

MIFACE INVESTIGATION: #04MI176

SUBJECT: 6-year-old youth dies when he was run over by a skid-steer loader driven by his 9-year-old brother.

Summary

On October 21, 2004, a 6-year-old male youth was killed while working with family members feeding cattle. The victim and his brother and sister were responsible for feeding the cows. Normally, this chore was done earlier in the evening; on this day, it was done in the later evening when it was dark outside. The victim's 9-year-old brother was operating a John Deere skid-steer loader, Model 6675 carrying silage to the cows. The victim and his sister ran ahead and opened the gate to the pen to allow their brother to unload the silage. Both the victim and his sister ran down a 2-



Figure 1. Path leading from barn to pen

track path from the barn to the pen; the victim's brother used the same path to get to the pen. (See Figure 1.) One side of the path was kept mowed; the other side of the path was left unmowed and was overgrown. External lighting did not light the path or pen area. The victim and his sister watched the gate so that the cows did not escape. The victim's brother unloaded the silage, and leveled the dirt while he exited the pen and the gate. After exiting the gate, the victim's brother turned the skid-steer around and proceeded to drive up the path towards the house. His brother would normally carry the victim and his sister back to the house in the skid-steer bucket. As his sister was closing the gate, the victim ran after his brother because he didn't stop and wait for him and his sister. The victim's brother stopped the skid-steer and began to back up and turn around when he felt a bump. He felt a second bump and looked to see what the bump was. It appears that when the skid-steer stopped and began to turn, the rear of the loader knocked the victim down and the skid-steer tires ran over him. The lights on the front of the skid-steer illuminated the ground and he saw his brother lying there. The victim's brother stopped the skid-steer and checked on his brother. Seeing his condition, he and his sister ran to the house for help. Emergency response was called and the victim was declared dead at the scene.

RECOMMENDATIONS:

- Restrict the operation of skid-steer loaders (and other heavy equipment) to persons older than 16 years of age who are instructed in the safe operation and appropriate use of the equipment.

Key Words: Agriculture,
Youth, Skid-steer loader

RECOMMENDATIONS, cont:

- Develop a Farm Health and Safety plan for family members, guests and employees.
- Identify farm work suitable for children to perform.
- Instruct workers, family members and other persons they should never approach operating equipment until they make eye contact with the operator and the operator discontinues operation.
- Ensure farm equipment is maintained according to manufacturer instructions.
- Do not allow any passengers to ride on equipment unless designed by equipment manufacturer to allow riders.
- Lower the bucket to the lowest position possible during transport trips and extended forward travel.

INTRODUCTION

On October 21, 2004, a six-year-old male youth was killed when he was run over by a skid-steer loader driven by his nine-year-old brother. MIFACE learned of this incident through a newspaper clipping. A MIFACE field investigator conducted a site visit on March 7, 2005, and talked with the victim's parents and siblings. The victim's family permitted the MIFACE researcher to take pictures of the incident site and the skid-steer loader involved in the incident. During the writing of this report, the police report and Death Scene Investigation Report completed by the medical examiner were obtained and reviewed.

The family farm had 100 head of dairy cattle, 45-50 head of milking cows, 8-10 dry cows, and the remainder being steers and heifers. They also had 73 acres where they grew corn and hay. The victim's father was involved in a second business, the building of wooden storage buildings, mini-barns, river boardwalks, gazebos, etc. The farm did not have a written farm safety and health plan.

The parents taught the victim's brother how to operate the skid-steer loader. The parents and/or the victim's brother would allow the younger children to operate the skid-steer only if they were in the cab with them. Their policy for skid-steer operation was that the operator must be able to see outside the cab.

INVESTIGATION

The John Deere skid-steer loader, Model 6675 had a 70-inch bucket, and 28-inch tires. (See Figure 2) The two front lights were operational; the backup lights were not operational at the time of the incident. Foot pedals operate the bucket and handles move the machine forward and back. The operator's manual was in the cab at the time of the MIFACE site visit.

The victim and his family “got a late start” that day, according to his father. The victim did his chores, and helped with other family chores, such as milking cows. The victim played with his family members during the day, but according to his father, he was quiet at lunchtime.

All of the children helped with the farm chores. After milking the cows, the father and his older sons went to the farm shop. At approximately 8:00-8:30 pm, the victim came to the shop to be with his father and his two brothers while they were working. He picked up the shingle scraps, teased his father by sneaking snack crackers, and pounded nails into wood. Usually, the dry cows were fed earlier in the evening before the victim would go to the shop to be with his dad, however, on the day of the incident, it was done in the later evening when it was already dark. When his dad was almost done in the shop, he told the victim and his brother and sister to go feed the dry cows.

The victim’s 9-year-old brother operated a John Deere skid-steer loader, Model 6675. While the victim’s brother filled the skid-steer bucket with silage, the victim and his sister ran ahead and opened the gate to the pen to allow their brother to unload the silage. Both the victim and his sister ran down a 2-track path from the barn to the pen; the victim’s brother used the same path to get to the pen. The west side of the



Figure 2. Skid-steer loader driven by brother

path was kept mowed; the east side was left unmowed and was overgrown with weeds and tall grass. There was no outside light source to light the path or the pen area. There was a small floodlight attached about 20-30 feet up on a silo that was several hundred yards away near the house and barn area. The floodlight did not light the path or pen area nor did it appear to be directed in the line of sight of the skid-steer loader operator causing him to raise the bucket as he proceeded up the path to the house from the pen.

The victim and his sister watched the gate so that the cows did not escape when the gate was opened. The victim’s brother unloaded the silage in the pen and then proceeded to exit the pen. Under normal circumstances, the brother would drive the skid-steer through the gate and wait for his brother and sister to close the gate. They would then get in the bucket and he would drive them back up to the house.

On the day of the incident, the victim did not follow his normal pattern. When near the gate, he stopped and leveled the dirt, backblading while he exited the pen and the gate in reverse. After exiting the gate, his brother turned the skid-steer around to drive forward and started to drive the skid-steer back to the house.

The victim’s sister started to close the gate while the victim ran after the skid-steer calling after his brother to stop. With the bucket about 5 feet in the air, and approximately

200 yards from the house, the brother stopped the skid-steer, and began to back up and turn the skid-steer back towards the gate, presumably to pick up his brother and sister to carry them in the bucket up to the house. Just as he was backing up and beginning to turn, he saw something but thought it was the overgrown weeds along side the two-track path. As he was backing he felt a bump. He felt a second bump and looked to see what the bump was. The lights of the skid-steer illuminated the ground and he saw his brother lying on the ground in the eastern track of the two-track. The victim's brother stopped the skid-steer and checked on his brother. Seeing the victim's condition, he and his sister ran to the house to get their mother. The mother went out to check on the victim. The older brother went to find his father while the mother called 911. The victim's head was crushed and the tires ran over his left thigh. Emergency response arrived, and the victim was declared dead at the scene.

The victim was approximately four feet one inches tall, two inches taller than the back of the skid-steer loader at its highest obstruction, which was three feet eleven inches tall. The victim's brother was approximately four-feet-five inches tall. When the bucket arms were raised to about five feet, the arm would be approximately 52 inches from the ground. The raised bucket may have negatively impacted his brother's ability to see out of the side of the skid-steer loader. Due to the victim's height as well as the darkness, his brother would be unable to see the victim when he looked out the rear window or out to the side.

CAUSE OF DEATH:

The death certificate stated the cause of death as a depressed skull fracture. An autopsy and toxicology was not performed.

RECOMMENDATIONS/DISCUSSION:

- Restrict the operation of skid-steer loaders (and other heavy equipment) to persons older than 16 years of age who are instructed in the safe operation and appropriate use of the equipment.

The Child Labor Bulletin 102 published by the U. S. Department of Labor contains the Hazardous Occupations Orders for Agricultural Employment. The Federal Fair Labor Standards Act (FLSA) orders do not specifically state that the operation of or assisting to operate a skid-steer loader is hazardous for youth under 16 years of age. However, a skid-steer loader could be considered similar to earthmoving equipment, in which case, it must not be operated by children under 16 years of age. Although the prohibition of employment in hazardous occupations does not apply to youths employed on farms **owned or operated** by their parents, this bulletin can be downloaded to learn about what jobs around the farm that are particularly hazardous for youth. Access the Department of Labor website: www.dol.gov/esa/whd/ to learn more.

In this tragic incident, the victim, only six years old, probably did not recognize the dangerous situation of running after his brother while he was operating the skid-steer

loader on the path toward the house in the dark. The victim ran too close to the moving machinery and may not have realized that when his brother stopped and turned the skid-steer loader, he would be hit by the rear of the loader. His brother, only nine years old, did not recognize this dangerous situation fast enough or perhaps did not have the knowledge to take appropriate action, such as stopping the skid-steer and looking before turning around to pick up his brother and sister.

The heavy machinery that keeps a farm productive and prosperous poses a serious risk to children's safety, as demonstrated in this fatality. As in this case, farms are often family-run, and each member of the family has a job to do to contribute to the farm's success. Injuries are more likely to occur when a child is performing a task beyond the child's mental, physical, or emotional ability. Operation of heavy machinery should be restricted to persons older than 16 years of age who possess the knowledge, skills, and physical capacity necessary for safe operation of these machines. Additional information about child safety and farm equipment is available from:

- National Children's Center for Rural and Agricultural Health and Safety on the Internet at <http://research.marshfieldclinic.org/children/>;
 - National Safety Council, on the Internet at www.nsc.org/necas/;
 - Farm Safety 4 Just Kids, on the Internet at <http://www.fs4jk.org>;
 - NIOSH, on the Internet at <http://www.cdc.gov/niosh/homepage.html>.
- Develop a Farm Health and Safety plan for family members, guests and employees.

Children who work on their parent's farm are often at a higher risk for injury. Although there are no legal requirements in Michigan for a written safety plan in agricultural industries, we recommend one be developed, even though the farm may be family-owned. Safety and health hazards on the farm, especially in light of children working the farm, must be identified – this is especially important for family-owned farms. The farm survey can be a family effort – children often have a different perspective than adults, and working as a family will foster greater communication of safety expectations.

A farm safety plan can not only address hazards, but also identify possible hazard controls that can be developed and implemented. Once developed, the farm safety plan should be communicated to all who work on the farm, especially children, to raise awareness of safety issues and promote safe work practices. Farm safety plans have additional benefits of increasing work efficiency, and minimizing costs, including worker compensation premiums. A safety plan should include work rules, such as a “no riders” policy.

Pacific Northwest Agricultural Safety and Health Center (PNASH) developed a sample written farm safety and health program. This sample program can be found and downloaded from the Internet: <http://www.uidaho.edu/bae/agsafety/frmsaf01.pdf>. The Texas Cooperative Extension Service has developed a sample farm safety inspection checklist encompassing barns and buildings, animal facilities, grain storage and handling

facilities, farm shops, chemical storage and handling facilities, farm machinery, fuel storage and handling facilities, and the general farmstead. The checklist may be found on the Internet at

<http://agsafety.tamu.edu/CONDUCTING%20FARM%20SAFETY%20INSPECTIONS.pdf>

- Identify farm work suitable for children to perform.

Identification of work suitable for the children to perform will be a natural outgrowth of the farm health and safety survey. The North American Guidelines for Children's Agricultural Tasks (NAGCAT) are a resource developed to assist parents in assigning farm jobs to their children, 7 - 16 years of age, living or working on farms. The NAGCAT can help answer questions that parents often have regarding the role of their child in agricultural work:

- "At what age are my children ready to participate in different types of farm work?"
- "What factors should influence my decision to assign an agricultural job to my child?"

Because of the wide variation in children's growth and development as well as the diversity of agricultural practices, specific recommendations for children's work in agriculture cannot be based on age. The guidelines were developed to assist adults in determining the physical and mental abilities their child have so that they can complete farm tasks safely. The guidelines have been categorized and are in poster format. These guidelines and posters can be found on the Internet at:

www.nagcat.org/nagcat/pages/default.aspx?page=nagcat_guidelines_posters.

- Ensure farm equipment is maintained according to manufacturer instructions.

The front lights of the skid-steer loader were operational; the rear lights were not. This may have played a role in the fatality. The non-functional rear lights made it more difficult for the operator of the skid-steer loader to see to his rear, because he is "blinded" by the front lights and has less "dark" visibility without the rear lights. The unlit area behind the skid-steer would have made it difficult for the victim's brother to see the victim as he chased after the skid-steer loader. Keep equipment in good repair and safety features up to date. Note in Figure 3 the non-aligned front lights of the skid-steer loader. The lights do not appear to be aimed to assist

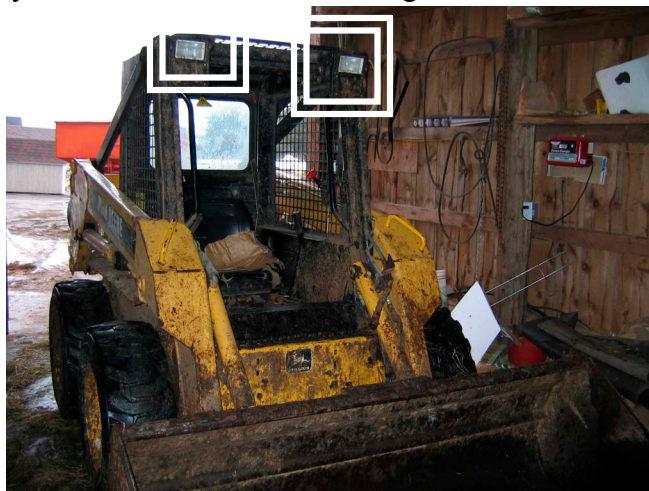


Figure 3. Non-aligned front lights on skid-steer loader

forward travel. It is important to read and follow the directions in equipment instruction and maintenance manuals and to conduct routine inspections of equipment so potential equipment safety hazards may be identified and fixed. Maintenance and servicing equipment is a prerequisite to a properly working, functional machine.

- Instruct workers, family members and other persons they should never approach operating equipment until they make eye contact with the operator and the operator discontinues operation.

Farm equipment can be loud and can restrict hearing and verbal communication of the operator. All persons near equipment should be trained to make eye contact with the equipment operator prior to approaching equipment in use. The operator should be trained to stop equipment movement prior to allowing a person to approach.

- Do not allow any passengers to ride on equipment unless specified by the equipment manufacturer.

The deceased's father indicated that the victim and his sister would be carried in the bucket up to the house after feeding the cows and making sure that the gate was secured. Farm machines, including tractors and skid-steer loaders, are designed to carry only one person, the operator. Carrying people in the bucket of a skid-steer loader is specifically identified as an "unsafe" act in manufacturer's operating manuals. Passengers may be thrown from machines as the result of unexpected movements such as bumps or turns. A passenger carried in a loader bucket is exposed not only to the risk of falling from the bucket but also to the risk of being immediately run over before the operator can stop or turn the skid-steer. Passengers can cause additional problems such as interfering with the operator's vision, interfering with the operation of machine controls, and distraction of the operator's attention from the tasks being performed. Families should institute a work rule that no one is allowed to be carried in a bucket or be a passenger on a piece of farm equipment unless the equipment is designed by the manufacturer to carry more than one person.

- Lower the bucket to the lowest position possible during transport trips and extended forward travel.

The skid-steer loader operator was traveling with the bucket approximately five feet in the air. It is unknown why the victim's brother did not lower the bucket to travel back to the house. The raised bucket restricted his visibility in front of him as well as looking out the side through the safety grids of the skid-steer cab, due to the skid-steer arms being raised. It is safer to travel with the bucket in the lowest position possible for the terrain. Not only does traveling with the bucket low improve visibility, but also keeps the loader's center of gravity within the loader's stability triangle.

Resources:

Developmental Stages of Children and Accident Risk Potential

By Robert A. Aherin, Ph.D, Extension Safety Specialist and Christine M. Todd, Ph.D,
Child Development Specialist, University of Illinois

Internet address: <http://www.ag.uiuc.edu/agsafety/devstage.html>

National Children's Center for Rural and Agricultural Health and Safety,

1000 North Oak Avenue, Marshfield, WI 54449. Tel (888) 924-SAFE(7233)

Internet address: <http://research.marshfieldclinic.org/children/>

National Safety Council, National Education Center for Agricultural Safety (NECAS)

10250 Sundown Rd. Peosta, IA. Tel (563) 557-0354 or (888) 844-6322.

Internet address: www.nsc.org/necas/

Farm Safety 4 Just Kids, P.O. Box 458, Earlham IA 50072. Tel (800) 423-5437 or
(515) 758-2827.

Internet address: www.fs4jk.org

National Institute for Occupational Safety and Health (NIOSH), Centers for Disease
Control and Prevention, 1600 Clifton Rd, Atlanta, GA 30333.

Tel (404) 639-3311 / Public Inquiries (404) 639-3534 / (800) 311- 3435

Internet address: www.cdc.gov/niosh/homepage.html.

Marshfield Clinic Research Foundation. North American Guidelines for Children's
Agricultural Tasks (NAGCAT). Internet Address:

<http://www.nagcat.org/nagcat/pages/default.aspx>

REFERENCES

Farm and Ranch Safety Management, 4th Edition, Copyright 1994, Deere & Company,
Moline, Illinois.

Child Labor Requirements in Agricultural Operations Under the Fair Labor Standards
Act (Child Labor Bulletin 102) WH-1295 (Revised May 2004), U.S. Department of
Labor, Employment Standards Administration, Wage and Hour Division. Internet
Address: www.dol.gov/esa/whd

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7/27/05

MIFACE

Investigation Report # 04 MI 176

Evaluation

To improve the quality of the MIFACE program and our investigation reports, we would like to ask you a few questions regarding this report.

Please rate the following questions on a scale of:

Excellent	Good	Fair	Poor
1	2	3	4

What was your general impression of this MIFACE investigation report?

1 2 3 4

Was the report...	Excellent	Good	Fair	Poor
Objective?	1	2	3	4
Clearly written?	1	2	3	4
Useful?	1	2	3	4

Were the recommendations ...	Excellent	Good	Fair	Poor
Clearly written?	1	2	3	4
Practical?	1	2	3	4
Useful?	1	2	3	4

How will you use this report? (Check all that apply)

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- ☐ Will not use it
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