STATE OF NEW YORK
DEPARTMENT OF HEALTH

FATALITY ASSESSMENT AND CONTROL EVALUATION

Farmer Dies after Backhoe Crushing Incident
Case Report: 02NY059

SUMMARY

On September 4th, 2002, a 63-year-old farmer was fatally injured as a result of being run over by a backhoe. The victim had been using the backhoe to move pieces of heavy equipment in a remote area of his farm at the time of the incident. When the farmer dismounted from the backhoe to connect the chain that would be used to pull a heavy piece of equipment, he left the backhoe idling with the transmission in gear and did not set the parking brake. As he was working at his position in front of the left rear tire, the backhoe began to move, knocking the victim down and running over his head. The backhoe proceeded on until coming to rest against a large steel holding tank. The victim was discovered approximately fifteen minutes later by a farm employee who immediately went for help. County sheriff investigators responded to the scene in addition to the local emergency squad. The county coroner was called to the scene and pronounced the victim dead at the location.

New York State Fatality Assessment and Control Evaluation (NY FACE) investigators concluded that to help prevent similar incidents from occurring in the future, individuals operating backhoes should:

- ***Never use a backhoe bucket for the towing connection to trailers;***
- ***Always disengage the transmission and apply the parking brake before dismounting machinery;***
- ***Never stand directly in front of or behind the wheels of a backhoe or other equipment while the machinery is running.***

INTRODUCTION

On September 16th, 2002, the New York State FACE program learned of an agricultural-related fatality through news media reports. The incident involved a 63-year-old Caucasian male farm owner who was attempting to pull pieces of heavy equipment with his backhoe at a remote location on his farm.

On October 8th, 2002, an investigation was conducted by a NY FACE investigator, who is an agricultural engineer. The investigator met with the county sheriff's investigator who had been at

the scene on the day of the incident, and who had followed up with the fatality investigation. NY FACE staff also reviewed the autopsy report and death certificate.

Investigation revealed that the victim involved in the incident had grown up in a farming family and had successfully owned and operated his own farm for many years. He operated a few thousand-acre crop farm growing corn, hay, cabbage, beets, and green beans. Seasonally, he employed many part-time workers, while year round he usually had three to four full-time employees.

INVESTIGATION

On September 4th, 2002, the farmer began his workday around 6:00 AM. At approximately 7:15 AM he drove a Ford 511 backhoe to a field remote from the farmyard. This field was located along a main road in the county. Several large heavy-duty farm trailers and some other pieces of trailed equipment were parked in this area. The farmer wanted to move the equipment from the location and clean up the area. At the time of the incident, he was in the process of moving two large pieces of equipment from the back of this parking area.

One of the trailers being moved by the victim was a very heavy-duty trailer that had an axle at the rear plus two axles at the front with a large pintle hook tongue at the front that was approximately three feet off the ground in its normal resting position. This was an articulated style trailer that was rated for transporting bulldozers and other heavy pieces of equipment. The farmer wanted to move these pieces forward out of the parking area and had brought the backhoe to this location in an effort to pull the trailer forward onto the gravel area of the parking lot. The trailer had been parked in a grassy area towards the back and some light settling had occurred into the ground. Evidence at the scene and the reconstruction of the incident by the NY FACE investigator indicate that in an effort to bring the trailer forward onto the gravel area, the farmer drove the backhoe in front of the trailer and positioned it so the front bucket of the backhoe was up against the tongue of the trailer. He positioned the bucket at the height of the hitch and drove the backhoe directly against the hitch ring. The farmer then dismounted from the backhoe while the engine was still running and removed a chain from the cab of the tractor in order to connect the trailer to the front bucket of the backhoe. As he was standing on the ground in front of the left rear tire and was pulling the chain out of the cab, the backhoe started moving forward. This was possible since the hydrostatic transmission was still in forward and the transmission was in gear with the parking brake not set. Although the engine was at a low idle speed, the backhoe began to drive forward, knocking the farmer to the ground, and running over the farmer's head. The design of the step into the cab, which incorporates a built in toolbox, assisted in pushing the body of the farmer to the side as it knocked him down. This allowed the tractor to run over his head instead of knocking him down and running over his entire body and head as is sometimes the case. The victim's head was crushed between the ground and the left rear tire with the backhoe continuing forward, pushing the trailer tongue sideways and pushing the entire heavy trailer until it came to rest against a large steel holding tank.

Approximately 15 minutes after the incident occurred, one of the farm employees was driving past the location and pulled in to talk with the farmer. The employee had not yet seen the farmer on this particular day, and usually touched base with him to see if there were any special work activities the farmer wanted him to accomplish. The farm employee discovered the victim on the ground and immediately got in his vehicle and drove to a neighboring farmhouse to try to call the emergency

squad. He was unable to make a call since he did not find anyone there. He was coming out of the driveway of the neighboring farm when a county sheriff in a patrol car went by heading towards the sheriff's office for his morning work shift. The employee flagged down the sheriff, who immediately went to the scene with the employee. The sheriff radioed in requesting EMS assistance at the location. County sheriff investigators responded to the scene in addition to the local emergency squad. The county coroner was called to the scene and pronounced the victim dead at the location.

CAUSE OF DEATH

The cause of death was listed on the death certificate as crush injuries to the head, neck and upper thorax.

RECOMMENDATIONS/DISCUSSION

Recommendation #1: ***Never utilize a backhoe bucket for the towing connection to trailers.***

Discussion: Backhoe buckets should not be used for towing. When backhoes are used for their designed purposes, safe operation procedure should be followed whenever operators must leave the operator seat.

Recommendation #2: ***Individuals operating machinery should always disengage the transmission and apply the parking brake before dismounting the machinery.***

Discussion: In this scenario the victim apparently dismounted from the backhoe with the transmission still in gear and the operational lever still in forward. This combination allowed the transmission and axle to continue driving the rear wheels of the backhoe. If the victim had taken the transmission out of drive and placed it in neutral this would have essentially parked the backhoe in a solid position due to the fact that the hydrostatic transmission locks up the transmission when put in the neutral or parked position. Additionally, if the parking brake had been applied, and assuming that the parking brake could have supplied sufficient braking force, the backhoe would not have driven forward at this low idle speed.

Recommendation #3: ***Individuals operating machinery should never stand directly in front of or behind the wheels of the backhoe or other equipment while the machinery is running.***

Discussion: Standing in front of the rear wheels of any piece of running machinery can be hazardous and result in a run over, especially if the machinery has not been shut off with the parking brake properly applied. In this scenario, since the victim was apparently working and arranging the towing chain while standing directly in front of the left rear wheel when the machine moved he was knocked down and subsequently run over. It is recommended to avoid working in close proximity to large drive wheels on heavy machinery. This area should not be considered a safe work zone.

REFERENCES

Iowa FACE Program Report No. 95IA042
http://www.cdc.gov/niosh/face/stateface/ia/95ia042.html

Kentucky FACE Program Report No. 98KY024
http://www.cdc.gov/niosh/face/stateface/ky/98ky024.html

The Fatality Assessment and Control (FACE) program is one of many workplace health and safety programs administered by the New York State Department of Health (NYS DOH). It is a research program designed to identify and study fatal occupational injuries. Under a cooperative agreement with the National Institute for Occupational Safety and Health (NIOSH), the NYS DOH FACE program collects information on occupational fatalities in New York State (excluding New York City) and targets specific types of fatalities for evaluation. NYS FACE investigators evaluate information from multiple sources. Findings are summarized in narrative reports that include recommendations for preventing similar events in the future. These recommendations are distributed to employers, workers, and other organizations interested in promoting workplace safety. The FACE program does not determine fault or legal liability associated with a fatal incident. Names of employers, victims and/or witnesses are not included in written investigative reports or other databases to protect the confidentiality of those who voluntarily participate in the program.

Additional information regarding the New York State FACE program can be obtained from:

New York State Department of Health FACE Program
Bureau of Occupational Health
Flanigan Square, Room 230
547 River Street
Troy, NY 12180

1-866-807-2130

www.health.state.ny.us/nysdoh/face/face.htm