MICHIGAN State FACE Program
Fatality Assessment & Control Evaluation

Michigan State University
Department of Medicine • Occupational and Environmental Medicine
909 Fee Road, 117 West Fee Hall • East Lansing, MI 48824 • 1-517-353-1846 • https://oem.msu.edu

REPORT#: 15MI086 **REPORT DATE:** 1/15/19

Owner of Farm Land Died Due to a Tractor Run Over

INCIDENT HIGHLIGHTS

DATE:
Summer 2015

TIME:
Approximately 4:00 p.m.

VICTIM:
Farm land owner in his 60s

INDUSTRY/NAICS CODE:
Real Estate & Rental & Leasing/53

EMPLOYER:
Self-employed

SAFETY & TRAINING:
On-the-job

SCENE:
Home backyard

LOCATION:
Michigan

EVENT TYPE:
Machine

SUMMARY

In summer 2015, a male farm land owner farmer in his 60s was run over by his Farm All B tractor with a Woods belly mower. The decedent and a family member were working on the damaged belly mower. The decedent reached up from the ground to turn on the tractor. The tractor gear was in reverse. As the tractor moved backward, the mower deck struck the decedent and knocked him to the ground. The decedent was dragged several yards by the mower deck. A tree in the yard stopped the tractor. The family member working with him called for emergency response. After 15-20 minutes, the decedent was removed from under the tractor….READ THE FULL REPORT> (p.3)

CONTRIBUTING FACTORS

Key contributing factors identified in this investigation include:

- Decedent started the tractor from the ground rather than the operator platform/tractor seat.
- Improper tractor shut down procedures.
- Tractor tires not chocked during maintenance activity….. LEARN MORE> (p.5)

RECOMMENDATIONS

MIFACE investigators concluded that, to help prevent similar occurrences, employers should:

- Start tractors from the operator seat only, not from the ground.
- Follow safe equipment shutdown procedures as described in the operator's manual.
- Use wheel chocks to prevent equipment movement during maintenance and repair activities….. LEARN MORE> (p.5)

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Michigan Fatality Assessment and Control Evaluation (FACE) Program

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SUMMARY

In summer 2015, a male farm land owner farmer in his 60s was run over by his Farm All B tractor with a Woods belly mower. The decedent and a family member were working on the damaged belly mower. The decedent reached up from the ground to turn on the tractor. The tractor gear was in reverse. As the tractor moved backward, the mower deck struck the decedent and knocked him to the ground. The decedent was dragged several yards by the mower deck. A tree in the yard stopped the tractor. The family member working with him called for emergency response. After 15-20 minutes, the decedent was removed from under the tractor and transported to a local hospital, where he died five days later from complications of the injuries sustained at the time of the incident.

INTRODUCTION

In summer 2015, a male farm land owner farmer in his 60s was run over by his Farm All B tractor with a Woods belly mower. MIFACE personnel contacted one of the decedent's family members (FM#1) who agreed to meet the MIFACE interviewer at the family home. MIFACE reviewed the death certificate, police report and hospital record during the writing of this report. Pictures used in the report are courtesy of the responding police department and news station covering the incident.

EMPLOYERS

The decedent owned 45 acres; 5 acres were leased to a farmer who grew wheat, soybeans and corn. In the past, the decedent's primary source of income was a job as a furniture and carpet salesman. He also performed woodworking and bought tractors needing repair, repaired them and then sold these tractors to supplement income. At one time, the decedent had horses and had a pasture area that was not rented/leased to grow crops. The pasture was kept fallow because the decedent had been considering boarding and/or raising horses again.

His family member described him as "handy" and a "perfectionist".

The family member did not know the length of time the decedent had owned the Farm All B tractor involved in the incident. Attached under the tractor was a Woods belly mower.

WRITTEN SAFETY PROGRAMS and TRAINING

The family member did not know of any specific safety and health training the decedent might have received. Although not required by OSHA since there were no employees, having a written health and safety plan can help prevent work-related injuries and deaths. FM#1 did not know if the decedent had an operator manual for the tractor.

WORKER INFORMATION

Approximately one year before the incident, the decedent had a medical event that limited the use of the left side of his body. After spending six months in rehabilitation, he used a brace for his left leg, was able to use a walker, and was able, with assistance, to climb onto/off of the mower deck of the tractor to get to the operator platform. On the day of the incident, the decedent did not utilize any help to access the operator platform.

Although the decedent was taking multiple medications for his health issues, the medication side effects were determined to not be a factor in this incident.

FM#1 mentioned a previous tractor overturn incident; the decedent had been mowing a steep hill when the tractor overturned.

INCIDENT SCENE

The Farm All B tractor with Woods belly mower involved in the incident was used to maintain the perimeters of the property and tree lines. The decedent also used it to mow acreage they had leased before and hoped to lease in the future and maintain the farm property's drainage ditches.

The decedent and another family member living nearby (FM#2) moved the Farm All B tractor with Woods belly mower from the pole barn to the home's grass lawn to work on it. The lawn area was flat.

FM#1 had removed the incident tractor from the home prior to the MIFACE visit; therefore, MIFACE could not determine any further information about the tractor.

WEATHER

The weather was not a factor on the day of the incident. It was in the high 70s, mostly cloudy, with winds from the south-southwest at 13 mph, gusting to24 mph. It lightly rained five hours prior to the incident time. [Weather Underground].

INVESTIGATION

The decedent had returned from mowing the pasture area, and spoke with FM#1, stating he was unsatisfied with the quality of the mow in the pasture and wanted to fix the Woods underbelly mower deck, which had, for reasons unknown, become crooked (not seated correctly under the mower).

The decedent contacted FM#2 and this family member came to the property to assist and diagnose the issue with the mower deck. The decedent backed the tractor out of the pole barn with FM#2 present. The decedent got off the tractor. According to FM#1, FM#2 saw the decedent "kick the brake and set the teeth". The decedent independently dismounted the tractor operator platform. Apparently, he did not place the tractor in neutral, but left it in reverse.

Photo 1. Incident tractor against tree

The exact sequence of events is unknown. Although several scenarios were discussed at the time of the site visit and were present in the hospital record, MIFACE agrees with FM#1's assessment of the two most likely hypotheses: the decedent was standing on the ground at the side of the tractor and either 1) reached up purposefully to start the tractor or 2) was reaching up for balance and inadvertently hit the starter. Because the tractor was in reverse gear, the tractor began to move backward. The decedent was struck by the mower deck, knocked to the ground, and was dragged by the mower deck several yards before the tractor movement was stopped by a tree (See Photo 1). FM#2 ran to the house and told

FM#1 to call for emergency response. FM#2 then ran to the pole barn and procured some jacks to partially raise the tractor from the decedent's chest.

Emergency responders arrived. It took emergency responders approximately 15-20 minutes to fully free the decedent from under the tractor. The decedent was conscious and speaking with emergency responders during his extrication. Emergency responders transported the decedent to a local hospital by ambulance. He died 5 days later from complications of the injuries sustained at the time of the incident.

CAUSE OF DEATH

The death certificate listed the cause of death as cerebral ischemia due to or as a consequence of occlusion of the vertebral arteries due to or as a consequence of complicating multiple blunt force injuries due to or as a consequence of compression beneath a tractor. No autopsy or blood toxicology was performed by the medical examiner.

CONTRIBUTING FACTORS

Occupational injuries and fatalities are often the result of one or more contributing factors or key events in a larger sequence of events that ultimately result in the injury or fatality. The following hazards were identified as key contributing factors in this incident:

- Decedent started the tractor from the ground rather than the operator platform/tractor seat.
- Improper tractor shut down procedures.
- Tractor tires not chocked during maintenance activity

RECOMMENDATIONS/DISCUSSION

Recommendation #1: Start tractors from the operator seat only, not from the ground.

Discussion: It is unknown if the decedent purposefully or inadvertently started the tractor while standing on the ground. This model of tractor did not have a seat safety switch requiring the operator to be in the seat to start the tractor.

The tractor model used by the decedent did not have a safety mechanism that prevented it from starting if he was not seated in the tractor seat. The operator's seat is the only place where an operator can maintain proper control during equipment start-up and during equipment operation. While seated in the operator's seat, an operator should check the engine throttle position, disengage the clutch and shift the transmission into neutral or park before the engine is started. Setting the brakes will prevent the tractor from rolling before the operator engages the transmission. Before starting a tractor engine, the operator should also ensure the power take off is disengaged. Performing these steps will reduce the likelihood of a tractor or machine unexpectedly moving forward or backward after the engine starts. In addition, if a tractor or machine does unexpectedly begin to move after starting, an operator seated in the seat will not be in danger of being run over and will be in position to maintain safe operating control.

Many modern tractor systems are equipped with additional safety interlock systems. Tractors equipped with neutral-start safety switches prevent starting the tractor engine unless the clutch pedal is depressed, the shift lever is in neutral or park or a combination of both. Some tractor models are equipped with a seat safety switch that requires the

operator to be in the operator's seat to start the tractor. When using an older model tractor without these safety interlock systems, operators must be particularly careful to follow safe tractor startup procedures.

Recommendation #2: Tractor operators should always utilize proper tractor shut-off procedures prior to exiting the tractor seat.

Discussion: Tractor operators should follow safe shutdown procedures prior to dismounting the tractor. The tractor's operating manual should be followed for any specific instructions. If a tractor owner does not have the operating manual, the owner should request it. For their own safety and that of bystanders, operators should never leave the driver's seat of a tractor that is still running and should properly shut it down before leaving the operator's seat. Before dismounting the tractor, operators should always:

- Disengage the PTO and lower all implements to the ground
- Place all controls in the neutral position
- Place the transmission in park lock, or if a manual transmission, place in the lowest gear
- Set the parking brake(s)
- Stop (turn off) the engine
- Remove the key

Recommendation #3: When performing maintenance on equipment with wheels, if any wheels are in contact with the ground, block/chock one or more of these wheels in both directions to prevent equipment movement.

Discussion: Blocking/chocking equipment wheels serves two purposes: 1) prevents the tires from rolling and causing unintended movement of the equipment and 2) prevents injury from the equipment when it unexpectedly moves. Blocks/wheel chocks should be selected according to the equipment's tire size/diameter, percent grade the equipment is being serviced on, the surface conditions and the vehicle's weight. It is best to use two blocks/chocks, in pairs, on at least one tire on the weighted axle. In this incident, the tractor was sitting on the ground so all axles were weighted. When all axles are weighted, MIFACE recommends that both of the rear axle tires be chocked. When possible, wheel chocks made of aluminum, rubber or molded urethane should be used rather than wood. For most farm equipment repair when in a field, even pine timbers will have sufficient strength to keep from crushing or rolling. MIFACE recommends 4"x 6" blocking rather than 4" x 4" to minimize rolling.

To learn more about selecting and positioning wheel chocking/blocking, an internet search revealed the following brochure from *Monster Motion Safety: Wheel Chock Guidelines*.

REFERENCES

Weather Underground [2015]. Weather history for nearby weather station. The Weather Channel Interactive, Inc.

ADDITIONAL RESOURCES

- MIFACE Investigation Reports
    - Farmer Run Over and Pinned Under Tractor Tire. (#11MI115) https://oem.msu.edu/images/MiFACE/11MI115.pdf

- Farmer Run Over by Tractor or Manure Spreader (#01MI058) (https://oem.msu.edu/images/MiFACE/01MI058v1.pdf
- Farm Hand Run Over by Tractor While Starting the Tractor While Standing On the Ground (02MI140) https://oem.msu.edu/images/MiFACE/02MI140v1.pdf

- Stoolmiller, Carson. Monster Motion Safety*: Chocking Procedures – A Step-by-Step Guide for Maximizing Safety*. https://monster-safety.com/chocking-procedures/ August 24, 2017.

DISCLAIMER

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ACKNOWLEDGEMEMENT

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