FACE INVESTIGATION: #04WI093

SUBJECT: Snow Plow Driver Dies When Caught in Auger of Salt Spreader

SUMMARY

On December 20, 2004, a 55-year-old truck driver (the victim) died after his clothing became entwined around a rotary auger that was used to move salt in the back of a dump truck to a spreader. He was alone, operating a snowplow Ford F550 dump truck with a hydraulically operated Swenson salt spreading attachment, at the time of the incident. He was found by a co-worker who was returning with his truck to the dispatch yard. The co-worker found the victim inside the box of the truck with the victim's arm caught up in the auger. The co-worker called 911 at 3:46 p.m. The paramedics responded and listed the time of death at 3:55 p.m. The medical examiner declared the victim dead at 5:15 p.m. The victim was removed from the auger by Emergency Medical Services (EMS) personnel and it was observed that the victim's right sleeve had been caught on one of the auger's teeth. The victim was transported to the medical examiners morgue. The FACE investigator concluded that to help prevent similar occurrences, employers should:

- **implement an effective Lockout Tagout program that identifies and addresses the hazards associated with rotary machine parts and includes all the manufacturer's recommendations for safe machine handling.**

- **contact the manufacturer to determine whether rotating machine components can be completely shielded to prevent worker contact with moving machine parts.**

- **ensure that workers are trained to recognize the hazards associated with working near or around exposed rotating machine parts.**

INTRODUCTION

On December 20, 2004, a 55-year old truck driver (the victim) died after his clothing became entwined around a rotary auger that was used to move salt in the back of a dump truck to a spreader. On December 21, 2004, the FACE investigator learned about the incident from the news media. The FACE investigator reviewed official reports and sent a letter to the company and requested an interview. A week later, the FACE investigator followed up with a telephone call to the company, who at that time declined an interview. The content of this report is based on the information from evidence presented in the official reports.

The company is a seasonal company involved in the removal of snow and ice. The company has been in business for over 20 years and employs 33 workers. The company employs eight truck drivers who operate the snowplows with a salt spreader in the dump box (Figure 1 and Figure 2). The other employees operated snow throwers, spreaders and

an ATV snow plow. The snow throwers were mainly used for walkways and the plows were used for driveways and parking lots. The management of the company consisted of the owner who directed a job superintendent and three foremen. The victim received initial training regarding the snowplow and the salt spreading attachment before the beginning of the snow removal season. The victim had worked for the company three previous seasons and was an experienced heavy equipment operator.

Figure 1. Snow Plow with a salt spreader in the dump box.

Figure 2. Dump box on the snow plow.

While the company provides annual training for its employees with an emphasis on quality and efficiency, the company did not have a written safety and health program.

INVESTIGATION

The victim was operating a snowplow Ford F-550 dump truck with a hydraulically operated Swenson salt spreading attachment, at the time of the incident.
The auger sits in a trough where rotary blades move the salt to a rotating wheel, which applies the salt to the pavement.

As the dump body of the truck is raised, salt is moved to the rotary blades of the auger (Figure 3). This salter/spreader/auger is an added attachment to the dump body of the Ford F-550 truck. The auger for the spreader box is located at the rear of the dump box. The auger is protected from the rear of the vehicle by metal shielding, but not from inside of the dump body of the truck (Figure 4). The auger is provided with a safety interlock that must be disconnected before the spreader trough bottom door can be opened exposing the auger located in the back of vehicle.

Figure 3. Raised dump body of the truck.

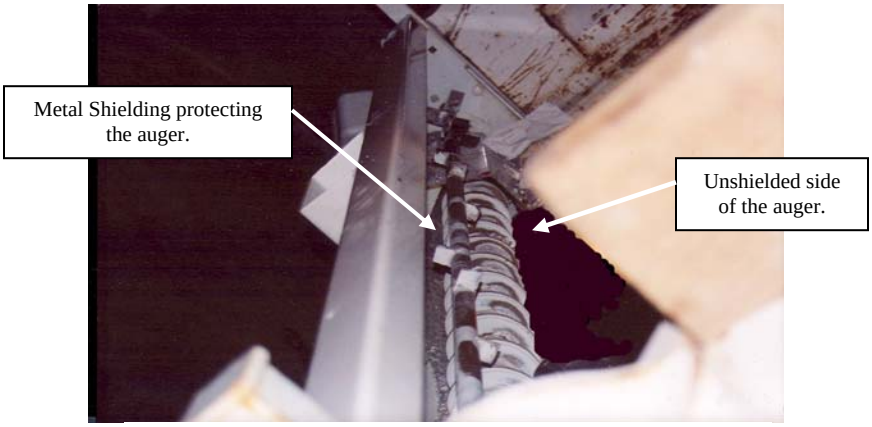

Figure 4. The auger at the rear of the dump box.

On the day of the incident, the victim was going about his normal duties of snow plowing and salting. The victim had left his last location at 2:16 p.m. and returned to another lot where the trucks are stored. The truck was backed up to a salt pile, surrounded by large concrete blocks. The salt had been covered by blue colored tarps held down by ties. Next to the truck was a front end loader which was used by the victim to fill the truck with salt.

The victim was found by his co-worker at 3:46 p.m. in the back of the dump truck next to the rotary auger. The co-worker called 911 and stated “a man has his arm in an auger.” The victim’s right arm had been caught in the auger and was wrapped around the auger several times. The victim’s jacket had been pulled extremely tight and his arm had been broken and bones were visible. Evidence suggests that the victim had been trying to free ice or salt clumps from the auger area inside the dump body when his sleeve caught on a metal tooth on the upper metal bar. Another metal auger was just below this bar and looked like a large screw. The large screw like auger pushes the salt to the driver’s side of the truck and the salt goes down a hole to a spreader and on to the pavement. A shovel had been found in the box at the feet of the victim. An ice scraper was seen on the ground

just under the spreader. The victim had been standing on the ground with the dump body in a 70° angle. The vehicle and auger was running at maximum speed. The victim reached in over the back of the truck to free the salt when the tooth of the auger caught his sleeve and pulled him up into the truck. The rotation of the teeth of the blades caught the victim's loose fitting jacket that became entwined around the blades of the auger.

CAUSE OF DEATH

The official cause of death is mechanical asphyxia caused by the victim becoming entangled in the auger mechanism of a salting truck.

RECOMMENDATIONS/DISCUSSION

Recommendation #1: Implement an effective Lockout Tagout program that identifies and addresses the hazards associated with rotary machine parts and includes all the manufacturer's recommendations for safe machine handling.

Discussion: The company did not have a Lockout Tagout program. A Lockout Tagout program should identify the hazards of not discontinuing the power to the rotating auger. Training on these hazards from a Lockout Tagout Program would enable employees to recognize and control the hazards. This recognition would tell employees the prevention steps of turning the power off and removing the ignition key.

An effective written safety and health program would have included hazard recognition and exposure to rotary blades of the auger. The written program would have also addressed the lack of training in the recognition of hazards associated with the rotary blades on the auger.

The safety precautions recommended by the tailgate manufacturer in the *RTJ Series Installation and Operating Manual Replaceable Tailgate Spreaders by Swenson Spreaders* are as follows:

- Observe settings on all equipment controls and shut off all equipment controls before starting engine so equipment will not operate when engine is started.
- Always check area around machine before engaging or operating controls and advise anyone nearby to move a safe distance away.
- Always wear relatively tight and belted clothing when operating equipment. Loose jackets, shirts, sleeves or other loose clothing should not be worn because of danger of catching them in moving parts or controls.
- Stop and inspect equipment if unusual movement, sounds or noises are observed. Repair damage before restarting and operating equipment.
- Disengage power to all operating equipment: (1) before leaving operators position; (2) before making any repairs, adjustments or cleaning; and (3) when not in use.

- Take all possible precautions when leaving the equipment unattended by disengaging the hydraulic system from the vehicle, shifting vehicle out of gear, setting parking brake, shutting off engine and removing key.

The manufacturer's Dump Box operating procedure states that the following are required:

1) Do not service or inspect dump box in the up position without safety support or safety blocks in position
2) Do not climb in the dump box with the truck running
3) Removed keys from the ignition and put ignition keys in your pocket

Recommendation #2: Contact the manufacturer to determine whether the rotary machine components can be completely shielded to prevent worker contact with moving machine parts.

Discussion: The auger for the spreader box is located at the rear of the dump box. The auger is protected from at the rear of the vehicle by metal shielding, but not from inside of the dump body of the truck. The rotary blades are exposed to accidental contact if the vehicle not longer has salt in the dump body. The auger is provided with a safety interlock and must be disconnected before the spreader trough bottom door can be opened exposing the auger located in the back of vehicle. The victim had the dump body in the raised position and was working to remove ice or salt clumps from the moving auger area inside the dump body where there was exposure to moving parts.

Recommendation #3: Ensure that workers are trained to recognize the hazards associated with working near or around the exposed rotating machine parts.

Discussion: Workers who operate or work near the rotary auger should receive specific training in the hazards associated with the rotary auger. Workers must follow the manufacturers' recommendation to shut off the power and remove the keys from the ignition. Loose clothing should never be worn. Employers could explore the feasibility of having employees wear tear-away clothing when working around hazardous machinery.

REFERENCES

Code of Federal Regulations, 29 CFR 1910.212, Machine Guarding. Washington, D.C.: U.S. Government Printing Office, Office of the Federal Register.

NIOSH Fact Sheet: Preventing Worker Injuries and Deaths from Traffic Related Motor Vehicle Crashes. DHHS (NIOSH) 98-142, July 1998. Available at: http://www.cdc.gov.

RTJ Series Installation and Operating Manual Replaceable Tailgate Spreaders. Swenson Spreader. P.O. Box 127; Lindenwood, IL 61049, Telephone: 815-393-4455. January 2003.

Code of Federal Regulations, 29 CFR 1910.147, Lockout/Tagout. Washington, D.C.: U.S. Government Printing Office, Office of the Federal Register.

NIOSH [1999]. NIOSH Alert: Preventing worker deaths from uncontrolled release of electrical, mechanical, and other types of hazardous energy. Cincinnati, OH: U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, DHHS (NIOSH) Publication No. 99-110.

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WISCONSIN FATALITY ASSESSMENT AND CONTROL EVALUATION (FACE) PROGRAM

FACE INVESTIGATION # 04WI093

Staff members of the FACE Project of the Wisconsin Division of Public Health, Bureau of Occupational Health, conduct FACE investigations when a machine-related, youth worker, Hispanic worker, highway work-zone death, farmers with disabilities or cultural and faith-based communities work-related fatality is reported. The goal of these investigations is to prevent fatal work injuries studying: the working environment, the worker, the task the worker was performing, the tools the worker was using, the energy exchange resulting in fatal injury and the role of management in controlling how these factors interact.

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