.

**Discussion:** The victim in this case was wearing leather-soled boots, which tend to be slippery when wet; some other type of sole might have made him less likely to slip on a wet surface. In this case his jacket was well-fitting and zipped, but since he fell directly onto the auger shaft it became entangled anyway.

**Reference:**

Snyder, K. and Bobick, T. 1995. *Safe Grain and Silage Handling*. DHHS (NIOSH) Publication No. 95-109.