

MIFACE INVESTIGATION REPORT: #07MI121

Subject: Laborer Painting Christmas Trees Electrocuted

Summary

On October 11, 2007, a 22-year-old male laborer was electrocuted when the boom of a stake truck modified to paint Christmas trees contacted an energized overhead 7,200-volt power line while he held an aluminum paint gun connected to the boom by a metal-reinforced hose. The decedent was a member of a three-person crew. One coworker (Coworker #1) drove the stake truck. A second coworker, (Coworker #2) was painting with a second paint gun spray line connected to the boom. The boom was extended as Coworker #1 attempted to drive uphill, over two rises leading to the road.



Figure 1. Incident site showing direction of stake truck exiting field and contacting power line (not to scale)

Both the decedent and Coworker #2 were holding the paint guns as the boom contacted the 7,200-volt line that was 26 feet 3 inches above the roadway. Two nicks were located on the ground/neutral wire, which measured 21 feet 8 inches at the point of contact. The decedent was electrocuted and thrown to the ground. Coworker #2 was knocked unconscious and fell to the ground. Coworker #1 exited the stake truck to assist the decedent. Coworker #2 regained consciousness and ran to the decedent, who at this time was still breathing. Coworker #2 provided CPR as Coworker #1 ran to a nearby vehicle. The two coworkers placed the decedent into the vehicle. Coworker #2 continued to administer CPR while en route to the nearest hospital, which was 17 minutes (approximately 13 miles) away. The decedent died at the hospital. Approximately five months after the incident, Coworker #1 was charged with operating a vehicle under the influence of drugs causing death.

RECOMMENDATIONS

- Prior to equipment with a boom being moved on the road, the boom should be lowered to its lowest or designated transport position and properly secured.
- The firm should consider replacing the metal reinforced hose paint spray lines with non-conductive paint spray lines with similar durability.
- Christmas tree growers should consider installing a panic button within reach of the sprayer operators and an automated boom control in the truck cab.

- Employers should conduct a job site hazard survey before starting any work, and provide subsequent training to employees specific to the most common site hazards. Employees should be able to identify site hazards and implement appropriate control measures.
- When overhead power lines are present in the work area, farmers should ask local utility company officials what the minimum power line height requirements are and report to the utility if line heights appear less than the minimum.
- Employers should develop, implement and train employees in the business' emergency action plan.
- Employers should develop, implement, and enforce equipment maintenance programs that include scheduled preventive maintenance and timely repairs to equipment.
- Employers should consider affixing an overhead line electrocution danger/caution label inside of any vehicle capable of contacting an overhead power line to remind workers to look for overhead lines before beginning the work operation.
- Employers should consider measures that contribute to a drug-free work environment, including the development and implementation of an alcohol- and drug-free workplace program, particularly for jobs related to machine and motor vehicle operation.
- Employers should develop topographical farm/plantation layouts showing potential hazardous locations and employees should review these layouts at the time of assignment. Updates to these diagrams should be made as work in the field progresses.
- Employers should evaluate the employer/employee relationship to determine the responsibility for safety management. Both the business and the contractor are to assure safe working conditions. If an employer/employee relationship is established (to suffer or permit to work), the employer, whether the business or the contractor, should ensure that the firm(s) complies with applicable MIOSHA rules and regulations.

INTRODUCTION

On October 11, 2007, a 22-year-old male laborer was electrocuted when the boom of the stake truck contacted an energized overhead 7,200-volt power line while he held an aluminum paint gun connected to the boom by a metal-reinforced hose. On October 12, 2007, MIFACE investigators were informed by the Michigan Occupational Safety and Health Administration (MIOSHA) personnel who had received a report on their 24-hour-a-day hotline that a work-related fatal injury had occurred on October 11, 2007. On June 5, 2008, MIFACE interviewed the company owner and another employee at the firm. On June 24, 2008, MIFACE interviewed via telephone, the responding police department deputy who investigated this incident. During the course of writing this report, the death certificate, medical examiner report, and the MIOSHA file and citations were reviewed. The pictures used in Figures 2 through 6, and 10 through 12 are courtesy of the MIOSHA

file. The picture used for Figures 1, 7, 8, and 9 were taken at the time of the MIFACE site visit. MIFACE had modified the pictures when necessary to maintain confidentiality.

The firm for whom the decedent worked was a Christmas tree business. The firm planted, trimmed, painted, harvested and sold Christmas trees. The company owner has been in business for over 40 years. The company owner indicated to the MIFACE researcher that he had owned and leased numerous fields. The MIOSHA file indicated he farmed 11 fields.

The firm had 10 employees, but hired additional seasonal employees. Work was seasonal, mostly occurring in the fall (Oct-Dec), and sometimes in spring and summer. Most spring and summer work was part-time, for example, trimming trees and applying weed killer and pesticides. Full-time work began in the fall when the trees are painted, harvested, wrapped and shipped. The decedent had worked for this firm on and off for three seasons, Coworker #1 had worked for two and one-half seasons, and Coworker #2 had worked for five seasons. The decedent had trimmed trees and also had painted Christmas trees for this employer. The decedent and his coworkers were paid by the job with a 1099 form and a weekly check. The firm's owner assigned the work to be performed when the work crews arrived at the office location and provided all equipment used to perform the work. Thus MIOSHA considered the workers "employees" although a 1099 form was used.

The firm did not have a written health and safety program. The owner indicated that on-the-job training was provided, but there was no written documentation of the training. The owner stated that new employees worked with experienced employees and learned the "do's" and "don'ts", and how to perform the job from the experienced employees. Employee training consisted primarily on how to use the pump, valves and what trees to spray and not to spray. The employer did not provide training concerning the hazards associated with overhead power lines and power line clearances. He stated he did not realize that there were energized overhead lines in the area. The owner did not know if the crew was wearing any personal protective equipment. He stated they were wearing "regular clothes."

MIFACE interviewed another employee while at the site. The employee confirmed the employer's explanation of the appropriate work practice for leaving a Christmas tree field painting area and traveling on the road with the stake truck. The work practice was to lower the boom to the horizontal position, laying it in the saddle, and stow the hoses and spray guns either onto the stake truck bed (if very short travel from field to field) or dismantle the hoses/guns from the boom if traveling a longer distance. Prior to entering the road, the stake truck windows should be cleaned.

At the conclusion of their investigation, MIOSHA General Industry Safety and Health Division issued the following Serious citations to the employer relating to the fatality.

SERIOUS: TREE TRIMMING AND REMOVAL, PART 53.

RULE 11(a) - A job briefing shall be conducted before any tree job involving unusual hazards is begun. No training was provided for employees working around energized power lines with equipment that can come in contact with power lines.

RULE 5321(4) - Require tree worker to maintain (table 1) distances from energized conductor or protective measures not provided by owner or systems operator (see Rule 5321). No training or procedures were in place for employees working around energized power lines with equipment that can come in contact with power lines.

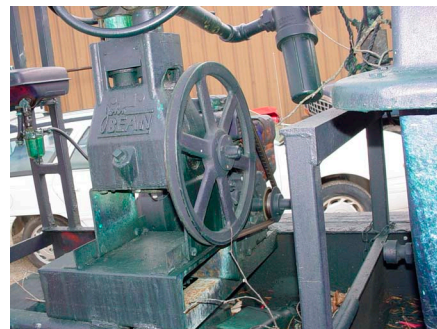
SERIOUS: MEDICAL SERVICES AND FIRST AID, PART 472.

RULE 325.47201(1) - An employer shall ensure the ready availability of medical personnel for advice and consultation on matter of plant health. Employees who work in remote tree fields in rural area did not have any means of requesting medical help, employees did not have truck radios, cell phones, or any other means of calling the police or emergency response medical units when an employee was seriously injured by contact with an electric power line.

RULE 325.47201(2) - An employer shall ensure that, in the absence of an infirmary, clinic, or hospital in near proximity to the workplace, which is used for the treatment of all injured employees, a person or persons shall be adequately trained to render first aid. Adequate first aid supplies shall be readily available. Employees have not received any type of first aid training or CPR training in case of emergency. Employees work in remote tree field around the area, no first aid kit or supplies. Employees perform a variety of job tasks from tree trimming, spraying chemicals, and using chain saws for harvesting.

MIOSHA General Industry Safety and Health also issued companion citations that involved personal protective equipment, an unguarded belt and pulley and flywheel (Figure 2), the firm's right to know program, and paint spray truck violations.

Figure 2. Unguarded belt, pulley and flywheel on the stake truck



INVESTIGATION

The stake truck involved in the incident was a 1979 Chevy 1-ton deluxe 30 flat bed truck that had been altered to facilitate painting Christmas trees (Figures 3 and 4). Affixed to the bed of the stake truck was a steel frame that supported the painting equipment. At the time of the MIOSHA inspection of the truck, the truck: (1) did not have a working gas gauge, horn, or backup warning alarm, (2) green paint covered headlights and tail lights

and the windows were somewhat covered with paint, (3) had front brakes only, (4) a bad muffler system, (5) holes in the floor boards, and (6) no keys, just a push button to start it.



Figure 3. View of passenger side of stake truck, concentration on length of boom



Figure 4. View of passenger side of stake truck, concentration on rear mast and boom junction

Two water reservoirs, one capable of holding 200 gallons of water, and one capable of holding 300 gallons, were affixed to the truck bed. There was a 30-foot long aluminum 4-inch diameter boom that had a spray paint system on the lower portion of the boom. The spray paint system included a pump system driven by a small gasoline powered engine mounted on the frame, and two steel-braided paint spray hoses. The pump and motor had an unguarded belt and pulley and a spoked wheel located toward the back of the truck.

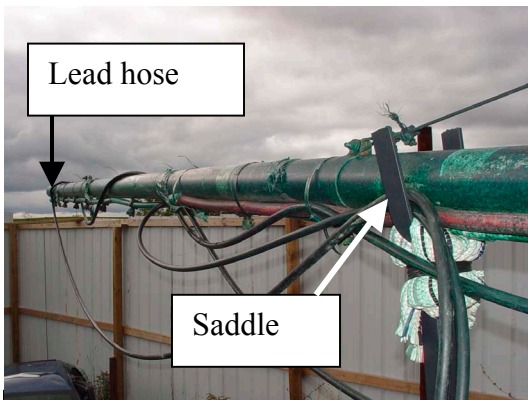


Figure 5. Boom resting in "saddle" and paint spray hose attachment to boom



Figure 6. Paint Spray guns

The mast to which the spray system (on the boom) was connected was approximately 11 feet 6 inches from the ground and had a pulley mounted on the top. There was a hand winch with a steel cable mounted approximately 3-1/2 to 4 feet down from the top to raise and lower the boom. When not in use, the boom was placed in a horizontal position in a "saddle" located just behind the truck cab (Figure 5). The upper section of the mast could spin 360 degrees but was normally pinned 90 degrees to the left (driver's side) of

the truck so the driver could see it and be aware of the spray paint operators. Once at the painting site, the boom was raised from the horizontal position by the hand crank and the steel cable into the appropriate spraying position. This was usually a 45-degree angle from the frame but could be raised to any angle as needed by the height of trees being painted. To maintain the position of the boom during spraying operations, the boom was locked in place and prevented from swinging by a metal pin placed in a hole on the casing of the boom.

The paint spray hoses were attached by male couplings to a 30-foot long, 4-inch diameter metal boom, and then secured in place by clamps. The hoses were metal reinforced, and rated at 2,500 psi. The hose at the end of the boom was referred to as the “long or lead hose” and the hose located approximately 15 feet from the “knuckle” area (where the boom is raised and lowered) was referred to as the “short hose.” Both hoses were oriented to the driver’s side of the stake truck. The working pressure in the lines was 8 to 12 pounds.

Aluminum spray guns were attached to the hoses by a quick disconnect (Figure 6).

The Christmas tree paint was a water-based paint that was shipped in 5-gallon buckets. The paint was added to the appropriate reservoir at the worksite to achieve the required dilution ratio for the type of tree and the desired color for the tree.



Figure 7. Overview of incident site, looking west. Overhead lines identified (not to scale).

On the day of the incident, the decedent and his two coworkers arrived at the office at approximately 8:00 a.m. and were given their work assignment. The owner indicated that the crew gathered the materials necessary to conduct the painting operation. The three crewmembers traveled in an employee vehicle to get the stake truck, which was at another location. Coworker #1 drove the stake truck and the decedent and Coworker #2 traveled in the other vehicle to the incident site to paint Christmas trees that had been tagged for harvest (Figure 7). The three crewmembers had been out painting together for several weeks prior to the incident. This was the first time the decedent had been painting trees in the incident field, but Coworker #1 had painted the trees in the incident field in past seasons. According to the company owner and confirmed by the employee MIFACE interviewed, as the driver, (Coworker #1) would have been considered the “lead man” in the field, and responsible to ensure safe work practices were utilized.

The site was shaped like a boot. A two-track road, with a fence along its intersection with the dirt road, traversed the “side” of the boot. The two-track was located at approximately the boot’s insole. At the location of the two-track and dirt road junction, there was

minimal elevation change between the field and the road. This area was the area recommended by the owner and confirmed by the employee as the desired area to enter and exit the field. The sole of the boot was parallel and adjacent to the dirt road. The 7,200-volt power lines crossed the road at two different locations; one set of power lines crossed near the “heel” end of the boot, and one set crossed near the “toe” end of the boot. The set of lines contacted by the boom were located between the insole and the toe of the boot. At the point of contact, the neutral line was 21 feet 8 inches above the road and the energized line was 26 feet 3 inches above the ground.

At the incident area, there were two “hills/rises” leading up to the road (Figure 9). After setting up the painting equipment, the crew began to paint the trees at the site. The crew raised the boom up over 20 feet to clear some pine trees. To conduct the painting operation, the decedent handled the “lead” hose (the hose nearest the end of the boom), Coworker #2 handled the “short” hose (the hose located approximately 15 feet from the knuckle in the middle of the boom), and Coworker #1 drove the stake truck. The decedent and Coworker #2 both walked alongside the driver’s side of the truck painting trees.

The crew had painted a landing of trees located in the sole area of the boot. The boom was most likely fully raised and in a locked position, as the crew had to contend with some tall trees.

During the site visit, the employee MIFACE spoke to indicated that when he sprayed the area last year, his practice was to spray the sole area of the boot, and then back the truck up to the two-track, stow the hoses/guns and lower the boom, and then back the truck onto the dirt road. It is unknown if Coworker #1 had been instructed in this work practice. After painting the trees, the police report stated that Coworker #1 and Coworker #2 indicated that it was faster to turn the truck around in the road rather than to back up to the two-track road and turn around.



Figure 8. Two-track road and field entrance/exit recommended by employer



Figure 9. Exit area

There was a series of two small rises that abutted the road. According to the electric company measurements, the elevation change from the tree field to the roadway at the point of contact was 47 inches with a 28-inch hill between. Coworker #1 made two attempts to get up these rises. The first attempt was unsuccessful, as indicated by tire divots in the first rise. He backed the stake truck up a distance, and then accelerated quickly to drive over both rises (Figures 9 and 10).



Figure 10. Divots and marks on hill rises to roadway

Both the decedent and Coworker #2 were holding the aluminum paint guns while Coworker #1 was attempting to drive onto the road. As the truck was accelerating over the rises, Coworker #2 yelled to Coworker #1 to stop because the boom was too high. Coworker #1 either did not hear the warning or was unable to react quickly enough. The truck continued over the rises and onto the road. The truck bounced and the elevated boom contacted both the neutral and energized lines. When the boom came into contact with the 7,200-volt power line, a loud bang was heard similar to a shotgun blast. Coworker #1 heard the bang, and then heard the decedent scream. The decedent and Coworker #2 were knocked to the ground. After backing the truck off of the power line Coworker #1 exited the truck and ran to the decedent. Coworker #2, after regaining consciousness, rose to his feet and also ran to the decedent. Coworker #1 instructed Coworker #2 to attend to the decedent. While Coworker #2 administered CPR to the decedent, Coworker #1 parked the truck, unpinned and lowered the boom, and leaned the boom against a nearby tree (Figure 11).



Figure 11. Incident area overview

The boom, which had been placed in the saddle, measured 29 feet 6 inches and was sticking out directly behind the truck. Then Coworker #1 ran up the hill to get the other vehicle at the site. As Coworker #1 drove to the nearest hospital (13 miles away), Coworker #2 continued to administer CPR. Upon arrival at the hospital, the decedent was breathing, but died later that day.

The MIFACE researcher encountered a discrepancy on whether a cell phone was available for use at the time of the incident. MIFACE spoke with the MIOSHA compliance officer and the officer indicated that none of the crewmembers had a cell phone or other communication device. MIFACE asked the company owner several times if a cell phone was available for use at the incident scene. The company owner responded

that a cell phone was available, but the employees did not use it. MIFACE determined that cell phone service was available in the area.

Two burn marks demonstrating direct contact with the overhead line were found on the lead hose (the decedent's hose) (Figure 12). One mark was located 7-1/2 to 8 feet down from the boom. This mark consisted of a 3/16-1/4-inch diameter hole burned through the hose. Additionally on the lead hose was an area about the size of a thumbnail that was sliced and the fine wire braiding looked charred. The plastic tubing for the spray system also appeared burnt. Where the mast and boom are attached, there was a burn mark at the pivot (up and down) point, indicating that the boom had come all the way up and hit the stationary section of the pivot.



Figure 12. Burn mark on hose

At approximately 11:00 a.m., the power company had an outage reported to them. They dispatched someone out to the area and found that a fuse was blown. They drove the area of the power lines that were affected and surveyed the lines for damage or breaks, but could not find a problem. The line crew observed the stake truck parked along the road. Because of the way the truck was parked the line crew thought the painting crew might be at lunch. The line crew returned to the fuse location and replaced the fuse.

The company owner and other employees were notified of the incident by one of the crewmembers. The owner and the other employees drove to the incident site. As the power company crew was leaving the site, they met these individuals and asked if they had informed the police of the incident. The company representatives indicated they had not yet informed the police, and the line crew informed them that a call to the police needed to be placed.

As a part of the police investigation, a blood sample was drawn from Coworker #1, the driver of the stake truck. The driver was found to have measurable levels of an illegal drug (marijuana). Blood toxicology also indicated the presence of a barbiturate and a narcotic; it is unknown whether these drugs were prescribed medications. The driver of the stake truck was prosecuted for driving under the influence of illegal drugs causing death.

CAUSE OF DEATH

The cause of death as stated on the death certificate was electrocution. Toxicological analyses indicated only drugs consistent with hospital treatment were present in the decedent's blood.

RECOMMENDATIONS/DISCUSSION

- Prior to equipment with a boom being moved on the road, the boom should be lowered to its lowest or designated transport position and properly secured.

One of the decedent's coworkers stated to the MIFACE researcher that the boom should have been lowered and secured prior to exiting the field. Employers should develop and enforce as a standard operating procedure the work practice of lowering and securing the machinery/equipment boom prior to movement on the road when traveling from one work area to another work area.

- The firm should consider replacing the metal reinforced hose paint spray lines with non-conductive paint spray lines with similar durability.

The metal reinforced paint spray lines were electrically conductive and provided a path for the electrical current to go to ground through the body of the decedent. Non-conductive spray lines would eliminate the path to ground and could reduce the number of fatalities that result when equipment with booms contact energized power lines. Durability and weight of the lines should be addressed as part of the selection process. Heavier non-conductive hoses can more easily be pulled through overlapping tree limbs without damage. The firm should also consider non-conductive spray guns to further enhance the safety of their workers.

- Christmas tree growers should consider installing a panic button within reach of the sprayer operators and an automated boom control in the truck cab.

Sprayer operators can become tangled in the hose, have a line brake, see the boom become entangled in vegetation, or as in this case see the boom approach an overhead power line. To alert the vehicle driver of an existing or impending hazardous situation, a panic button within reach of the spray operator could activate a warning light in the cab, indicating to the driver to apply the brakes and stop the vehicle. In this incident, the surviving sprayer operator yelled to the driver to stop as he noted that the boom was going to strike the power line, but the driver did not stop. If a panic button had been present and a warning light activated in the cab, the driver may have applied the vehicle brakes prior to contacting the overhead power line and the incident may have been avoided.

An automated boom control located in the cab could speed up the spraying operation by allowing in-cab boom positioning rather than stopping spraying activities to adjust the boom. Communication between the sprayers and the driver must be established so the driver can correctly position the boom and avoid potential hazardous situations.

- Conduct a job site hazard survey before starting any work, and provide subsequent training to employees specific to the most common site hazards. Employees should be able to identify site hazards and implement appropriate control measures.

Prior to the start of work, employers should conduct jobsite surveys to identify potential worker hazards so that appropriate preventive measures to control these hazards can be identified and implemented. Company policies and training should be designed based upon the findings of the job hazard analysis. Once an assessment has been completed, written safety rules and procedures should be developed, implemented, and enforced. Input from workers who usually perform the tasks is important.

Three characteristics of this jobsite combined to produce a serious hazard: 1) a 7,200 V energized overhead power line located approximately 22 feet off the ground near the roadway, 2) the use of an elevated conductive truck-mounted boom and spray lines in the vicinity of the power line, and 3) an elevation change coupled with tree height from the field to the roadway. Although the overhead line met the National Electrical Safety Code (NESC) requirement of 18-1/2-foot ground clearance, the elevated boom and “bounce” of the truck as it entered the road ensured contact with the energized line. The seriousness of these hazards could be minimized by ensuring that employees maintain a safe distance from energized conductors, especially when the boom is elevated, by using non-conductive materials, and providing a standard operating procedure for work operations (e.g. field entrance/exit locations, boom lowering prior to entering roadway, etc.), employee training, etc. In this incident, neither the truck driver nor the two painters apparently considered the height of the boom in relation to the overhead power lines when the boom was fully raised when making the decision to drive the truck up to the road at that location. Only after the truck was nearing/on the roadway did Coworker #2 note that contact would be made and yelled for the driver to stop.

The employer stated he was unaware of the power lines at the incident site. Although limited on-the-job training had been performed and instruction given (e.g. watch out for overhead lines), the hazards associated with overhead lines were not stressed. The danger of overhead power lines appears to be obvious, however, contact with power lines and the subsequent occupational-related fatalities continue. Employers must stress and routinely review the hazards associated with overhead power lines. This incident underscores the need for increased management and worker understanding, awareness, and ability to identify the hazards associated with working on or in proximity to electrical energy.

- When overhead power lines are present in the work area, farmers should ask local utility company officials what the minimum power line height requirements are and report to the utility if line heights appear less than the minimum.

After conducting the topographical survey and overhead power lines are present in the work area, farmers should contact local utility company officials to ask what the minimum height requirements are for those lines and report any power lines that appear to be lower to determine the actual line height. This information should be used in the job site hazard survey in relation to all farm equipment and tools. *Do not attempt to measure the line heights yourself!* After the height of all power lines have been established, the clearance needed for equipment that must travel underneath the line can be determined.

To determine if equipment can be safely operated in the vicinity of the power line, farmers should measure the maximum height and vertical reach of all machinery and equipment. Farmers should also consider the possibility that some equipment during transport is actually taller than when in use, and the height should be accounted for during transport and entering and exiting a field.

- Business owners should develop, implement and train employees in the business' emergency action plan.

An emergency situation occurred and it was not reported immediately to management, emergency response or regulatory authorities. The company owner had not developed an emergency response plan, and did not know the report notifications he was required to make. An emergency action plan describes the actions employees should take to ensure their safety if a fire or other emergency situation occurs. It also provides a framework for the employer to follow as the firm reacts to the emergency situation.

Although the majority of work was performed out-of-doors, away from the business location, the business "home" location had an office and maintenance barn. The maintenance area had several functions such as storage of chemical materials, equipment maintenance, equipment storage, etc. Workers often worked at remote locations, and when emergencies occurred, they did not have a procedure to follow.

The decedent's coworkers transported him to the nearest hospital located approximately seventeen minutes and 13 miles away. An emergency response fire rescue unit was within two miles of the worksite, and most likely, could have provided medical help much sooner if his coworkers had called 911. As part of the emergency action plan, employees should be provided a communication device when working in a remote location so, if necessary, appropriate emergency notifications can be made.

MIOSHA General Industry Safety Standard Part 6, Fire Exits, Rule 608 requires that a business with 10 or more employees have a written emergency plan. In businesses with fewer than 10 employees, the plan can be communicated orally and need not be in writing. MIOSHA General Industry Safety Standard Part 6 may be found and downloaded at: www.michigan.gov/documents/CIS_WSH_part6_38111_7.pdf. Federal OSHA has an e-tool to assist employers in developing an emergency action plan. The e-tool can be found at: <http://www.osha.gov/SLTC/etools/evacuation/index.html>.

- Develop, implement, and enforce equipment maintenance programs that include scheduled preventive maintenance and timely repairs to equipment.

Regularly scheduled preventive maintenance for equipment is an important way to ensure that the equipment is in safe working condition. When a problem is identified that jeopardizes the safety to the operator or any other person, the vehicle or equipment should be taken out of service and repaired before being placed back in service. The stake truck, although considered an implement of husbandry, was not well maintained. Although the issues with the truck noted by MIOSHA may not have contributed to the

fatality, they did pose an increased risk of an employee being injured. Employers should maintain equipment in proper working condition in accordance with the manufacturer's guidelines and document such maintenance.

- Employers should consider affixing an overhead line electrocution danger/caution label inside of any vehicle capable of contacting an overhead power line to remind workers to look for overhead lines before beginning the work operation.

Several safety label manufacturers have labels that highlight the risk to the operator of a piece of equipment if the equipment contacts an overhead power line. The two labels used as illustrations were found on the Accuform website (www.accuform.com).



- Employers should consider measures that contribute to a drug-free work environment, including the development and implementation of an alcohol- and drug-free workplace program, particularly for jobs related to machine and motor vehicle operation.

The employer did not have an alcohol and drug-free workplace program. The driver of the stake truck was prosecuted for driving under the influence of illegal drugs. The owner stated to the MIFACE researcher that if he had known that the driver of the stake truck was under the influence of illegal drugs, he would not have permitted him to work that day. Employers should consider designing and implementing an appropriate alcohol- and drug-free workplace program that matches the needs of their organization. Such programs are often unique to the individual company and include measures that are feasible, applicable, and beneficial to that particular workforce.

Currently, there is no specific MIOSHA standard on this issue. Employers can create a drug- and alcohol-free workplace policy for their business by utilizing the U.S. Department of Labor's [Drug-Free Workplace Adviser](#). The Adviser has 13 sections with questions that are completed by the employer. At the conclusion of the Adviser, a drug- and alcohol-free workplace policy is created based upon employer selections. The Department of Labor strongly recommends that a legal consultant, such as a labor/employment attorney, review the created policy prior to distribution and implementation. Employers may also find it useful to research how similar businesses and industries in their local area have addressed this issue.

If a farm has vehicles that require a commercial driver's license, the drivers of such vehicles are required by Department of Transportation (DOT) and Federal Motor Carrier Safety Act (FMSCA) regulations to be in a drug and alcohol testing program.

- Develop topographical farm/plantation layouts showing potential hazardous locations and employees should review these layouts at the time of

assignment. Updates to these diagrams should be made as work in the field progresses.

The employer had Christmas tree farms at numerous different locations that required treatment (pesticide application, trimming, painting, cutting, etc.) during the course of the growing season. In this incident, MIOSHA determined that the Christmas tree farm did not fall under the Standard Industrial Code (SIC) 01 or 02, thus the farm was not exempt from complying with MIOSHA General Industry Safety and Health Division rules and regulations. As part of the hazard analysis, the employer should develop a topographical diagram of potential hazards, such as ditches, stumps, overhead electrical lines, etc. and their locations for each farm. The diagram could also show equipment access points to the farm, a painting strategy, directions to the farm site, etc. The diagram could be copied and laminated for protection, and kept at the home office or in company vehicles.

The employer indicated that although the driver of the stake truck had been to this farm location, the other coworkers had not been previously at the site. As this was an unfamiliar worksite for two of the three workers, it may have been helpful for them to have a diagram showing approximate locations of potential hazards, such as the overhead power lines, ditches and drop-offs, irrigation equipment, restricted areas such as steep inclines as well as normal entry points and nearest phones if there is no cell phone or cell phone service. After diagram review, the workers might have been more aware of the hazards inherent at the location and proceeded out of the field differently (at another location or lowering the boom).

As the growing season progresses, terrain changes can occur, such as stumps hidden by tall grass, ground washouts, etc. The person noting the change(s) should update the farm's layout. Supervision should then alert all affected workers of these conditions.

- Employers should evaluate the employer/employee relationship to determine the responsibility for safety management. Both the business and the contractor are to assure safe working conditions. If an employer/employee relationship is established (to suffer or permit to work), the employer, whether the business or the contractor, should ensure that the firm(s) complies with applicable MIOSHA rules and regulations.

The decedent's employer indicated to the MIFACE researcher that because the workers were paid by 1099 forms, the workers were considered independent contractors, and he did not think that the firm would be "covered" by MIOSHA regulations. The MIOSHA News, Vol. 9, No. 4, Fall 2005 issue is available on the Internet at http://www.michigan.gov/documents/MIOSHA_news_fall05_140428_7.pdf. One of the articles, What Defines Employer – Subcontractors and MIOSHA Regulation gives readers an opportunity to evaluate their relationship with workers issued a 1099 and whether the reader would be determined to be an "employer" by MIOSHA. MIOSHA must establish an employer/employee relationship before MIOSHA rules and standards can be applied during the investigation of any worksite or work operation.

The article states “The Form 1099 is an Internal Revenue Service (IRS) form that is used for reporting certain types of income, and is not a factor for MIOSHA in determining an employer/employee relationship with respect to MIOSHA rules and standards.” The article lists several items that are considered (although not all must be met) when MIOSHA determines whether an employer/employee relationship exists:

- Who has hire/fire authority?
- Who establishes the hours of work/schedule of work progress?
- Who provides materials/equipment?
- Who provides workers’ compensation insurance?
- Who pays the workers?
- Who supervises the workers?
- The “Economic Realities Test” – who stands to gain from the efficiency of the work performed?

If an employer/employee relationship is established, then the employer must comply with applicable MIOSHA rules and regulations.

RESOURCES

MIOSHA standards cited in this report may be found at and downloaded from the MIOSHA, Michigan Department of Labor and Economic Growth (DLEG) website at: www.michigan.gov/mioshastandards. MIOSHA standards are available for a fee by writing to: Michigan Department of Labor and Economic Growth, MIOSHA Standards Section, P.O. Box 30643, Lansing, Michigan 48909-8143 or calling (517) 322-1845.

- MIOSHA General Industry Safety Standard, Part 53, Tree Trimming and Removal.
- MIOSHA General Industry Safety Standard, Part 472, Medical Services and First Aid.
- MIOSHA General Industry Safety Standard, Part 6, Fire Exits.
- Massachusetts Case Report 06-MA-027: A Municipal Worker Struck by a Motor Vehicle While Patching a Pothole. <http://www.cdc.gov/niosh/face/stateface/ma/06ma027.html>
- Oklahoma Case Report 04-OK-058-01: An Elevator Operator Was Killed When He Fell From a Manlift. <http://www.cdc.gov/niosh/face/stateface/ok/04ok058.html>
- Missouri FACE Investigation #93MO154: Journeyman Roofer Dies From 25-Foot-Fall Through Structural Decking. <http://www.cdc.gov/NIOSH/FACE/stateface/mo/93mo154.html>
- DTE Energy Offers Farm Safety Tips. Monday Apr 28, 2008. 3:34 p.m. EDT. <http://www.reuters.com/article/pressRelease/idUS216733+28-Apr-2008+PRN20080428>
- What Defines Employer – Subcontractors and MIOSHA Regulations. MIOSHA News, Vol. 9., No. 4., Fall, 2005. http://www.michigan.gov/documents/MIOSHA_news_fall05_140428_7.pdf
- National Electrical Safety Code Handbook 2007 Edition. <http://www.ieee.org/portal/site>

Key Words: Electrocution, Boomed Truck, Christmas Trees

MIFACE (Michigan Fatality Assessment and Control Evaluation), Michigan State University (MSU) Occupational & Environmental Medicine, 117 West Fee Hall, East Lansing, Michigan 48824-1315; <http://www.oem.msu.edu>. This information is for educational purposes only. This MIFACE report becomes public property upon publication and may be printed verbatim with credit to MSU. Reprinting cannot be used to endorse or advertise a commercial product or company. All rights reserved. MSU is an affirmative-action, equal opportunity employer. 11/5/08

MIFACE Investigation Report #07 MI 121 Evaluation

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

Please rate the report using a scale of:

Excellent	Good	Fair	Poor
1	2	3	4

What was your general impression of this MIFACE investigation report?

	Excellent 1	Good 2	Fair 3	Poor 4
<i>Was the report...</i>				
Objective?	1	2	3	4
Clearly written?	1	2	3	4
Useful?	1	2	3	4
<i>Were the recommendations ...</i>				
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)

- Distribute to employees/family members
- Post on bulletin board
- Use in employee training
- File for future reference
- Will not use it
- Other (specify) _____

Thank You!

Please Return To:

MIFACE
Michigan State University
117 West Fee Hall
East Lansing, MI 48824
FAX: 517-432-3606

Comments:
