

## **MO FACE INVESTIGATION #97MO030**

### **SUBJECT: Farm Worker Struck-By Back-Hoe in Missouri**

#### **SUMMARY:**

On March 21, 1997 a 48-year-old male farm worker was run over by a back-hoe. He was apparently preparing to move the back-hoe into a maintenance building on the farm. The victim was standing in front of the right rear tire of the back-hoe when he apparently started it while it was in gear. The back-hoe ran over him, then proceeded across the equipment lot before stopping against a trailer. The victim was a part-time intermittent farm worker. He had worked with the employer for many years and had a good knowledge of most the farm's equipment.

The MO FACE investigator concluded that in order to prevent similar occurrences, all employers should:

- ensure that all back-hoes and heavy equipment be started only when the operator is occupying the operator seat;
- ensure all safety switches are maintained and interlocks are operational;
- provide training to employee's in hazard recognition and avoidance, along with safe work practices.

## **INTRODUCTION:**

On March 26, 1997, the MO FACE Program was notified by the county coroner of a machinery-related fatality incident that occurred on March 21, 1998. A 48-year-old farm worker (victim) was killed when he started a back-hoe while it was in gear and it ran over the entire length of his body. The employer in this incident was a farmer who also owned a construction company. The employer operates his construction business out of his farm home. There he maintained his construction equipment including a road grader, two back-hoes, two dump trucks, and various other equipment. The employer also farmed mostly by himself for approximately 20 years and employed the victim for farm work on an as needed basis. The victim had worked for the farmer intermittently for five years and was familiar with the farm equipment located there. The employer did not have a written safety program and stated that he always told the people that worked for him to use common sense, and always make sure they are in the seat when starting any equipment.

The MO FACE investigator traveled to the incident site and conducted interviews with the employer, the county coroner, and the deputy sheriff who investigated the incident. The incident was unwitnessed but the employer's wife was home at the time of the incident and assisted the victim and notified emergency personnel.

## **INVESTIGATION:**

The victim arrived at the farm that morning and had several projects to work on including some fence repair and some repair to the back-hoe. These activities were not out of his capabilities, and he had performed them many times in the past. The back-hoe was an older (late 60's, early 70's) model Ford 3400. It was being started for the first time since winter. The incident was unwitnessed, but apparently the victim started the tractor while it was in gear. He was standing on the right side of the unit in front of right rear tire. After the tractor engine started and the transmission was in gear, the back-hoe began moving, striking the victim proceeding across a gravel parking lot. The unit traveled approximately 157 feet when the bucket of the loader came to rest after striking the rear of a flatbed, goose neck trailer.

The employer's wife heard the victim shouting for help, came out of the house and saw the back-hoe running against the trailer. She first attempted to shut the tractor off by turning the key off. When this did not work, she ran around to the right side of the back-hoe and pulled the kill switch. She then went to the aid

of the victim and then called 911.

The deputy sheriff arrived at the scene first and was able to talk with the victim. The victim said "he was not sure what happened". The victim was life-flighted to a major medical center but did not survive the injuries.

### **CAUSE OF DEATH:**

Crush injuries to the chest and abdomen and multiple fractures.

### **RECOMMENDATIONS/DISCUSSION:**

The following recommendations are intended to educate all employers and employees how similar occurrences can be avoided.

**Recommendation #1: Back-hoes and heavy equipment should be started only when the operator is occupying the operator seat.**

**Discussion:** The victim apparently started the back-hoe while standing in front of the right rear tire. Had he climbed into the seat to start the equipment, this incident would have been avoided. Employers should ensure that workers are trained in the hazards of working on and around heavy equipment, as well as the hazards of starting heavy equipment from the ground. According to some equipment manufacturers, many of the back-hoes manufactured since 1970 are equipped with safety interlocks to prevent this type of operator action. For example, these newer tractors cannot be started unless someone is sitting on the driver's seat, the clutch is depressed, and/or the tractor is in a particular starting gear.

**Recommendation #2: Employers should ensure all safety switches are maintained and interlocks are operational.**

**Discussion:** According to the employer a ignition safety switch may not have been connected. It may have been disconnected when the tractor had an ignition module replaced recently. Failure to reconnect safety interlocks can introduce hazardous situations. Following all

maintenance procedures, ensure that safety interlocks are re-installed, operational and properly.

**Recommendation #3:** Employers should develop, implement and enforce a comprehensive safety program that includes, but is not limited to, training of employees in hazard recognition and avoidance, and safe work practices.

**Discussion:** The employer did not have a comprehensive safety training program, and it appears that the victim may not have fully understood the hazards of starting the back-hoe while not sitting in the operator's seat. Employers should incorporate their employees into the company's comprehensive safety and health plan and safety committees. This form of empowerment can increase worker participation and worker hazard recognition and avoidance. It may also invite more open positive feedback on how the facility could operate more safely and efficiently.

The Missouri Department of Health, in co-operation with the National Institute for Occupational Safety and Health (NIOSH), is conducting a research project on work-related fatalities in Missouri. The goal of this project, known as the Missouri Occupational Fatality Assessment and Control Evaluation Program (MO FACE), is to show a measurable reduction in traumatic occupational fatalities in the State of Missouri. This goal is being met by identifying causal and risk factors that contribute to work-related fatalities. Identifying these factors will enable more effective intervention strategies to be developed and implemented by employers and employees. This project does not determine fault or legal liability associated with a fatal incident or with current regulations. All MO FACE data will be reported to NIOSH for trend analysis on a national basis. This will help NIOSH provide employers with effective recommendations for injury prevention. All personal and company identifiers are removed from all reports sent to NIOSH to protect the confidentiality of those who voluntarily participate with the program.

#### SIGNATURES:

Thomas D. Ray  
MO FACE Program Coordinator  
Chief Investigator

Daryl Roberts  
Chief  
Bureau of Environmental Epidemiology

## MO FACE Dissemination List

NIOSH	NIOSH FACE Program
Alaska Department of Health and Social Services	AK FACE Program
California Public Health Foundation	CA FACE Program
University of Iowa	IA FACE Program
Kentucky Injury Prevention and Research Center	KY FACE Program
Massachusetts Department of Public Health	MA FACE Program
Maryland Division of Labor & Industry	MD FACE Program
Minnesota Department of Health	MN FACE Program
Nebraska Department of Labor	NE FACE Program
State of New Jersey Department of Health	NJ FACE Program
Oklahoma State Department of Health	OK FACE Program
Texas Worker's Compensation Commission	TX FACE Program
Washington Department of Labor & Industries	WA FACE Program
Wisconsin Division of Health	WI FACE Program
Wyoming Department of Health	
Missouri Southern State College	
Missouri Department of Public Safety	
Cuivre River Electric Company	
University of Missouri	
OSHA Kansas City Area Office	
MIRMA	
OSHA St. Louis Area Office	
St. Joseph Safety Council	
Missouri Safety Council	
St. Louis County Department of Community Health	
41st Judicial Circuit of Missouri	
Cape Girardeau County Community Traffic Safety	
St. Louis County Medical Examiner Office	
AMEC	
Missouri Police Chiefs Association	
Children's Mercy Hospital	
St. Louis City Medical Examiner Office	
St. Charles Police Department	
Grundy Electric Company	
Jackson County, Office of the Medical Examiner	
Shelter Insurance Companies	
Missouri Hospital Association	

Safety Council of Greater St. Louis  
MO Department of Elementary & Secondary Education  
Missouri Farm Bureau  
Missouri State Labor Council  
Empire District Electric Company  
Department of Social Services  
Mine Safety and Health Administration  
Safety Council of the Ozarks  
Stephens College  
Missouri Department of Mental Health  
Missouri Department of Labor and Industrial Relations  
Empire District Electric Company  
North Central Missouri Safety Council  
Missouri Sheriff's Association  
Missouri Attorney General's Office  
Missouri Department of Agriculture  
Safety and Health Council of Western Missouri & Kansas