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# INJURY UPDATE

*A Report to Oklahoma Injury Surveillance Participants\**

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August 5, 2005

## **Jump-Start/Bypass-Start-Related Fatalities In Oklahoma, July 1997 – February 2005**

The Oklahoma State Department of Health, Injury Prevention Service began a National Institute of Occupational Safety and Health (NIOSH) funded Fatality Assessment and Control Evaluation (FACE) project in July 1997. Currently, 14 other states also participate in the NIOSH FACE program. FACE is a data collection and research project designed to identify and prevent occupational fatalities. Data are collected on all work-related fatalities. Oklahoma FACE staff investigates incidents involving highway work zones, machinery, youth under 18 years of age, and immigrant workers. Prevention recommendations are made, and information is disseminated to related businesses/industries, safety professionals, and other stakeholders.

Each year in Oklahoma, approximately 109 occupational fatalities occur; 20 are machine-related. Forklifts, tractors, and other machinery can be very dangerous and all possible precautions should be taken to prevent injuries and deaths. From 1998 to 2003, 85% of machine-related agricultural fatalities in Oklahoma involved tractors. On average, one forklift-related fatality occurs annually. Jump-starting or bypass-starting mobile equipment can increase the likelihood of serious injury or death. Jump-starting and bypass-starting are dangerous because the operator is required to work closely to the wheels and other moving parts of the equipment (Figure 1). Operators may be run over while attempting to jump-start or bypass-start equipment when the transmission is not in neutral and/or the emergency brake is not engaged. Operators with safety training and up to 15 years of experience have been killed attempting to jump-start/bypass-start equipment. Familiarity with equipment does not protect operators when a risky practice, such as jump-starting/bypass-starting, is being performed.

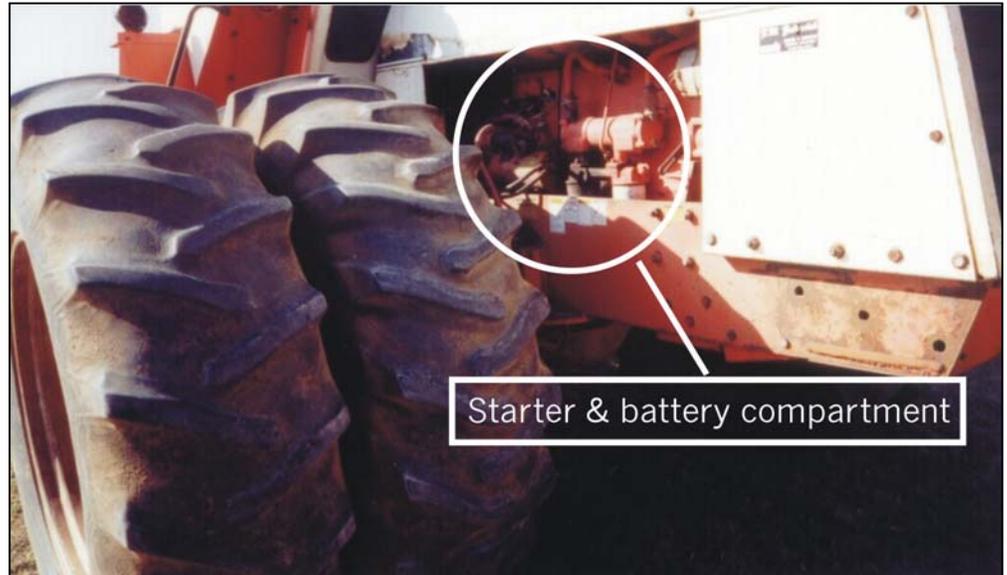
Between July 1997 and February 2005, eight jump-start/bypass-start fatalities occurred in Oklahoma. Seven of the victims were male and one was female, with ages ranging from 35 to 70 years (average age 57 years). Seven victims were operators and one was a secretary/treasurer assisting in a jump-start. Six of the eight incidents involved tractors; one involved a forklift; and one involved a dirt compacting machine. Farming was involved in five of the jump-start/bypass-start-related incidents, while one occurred in road construction, one in mining, and one in machinery repair. Four victims used jumper cables during the incident, and the other four victims used a hand tool to bypass-start the equipment. Seventy-five percent of the victims were performing routine job tasks of their usual occupation during the time of incident.

\*The INJURY UPDATE is a report produced by the Injury Prevention Service, Oklahoma State Department of Health. Other issues of the INJURY UPDATE may be obtained from the Injury Prevention Service, Oklahoma State Department of Health, 1000 N.E. 10<sup>th</sup> Street, Oklahoma City, Oklahoma 73117-1299, 405/271-3430 or 1-800-522-0204 (in Oklahoma). INJURY UPDATES and other IPS information are also available at [www.health.state.ok.us/program/injury](http://www.health.state.ok.us/program/injury).

## CASE BRIEFS

- A 51-year-old farm worker was refueling his tractor when the engine died. He positioned himself in front of the wheels to bypass-start the tractor because the ignition switch did not work. The tractor was in gear, and it lurched forward, fatally injuring the farmer.

Figure 1. Proximity of starter and battery compartment to tractor wheels.



- A 37-year-old secretary/treasurer of a company was helping a co-worker jump-start a forklift. The reverse pedal of the forklift was engaged and the emergency brake was not set. When the forklift started, it traveled in reverse, crushing the victim between the forklift and a pickup truck.
- A 62-year-old equipment operator was using a pad-foot drum compactor. Due to a faulty starter system, the compactor would die frequently when used on rough terrain. After the compactor died, the operator leaned over the rear tire to bypass-start the equipment. The compactor had been left in gear and the propulsion lever engaged; the operator was crushed when the compactor started and moved forward.
- A 35-year-old farmer had been having problems with his tractor stalling. The farmer used his pickup to jump-start the tractor. The farmer was jump-starting the tractor when it rolled over him, pinning him to the ground. The farmer was found by his wife with the tractor on top of him and the jumper cable still attached to the pickup. The pickup ignition was on, but the truck was out of gas.

## PREVENTION

Comprehensive safety training and equipment specific training are essential for the safety of employees. The Occupational Safety and Health Administration's (OSHA) powered industrial truck (e.g., forklift) standard includes training requirements for operators. On-site supervision of employees by a competent and trained person is also necessary to encourage safe behaviors and work practices. The occurrence of "near misses" and minor injuries are warning signs of more serious incidents that are likely to occur if corrective action is not taken. Weekly safety meetings provide a good opportunity for supervisors and employees to discuss recognized hazards and prevention methods. The most important goal in a comprehensive safety program is to prevent incidents from occurring rather than correct a safety problem after a serious injury or fatality has occurred.

Safe operating procedures should be established for all equipment used on the jobsite. Safe operating procedures include: daily maintenance inspections of equipment, use of safety equipment [seat belts, rollover protective structures (ROPS), warning lights, horns, and backup signals], and staying within the operator's compartment of equipment when in use. Safety interlock switches and hinges can be used to disable equipment when the operator's seat is not occupied, the engine compartment is open, or machine guarding is disturbed. All manufacturer recommendations and warning labels should be followed when operating equipment. The importance of daily maintenance inspections must be stressed to employees and they should

be trained to assess equipment condition and conduct pre-start inspections. When a mechanical problem is identified, equipment should be taken out of service and placed in an area for repair by trained maintenance staff. OSHA's standard on the control of hazardous energy (lockout/tagout) contains information that can be helpful in preventing injuries during the maintenance and repair of equipment.

**The following are general recommendations for equipment safety:**

- Use seat belts at all times when operating equipment.
- Retrofit older equipment with ROPS and seat belts.
- If a bypass-start cannot be avoided, ensure the parking brake is set and the transmission is in park or neutral.
- Disengage the power take off (PTO) before dismounting equipment.
- Maintain equipment in proper working order.
- When possible, avoid operating equipment on steep slopes or near ditches and embankments.
- Maintain safe task appropriate speeds while operating equipment.
- Provide comprehensive safety training to all employees.
- Provide equipment specific training to equipment operators.
- Provide employee supervision at work sites.

OKFACE program personnel conduct in-depth, on-site fatality investigations for targeted causes of work-related injury deaths, including jump-start/bypass-start-related incidents. Detailed reports of the investigated cases, including prevention recommendations, have been distributed statewide to interested employers and agencies. The reports are also electronically displayed on the Injury Prevention Service website at [www.health.state.ok.us/program/injury/okface/index/html](http://www.health.state.ok.us/program/injury/okface/index/html). To receive future OKFACE reports, contact Nancy Green at [nancyk@health.ok.gov](mailto:nancyk@health.ok.gov) or (405) 271-3430 to be placed on the mailing list.

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