

---

**Iowa FACE Report:**     **A 17-year-old (minor) farm worker was caught between the raised bucket of a wheel loader and the door header of a cattle shed**

**Case ID:**                 **2011 IA 039**

**Report date:**          **10 December 2013**

---

### Summary

In summer of 2011, a 17-year-old farm worker died of injuries he sustained after being caught between the raised bucket of the wheel loader (pay loader) in which he was working and the door header of a cattle shed. The victim, another employee ("Employee 2"), and the employer's grandfather were



preparing to repair the track of a large sliding door at the end of the cattle shed and rehang the door on the track.

The grandfather was directing the task. Employee 2 was preparing the sliding door that was lying on the ground beside the wheel loader, and the victim was going to repair the door track. The grandfather started the wheel loader and drove to face the door frame just outside the cattle shed. He set the parking brake and had the victim get into the loader bucket. The grandfather raised the victim up, with instructions to remove a bird nest from the door track. The wheel loader was not close enough to the shed for the victim to reach the track, and the grandfather attempted to pull closer to the shed with the bucket still raised, but he did not know how to release the parking brake. He asked Employee 2 to show him how to turn off the parking brake, so Employee 2 entered the cab and released the parking brake switch. The wheel loader - which was in gear - lurched forward, and the victim's head was caught between the door header of the shed and the back of the bucket as it moved forward. In his panic and confusion, the grandfather depressed the accelerator instead of the brake pedal, and the wheel loader continued moving forward into the alley of the shed. When the grandfather slammed on the brake inside the shed, the victim was thrown out of the bucket and struck his head on a concrete feed bunk. The victim suffered severe head trauma and did not regain consciousness.

Those at the site called 911. First responders arrived from the nearby town and assessed the victim's injuries. An ambulance arrived shortly thereafter and transported the victim to a hospital 10 miles away, where he was pronounced dead 45 minutes after the initial 911 call.

Among factors contributing to this fatality were a) use of the wheel loader as a personnel lift and work platform; b) attempting to move the wheel loader with the loader arms raised and a worker in the bucket; and c) the unrecognized hazard of using the wheel loader to hoist personnel.

To prevent similar fatalities, Iowa FACE recommends:

1. *Employers should select and use appropriate equipment designed for working at heights, such as personnel lifts, ladders, or scaffolds.*
2. *Employers should train workers on safe operation of powered agricultural equipment and assure that only workers who have been trained and demonstrate knowledge of safe operating procedures are allowed to operate the equipment.*
3. *Employers should conduct pre-job planning to identify hazards and pre-job briefings to communicate work plans to employees. Employers should then assure that only trained and qualified persons are allowed to direct and supervise work tasks.*
4. *Employers and young employees should be aware of injury risks for young farm workers and refer to applicable child labor laws addressing safe working conditions and permissible tasks for teenagers.*

## **Introduction**

A 17-year-old farm worker was caught between the bucket of a wheel loader and the door header of a shed and was then thrown from the bucket. The Iowa FACE Program learned of the fatality through a news article published the following day.

This case investigation report was prepared using information from the Sheriff's Department investigation, the Iowa Division of Labor Services / IOSHA investigation, the ambulance emergency medical service (EMS) records, the hospital emergency room report on the case, and County Assessor records. Iowa FACE interviewed the Director of Product Assurance and Regulation at Volvo Construction Equipment (the manufacturer of the wheel loader), the Sheriff's Deputy who investigated the incident, and the Medical Director of the hospital emergency department where the victim was transported. A medical examiner report was not available because the victim was pronounced dead in a neighboring state that does not have a state medical examiner or medical examiner reports. An autopsy was not performed.

## **Employer**

The employer was a privately owned family partnership that operated a farm and a beef cattle feedlot. The number of employees varied with the season of year but ranged from 10 to 13 (including the victim and excluding some non-paid family members) during the seven-month period preceding the fatality. The employees were not affiliated with an organized labor union.

The principals in the family partnership included an adult son and his father who were co-owners of the operation. The adult son supervised the feedlot operation and lived at the site; his father worked at the farm and was also involved in a trucking business. The two co-owners were the primary operators who were present on a regular basis to direct activities at the farm and feedlot. A third family member - the grandfather/father of the co-owners - was a financial backer and helped at the site or directed activities on occasion. The grandfather came to the farm from time to time (one to two times per week) to help out, run errands, or do field work during the spring and fall seasons. The grandfather was operating the wheel loader at the time of the fatality.

### **Safety programs and training**

The employer did not have a safety manager or written safety and health policies or programs. Prior to the fatality, there existed no safety training of employees.

Following the fatality and in response to OSHA citations, the employer held an employee safety meeting at which time a hired consultant presented information on a variety of farm safety topics, including safe use of machinery and implements, grain handling, livestock handling, personal protective equipment, electrocution hazards, and machinery guarding. A separate meeting was held later specifically addressing safe operation and servicing of wheel loaders.

### **Victim**

The victim was a minor (17-year-old) part-time farm worker hired to perform odd jobs during the summer. He had completed his junior year of high school, and an AP news article noted this was his second summer working at the cattle feedlot. His older brother (a non-minor) was also employed by the business. The victim and his brother were not relatives of the employer's family.

His job duties included mowing and weed trimming, diluting and spraying 2, 4-D herbicide, working (sorting and moving) and vaccinating cattle, and moving feed from a storage silo. He operated tractors, pay loaders, a skid loader, a mower, and a weed trimmer. Records showed that he worked 25 to 54 hours per week, 3 to 6 days per week during the two-month period preceding the fatality. His work day typically started around 08:30, and on most days, he worked a full shift.

## Incident scene

The incident occurred at a rural site two miles from a nearby town. This site included a residence where the employer (younger co-owner) lived, a garage, an office/employee break room, utility buildings used for storage of equipment and commodities, silage bunkers, cattle sheds, 4,000 head of cattle on over 600,000 square feet of feedlots, and crop land (Exhibit 1).

The incident occurred at the north end of a 36-foot-wide by 200-foot-long cattle shed built in 2002 (Exhibits 1 & 2). The shed was oriented north/south and was open to a feedlot on the east side. The shed was wood-framed with a steel roof, steel cladding, and a concrete floor and alleyway. The alley ran through the west half of the shed and provided access for a tractor or loader to fill the 200-foot-long concrete feed bunk running the length of the shed (Exhibit 2).

Large sliding doors measuring approximately 18 feet wide by approximately 12-13 feet high provided access to the alley at the north and south ends of the shed. These doors were closed during winter months and open the remainder of the year. The east end of the door track on the north end had come loose from the building and needed to be reattached, and the door, which had been removed some time prior to the incident, needed to be remounted. At the time of the incident, the door was laying exterior-side-down outside the north end of the shed (Exhibit 2).



1. Aerial view of facility (Google Earth 2012 image)



2. North end of cattle shed

## Equipment

The employer owned two Volvo L70E wheel loaders that were used for a variety of purposes by “everyone” at the farm site, including the owners, the victim, and other farm employees.

The wheel loader involved in the incident was manufactured in 2003 or 2004 and purchased by the employer in used condition two and one half years before the incident. It was equipped with original equipment, including the large light material bucket attached on the front end (Exhibits 3 & 4). This wheel loader had a scale in the cab and was used mainly to weigh and move feed. The other wheel loader on site was used to transport other materials.

The wheel loaders were used at least a few times a month as personnel lifts. At maximum loader height, the bottom of the loader bucket could be elevated 12 feet 8 inches above ground. The clearance from ground level to top of cab was 10 feet 8 inches (Exhibit 5).

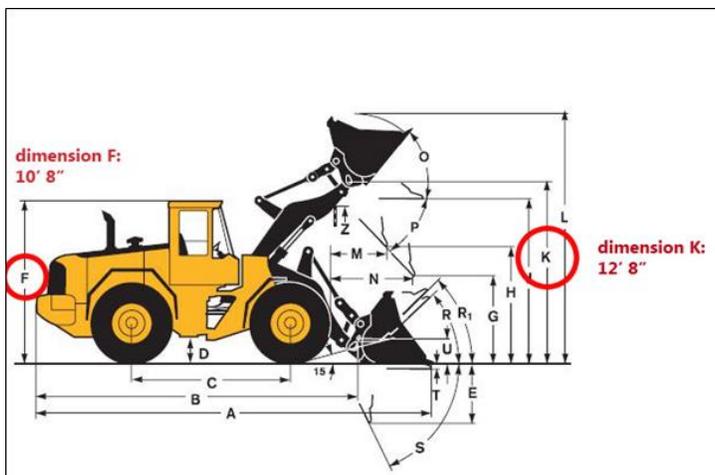
Maintenance was performed on a regular basis: fuel and grease every 10 to 12 hours of use, and oil change and other service every 200 hours of use. There was no indication of wheel loader equipment malfunction in investigation reports describing the incident.



**3. Wheel loader involved in fatality.**



**4. View of wheel loader from rear**

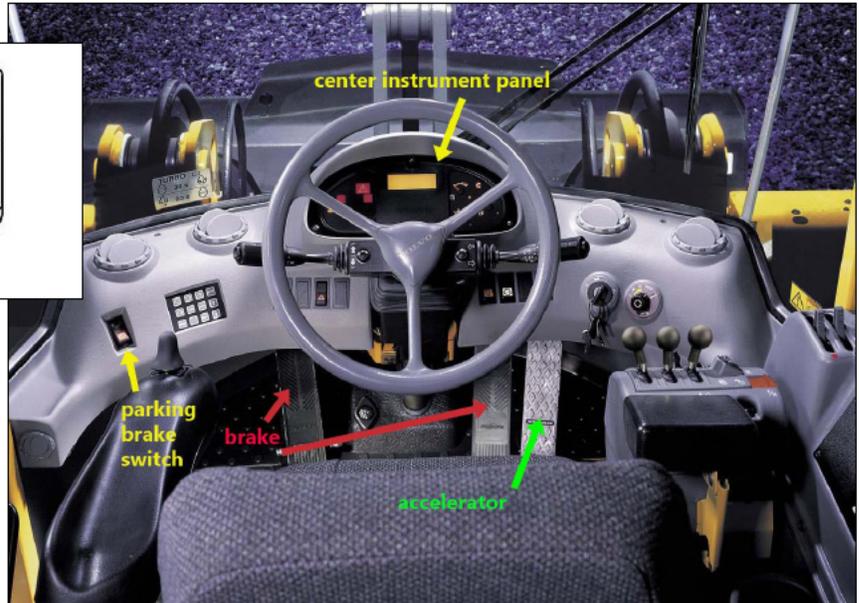
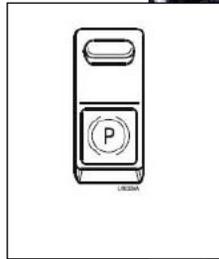


**5. Height dimensions of L70E wheel loader**

The parking brake for the L70E wheel loader is a dry disc brake positioned on the transmission output shaft. It is electro-hydraulically controlled with this switch on the instrument panel (Exhibit 6). The parking brake is applied by spring force and released by oil pressure with this switch. A catch on the switch acts as a safety feature to prevent the parking brake from being released accidentally.

*Per the L70E operator's manual:*

To engage the parking brake, the gear selector should be moved to neutral, and then the lower end of the switch [labeled ((P))] is pressed. The machine should be completely stationary before depressing the parking brake switch. When the parking brake is applied, the red parking brake control lamp on the center instrument panel is lit (Exhibit 7). The parking brake is released by sliding down the safety catch of the switch and then pressing the upper end of the switch.

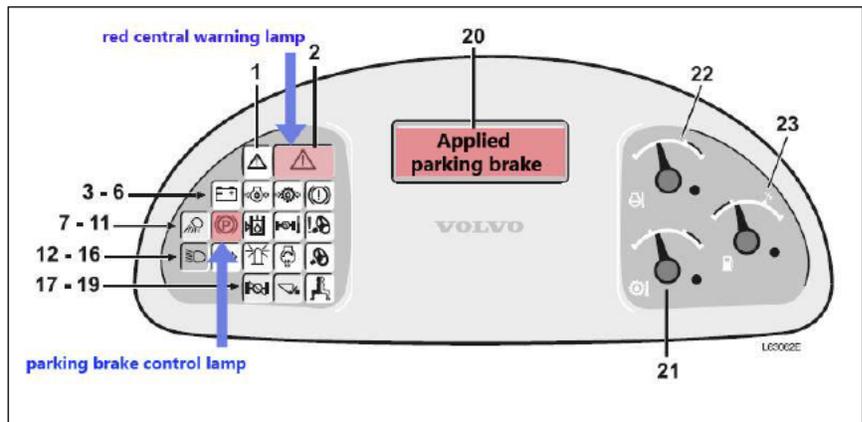


**6. Inside of wheel loader cab and diagram of parking brake switch (upper left).**

*(Cab photo modified from product literature brochure)*

The center instrument panel of the wheel loader dash provides information on situations requiring operator intervention. This information is provided through several means, including control lamps, warning lamps, an audible buzzer, and a text display unit. If abnormal operating scenarios or faults occur, a red central warning lamp flashes and information is shown on the display unit. A buzzer may sound at the same time, depending on the abnormal scenario. In these situations the machine should be stopped immediately.

One such scenario involves application of the parking brake while a directional (forward or reverse) gear is engaged. If the parking brake is applied when a directional gear is engaged, the red central warning lamp flashes, the warning buzzer sounds, and a flashing warning text "Applied Parking Brake" is displayed on the center text display unit (Exhibit 7).



**7. Diagram of wheel loader center instrument panel showing parking control lamp, flashing red central warning lamp, and flashing display alarm text in event of parking brake application while directional gear is engaged.**

## Weather

The incident occurred on a clear summer afternoon. Temperature was around 92 °F, relative humidity was around 47 percent, and wind speed was approximately 10 miles per hour from the west. Weather was not a contributing factor in the incident.

## Investigation

The afternoon of the incident, approximately 14 people were working at the farm site, 8 of whom worked for the employer. Three of the employees (including the victim's brother) were assisting a concrete crew that was working on a new shed construction project at the north end of the site.

The employer's grandfather came to the site and gathered the victim and another employee to reinstall the sliding door on the north end of the cattle shed. The track for the door had come away from the building at the east end (Exhibit 2) and needed to be repaired and reattached before mounting the door. The grandfather was directing the activity and operating the wheel loader. He drove the wheel loader to the north side of the shed and told the victim to get in the bucket so he could be lifted up to remove a bird nest from the track and work on the roller at the west end (right side) of the track. The other employee (Employee 2) was preparing the overhead door, which was lying on the ground east of the wheel loader.

The grandfather drove the wheel loader to the outside the shed's north doorway and set the parking brake. He raised the victim, who was standing upright in the bucket. Once lifted to the door header elevation, the victim told the grandfather to pull ahead because he was not close enough to reach the track.

The grandfather attempted to pull forward but he did not know how to release the parking brake. He asked Employee 2 to show him how to release the brake, and Employee 2 then climbed up into the cab and operated the switch to release the parking brake. The wheel loader - which was in forward gear - lurched forward when the parking brake was released. The victim's head was caught between the door header and the back side of the loader bucket as the wheel loader moved forward (Exhibit 8). The back side of the bucket made scraping contact with the door header, and the door header cracked as the wheel loader continued moving forward into the shed (Exhibits 9 & 10).

The sudden movement of the wheel loader caused the grandfather to panic or become confused, and he stepped on the accelerator instead of the brakes, driving the wheel loader into the shed alleyway before he then slammed on the brakes. When the wheel loader stopped abruptly about six feet inside the alleyway, the victim was thrown forward out of the bucket. His head struck the vertical wall of the concrete feed bunk, and he landed 25 to 50 feet ahead of the wheel loader on the concrete floor (Exhibit 11).



**8. Exterior view of door opening showing point of impact where victim struck the door header.**

Employee 2 and the grandfather called for help from others at the farm, and a 911 call was made between 13:58 and 14:00. The employer who was working at the farm notified the victim's brother of the injury.

A sheriff's deputy and first responders arrived from two miles away and began care and assessment of the victim, who had suffered obvious head and neck trauma and blood loss. EMTs and an ambulance from a nearby hospital arrived at 14:13. The victim was unresponsive with no signs of life, pulse, or respiration detected. Automated external defibrillator (AED) patches administered by first responders advised "No Shock" initially, but a shockable rhythm was reported by the AED after the EMTs arrived. EMTs administered shock and began cardiopulmonary resuscitation, which was continued on the way to the hospital while ambulance personnel maintained communications with the emergency department. Upon arrival to the emergency department at 14:41 the victim had no signs of life, no pulse, and no respiration. He was declared dead by the attending physician at 14:45.



**9. Scrape marks on top edge of loader bucket.**



**10. Interior view of shed doorway.**



**11. Concrete feed bunk the victim struck upon being thrown from bucket.**

The Iowa Division of Labor Services/IOSHA learned of the incident through media reports and investigated the fatality five days after the event. IOSHA issued citations to the employer for three category *serious* violations and one *other* citation, summarized below:

- |  |              |
|--|--------------|
| 1. Employer did not provide employees initial and annual training regarding safe operation and servicing of farm equipment which they used in their work, including the wheel loaders, tractors, skid steer, and other agricultural equipment. | OSHA 1928.57 |
| 2. Employer did not restrict riders from being on farm field equipment. Employee was exposed to crushing or falling hazards in bucket of wheel loader.   | OSHA 1928.57 |
| 3. Employees were exposed to crushing hazards when the wheel loader was engaged. Workers were not instructed to stay clear of equipment when machine is started and operated.  | OSHA 1928.57 |
| 4. Employer did not notify IOSHA of the fatality.  | OSHA 1904.39 |

### **Contributing factors**

Factors contributing to this fatality included:

- use of the wheel loader as a personnel lift and work platform;
- attempting to move the wheel loader with the loader arms raised and a worker in the bucket; and
- the unrecognized hazard of using the wheel loader to hoist personnel.

### **Cause of death**

The director of the hospital Emergency Department where the victim was transported was the attending physician on site. The physician attributed the victim's cause of death to massive traumatic head injury. There was no autopsy performed.

## Recommendations

### 1. Employers should select and use appropriate equipment designed for working at heights, such as personnel lifts, ladders, or scaffolds.

In the course of their investigation, IOSHA compliance officers observed a 25-30 foot aluminum extension ladder at the site and inquired of the employer why the extension ladder had not been used for the door track repair work. It was the employer's impression that using the wheel loader bucket as a personnel lift to access elevated areas was safer than using a ladder and cheaper than renting or purchasing additional lifting equipment. It was the employer's practice to use loader buckets as personnel lifts during his entire working career, even though the L70E operator's manual warns against this activity (Exhibit 12). The employer and employees confirmed that loader buckets were frequently used as personnel lifts to perform a variety of work at elevated locations, and that those who were lifted in the bucket usually communicated with the equipment operator by hand signals.

The L70E wheel loader operator manual and the Association of Equipment Manufacturers (AEM) wheel loader safety manual specifically state that a wheel loader should never be used for a work platform, lift, or personnel carrier, and that riders are not permitted on the wheel loader. Using a loader bucket as a personnel lift or work platform is unsafe for several reasons:

- the loader bucket has no protective railing or enclosure to prevent a worker or rider from falling out;
- the work area on the bucket is small and narrow, posing risk of crushing if the loader is moved in a tight or narrow area near stationary objects, as was the case in this fatality;
- there is no means for a worker in the bucket to control the position or movement of the bucket or the loader;<sup>1</sup> and
- an operator's ability to see and perceive the position of the bucket, a worker in it, and a nearby stationary object may be limited, depending on the position of the bucket at its raised elevation.

### Buckets

When the machine is used with a bucket, a working load of 50% of the tipping load for a fully steered machine is permissible. Depending on application and/or machine size the manufacturer often recommends a utilisation lower than 50%.

Information regarding weight, capacity, load, edge savers, etc., see the Attachment Catalogue.

**! WARNING!**  
The bucket must not be used for transporting or lifting people – as this might lead to accidents.

**NOTE!** Excavating forward must not be done at high speed if the bucket is tilted forward more than 15°. Working with a bucket tilted fully forward should be avoided.

### Work Safely

**Remember The Other Person** (continued)

Never use a bucket for a work platform or personnel carrier.

Always look around before you back up, hook up, or swing an attachment. Be sure that everyone is in the clear.

Know the pinch points and rotating parts on the machine. Awareness on your part can prevent accidents.

**! WARNING:** Never let anyone in or near the pivot area of articulated machines. (19)

19  
**WRONG**



Stay away from pinch and wrap points.

**! WARNING**  
LOAD OV

**Traveling O**

Take it slow and e  
areas. Traffic cour

Give the right of w  
distance from oth

### 12. Excerpts from L70E Operator's Manual (above) & AEM Wheel Loader Safety Manual (below)

<sup>1</sup> Means to control the position of the lift from the platform or bucket is a requirement for personnel lifts.

**2. Employers should train workers on safe operation of powered agricultural equipment and assure that only workers who have been trained and demonstrate knowledge of safe operating procedures are allowed to operate this equipment.**

The employer at this farm operation had no employee safety training program in place, even though the farm operation employed more than 10 individuals that were not their own family members. Wheel loaders and other powered equipment were used by many or all employees at the farm, including an elderly worker who did not work at the site on a regular basis (the grandfather) and a minor (the victim).

None of the individuals working to rehang the cattle shed door demonstrated awareness of the hazards of working on, or in close proximity to the wheel loader, or the hazard of using the wheel loader for a lift/work platform. Both young workers involved in the task at hand were working either on or near the wheel loader, within the 7-meter (23-foot) safety zone in all directions around the wheel loader, from which workers should be prohibited, as described in the operator’s manual (Exhibit 13).

Although the grandfather drove the wheel loader to the cattle shed, neither he nor Employee 2 recognized the significance of the vehicle warning system’s flashing lights and buzzer notifying that the loader was in gear (instead of neutral, as it should have been) with the parking brake engaged. The wheel loader was relatively new to the farm (less than three years), and the age of the grandfather (87) may have contributed to his perception that he knew how operate the equipment, or he may have relied on his knowledge or experience with prior equipment at the farm.

Training for workers operating this type of equipment should include a) safe operating recommendations included in the equipment operator’s manual, b) the function and indication of warning systems provided by the equipment, and c) how to recognize potentially hazardous work scenarios and improper use applications of the equipment. Operator’s manuals, manufacturer or equipment dealer videos, and training courses can be used to inform both new workers, as well as experienced workers using unfamiliar equipment, regarding safe operating practices. No employees should be allowed to operate equipment without completing training and showing proficiency in safe operation. Additionally, all

Operating instructions  
68 Safety rules when operating

**Safety rules when operating**

**Operator duties**

- The machine operator must operate the machine in such a way that the risk of accidents is minimised both for the operator, other road users and persons present at the work site.
- The machine operator must be thoroughly familiar with how to operate and maintain the machine and should preferably undergo required training on the machine.
- The machine operator must follow the rules and recommendations given in the Operator's Manual, but also pay attention to any statutory and national regulations or specific requirements or risks that apply at the work site.
- The machine operator must be thoroughly rested and must never operate the machine under the influence of alcohol, medicine or other drugs.
- The machine operator is responsible for the load of the machine both when travelling on public roads as well as when working on site.
  - There must be no risk of the load falling off while operating.
  - Refuse to take a load which is an obvious safety risk.
  - Respect the rated load capacity of the machine. Note the effect of varying distances to the centre of gravity and the effect of additional units.
- The machine operator must be in charge of the working area of the machine.
  - Prevent persons from walking or standing under raised lifting arms, unless they have been made safe or supported
  - Prevent persons from entering or remaining in the danger area, i.e. a distance of at least 7 m (23 ft) in all directions from operating machines. The operator may allow a person to remain in the danger area, but should then observe caution and operate the machine only when the person is visible or has given clear indications of where he or she is.
  - Prevent persons from being in the cab of a vehicle which is placed so that there is a risk that the cab may be hit by other machines or falling objects, e.g. stones or logs. This does not apply if the cab is sufficiently strong or protected to withstand the impact of such external forces.
- The machine operator may only allow an instructor on board, if there is an approved passenger seat.

The danger area around an operating machine forms a circle with a radius of least 7 m (23 ft).

**Work Safely**

**Remember The Other Person**

Never allow an untrained or unqualified person to operate your machine. Handled improperly, this machine could cause severe injury or death.

**WARNING: YOUR WHEEL LOADER/TRACTOR IS A ONE-PERSON MACHINE. NEVER PERMIT RIDERS. (18)**

18  
WRONG

No riders allowed.

**13. Excerpts from L70E Operator’s Manual (above) & AEM Wheel Loader Safety Manual (below)**

workers should be trained to maintain a safety zone around powered equipment, and to never position themselves in a narrow space between a powered implement or vehicle and a stationary object.

**3. Employers should conduct pre-job planning to identify hazards and pre-job briefings to communicate work plans to employees. Employers should then assure that only trained and qualified persons are allowed to direct and supervise work tasks.**

In this incident, the determination to repair and hang the sliding door was made shortly before the work activity commenced. The employer who reportedly supervised activities at the feedlot was not directly involved in the activity. This was not a routine work task for any of the three individuals involved in the project, and none had training or experience to assess and communicate hazards, select proper equipment to be used, and then direct the task activities.

Although the nature of agricultural work involves many non-routine tasks, a general discussion of the intended work and site safety review to identify hazards is recommended, *prior to beginning the task*. Employers or their qualified supervisors should hold a pre-job briefing to communicate the plans for the task to be performed, and they should include in the discussion any safety hazards that may be present in completing the job and how those hazards will be addressed (Exhibit 14).<sup>2</sup> Everyone involved in the task should have a chance to ask questions and understand how the job will proceed. This is particularly important for non-routine tasks - for which employees may not be trained or familiar with equipment or hazards - and for new employees who are learning to perform a variety of tasks for the first time.

Once a safe work plan is identified and communicated, the supervisor or qualified person should be present to oversee the work and exercise authority to stop or change the work plan if unsafe practices or conditions are observed.

**4. Employers and young employees and their parents should be aware of injury risks for young farm workers and refer to applicable child labor laws addressing safe working conditions and permissible tasks for teenagers.**

On average, 113 young workers under age 20 die in farm injuries annually in the US. Machinery-related injuries are the leading cause of deaths for teen workers aged 16 to 19. Fatalities involving farm youth most often involved head injuries and occurred during summer months (NIOSH). Fatalities occurred more often among youth who were employed by a non-family member than among youth working at their family's operations. The victim in this case was described as an enthusiastic worker who lived on a farm, enjoyed farm work and operating vehicles and equipment, and he was familiar with working around animals. Yet his fatality typifies many of the fatalities involving youth working in agriculture.

**What to address in a pre-job briefing**

- ✓ Summarize the critical steps and materials
- ✓ Anticipate what can go wrong or where errors can occur
- ✓ Foresee consequences
- ✓ Review past operating experience
- ✓ Review equipment (equipment for the job, engineering and equipment controls, PPE)

**14. Topics to cover in a pre-job briefing.**

*Adapted from AGC California SAFETY SNAPS SS09-02: Pre-job planning and job hazard analysis*

<sup>2</sup> For more information, see SAFETY SNAPS SS09-02 at: [http://www.agc-ca.org/uploadedFiles/Member\\_Services/Safety-Health/Safety\\_Bulletins/SS09\\_02.pdf](http://www.agc-ca.org/uploadedFiles/Member_Services/Safety-Health/Safety_Bulletins/SS09_02.pdf)

Young workers may be particularly susceptible to work pressures, and without a formal training program or awareness of their rights to a safe work place, they may be (or feel) pressured not to decline work in hazardous situations. Young workers may also be enthused to perform work that involves operating powered equipment or machinery, and yet they may be unaware of the hazards present.

The employer in this incident was unaware of child labor laws intended to protect teen workers. Federal and state child labor laws specify not only wages, hours, and types of work that are allowable, but also jobs that are determined to be too dangerous for youth under 16. Farm operators who employ young workers should familiarize themselves with restricted jobs which cannot be legally performed by teens younger than 16 and provide adequate training and careful supervision of young workers, regardless of age. While youth aged 16 or over - such as the 17-year-old victim in this incident - are legally permitted to perform hazardous work on farms (some of which includes operating tractors and machinery, working at elevations, and applying agricultural chemicals), they may not fully understand all risks associated with these tasks. Employers should clearly explain risks and determine individuals' aptitude and understanding (see Recommendation 2) before delegating hazardous work to youth and then supervise carefully.

Young workers of all ages - and their parents- should acquaint themselves with young workers' rights to receive safety training, ask questions, work in a safe place, and refuse hazardous work.

#### **Additional resources**

- **Pre-job planning and job hazard analysis (Safety Snaps SS09-02)**  
Associated General Contractors (AGC) of California Safety and Health Council  
[http://www.agc-ca.org/uploadedFiles/Member\\_Services/Safety-Health/Safety\\_Bulletins/SS09\\_02.pdf](http://www.agc-ca.org/uploadedFiles/Member_Services/Safety-Health/Safety_Bulletins/SS09_02.pdf)
- **Youth in Agriculture etool**  
United States Department of Labor / Occupational Safety & Health Administration (USDOL/OSHA)  
<http://www.osha.gov/SLTC/youth/agriculture/index.html>
- **Youth & Labor, Agricultural Employment**  
USDOL/OSHA. <http://www.dol.gov/dol/topic/youthlabor/agriculturalemployment.htm>.
- **YOUNG WORKERS you have rights!**  
USDOL/OSHA. <http://www.osha.gov/youngworkers/index.html>.

## References

- Association of Equipment Manufacturers (AEM). Wheel Loader / Tractor Safety Manual for Operating and Maintenance Personnel. Form WLT03-04, revised 2005. Available for purchase at: [www.aem.org](http://www.aem.org).
- Centers for Disease Control and Prevention (CDC), NIOSH. 2000. Teens face serious risk of job-related death in agricultural operations, NIOSH finds. <http://www.cdc.gov/niosh/updates/farmag.html>.
- CDC/NIOSH. Agricultural safety. <http://www.cdc.gov/niosh/topics/aginjury/>.
- CDC/NIOSH. 2003. NIOSH Alert – Preventing deaths, injuries, and illnesses of young workers. DHHS/NIOSH Publication 2003-128. <http://www.cdc.gov/niosh/docs/2003-128/pdfs/2003128.pdf>.
- Code of Federal Regulations, Labor. 29 CFR 1910.1928. Occupational safety and health standards for agriculture. [http://www.osha.gov/pls/oshaweb/owastand.display\\_standard\\_group?p\\_toc\\_level=1&p\\_part\\_number=1928](http://www.osha.gov/pls/oshaweb/owastand.display_standard_group?p_toc_level=1&p_part_number=1928).
- Iowa FACE Report 96IA061. Wife is pinned between tractor loader bucket and foundation wall while helping husband build new home. <http://www.cdc.gov/niosh/face/stateface/ia/96ia061.html>.
- Minnesota FACE Report 95MN04601. Farm youth dies after being struck by a loader bucket. <http://www.cdc.gov/niosh/face/stateface/mn/95mn046.html>.
- NIOSH FACE Report 2003-06. Hispanic carpenter dies after being crushed between the loader bucket of a backhoe/loader and a concrete building – North Carolina. <http://www.cdc.gov/niosh/face/In-house/full200306.html>.
- Thompson D, Shea J. 2010. Pre-job planning and job hazard analysis. Association of General Contractors (ACG) of California Safety and Health Council. Safety Snaps Publication SS09-02. [http://www.agc-ca.org/uploadedFiles/Member\\_Services/Safety-Health/Safety\\_Bulletins/SS09\\_02.pdf](http://www.agc-ca.org/uploadedFiles/Member_Services/Safety-Health/Safety_Bulletins/SS09_02.pdf)
- USDOL. Elaws – Fair Labor Standards Act Advisor – Prohibited Occupations for Agricultural Employees. <http://www.dol.gov/elaws/esa/flsa/docs/hazag.asp>
- Volvo L70E operator’s manual. V L70E 22B1001561-063.pdf

## Acknowledgements

Iowa FACE thanks the county Sheriff’s Department and the Iowa Department of Labor for use of photographs taken at the scene and for assistance in developing this report.

**NAICS sector:**           **11     Agriculture**

**Keywords:**             **young worker, farming, wheel loader, personnel lift, crushing injury**

## Investigator information

This investigation was conducted by Stephanie Leonard. This report was prepared by Stephanie Leonard and reviewed by Renee Anthony.

## **Fatality Assessment and Control Evaluation (FACE) Program**

The National Institute for Occupational Safety and Health (NIOSH), an institute within the Centers for Disease Control and Prevention (CDC), is the federal agency responsible for conducting research and making recommendations for the prevention of work-related injury and illness. In 1982, NIOSH initiated the Fatality Assessment and Control Evaluation (FACE) Program. FACE examines the circumstances of targeted causes of traumatic occupational fatalities so that safety professionals, researchers, employers, trainers, and workers can learn from these incidents. The primary goal of these investigations is to make recommendations to prevent similar occurrences. The Iowa FACE Program is one of nine state-based programs funded by NIOSH that conducts surveillance of occupational fatalities and conducts in-depth investigations of targeted Iowa cases. FACE investigations are intended to reduce or prevent occupational deaths and are completely separate from the rulemaking, enforcement and inspection activities of any other federal or state agency. Under the FACE program, investigators interview persons with knowledge of the incident and review available records to develop a description of the conditions and circumstances leading to the deaths in order to provide a context for the FACE Program's recommendations. The FACE summary of these conditions and circumstances in its reports is not intended as a legal statement of facts. This summary, as well as the conclusions and recommendations made by Iowa FACE, should not be used for the purpose of litigation or the adjudication of any claim. For further information, visit the Iowa FACE Program website at <http://www.public-health.uiowa.edu/face/> (or call toll-free 1-800-513-0998), and the NIOSH FACE Program website at [www.cdc.gov/niosh/face/](http://www.cdc.gov/niosh/face/) (or call toll free 1-800-CDC-INFO (1-800-232-4643)).

The Iowa FACE team at the University of Iowa includes John Lundell and T. Renée Anthony, Co-Investigators; and Stephanie Leonard, Field Investigator. Additional expertise is provided from Iowa FACE partners John Kraemer, Director, Forensic Operations at Iowa Office of the State Medical Examiner; and Rita Gergely, Principal Investigator and Kathy Leinenkugel, Surveillance Specialist, both at the Iowa Department of Public Health.

For additional information regarding this report or the Iowa FACE Program contact:

**Iowa FACE**  
**The University of Iowa**  
**Department of Occupational and Environmental Health**  
**UI Research Park, 240 IREH**  
**Iowa City, IA 52242-5000**

**Toll free: (800) 513-0998**

**Fax: (319) 335-4085**

**Internet: <http://www.public-health.uiowa.edu/FACE>**

**E-mail: [cph-face@uiowa.edu](mailto:cph-face@uiowa.edu)**