

F.A.C.E. INVESTIGATION REPORT

Fatality Assessment and Control Evaluation Project

FACE #96-NJ-077-01
Dairy Farmer Killed in Cattle Feeding Machine
Incident



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FROM: Fatality Assessment and Control Evaluation (FACE) Project
New Jersey Department of Health & Senior Services (NJDHSS)

SUBJECT: Face Investigation #96-NJ-077-01
Dairy Farmer Killed in Cattle Feeding Machine Incident

DATE: April 30, 1997

SUMMARY

On September 30, 1996, a 61-year-old dairy farmer was killed when his head was caught in a cattle feeding machine. The incident occurred at the family farm in the cattle feeding pen. The victim was operating a center drive feeding machine, which directed corn from a nearby silo and transferred it to a conveyor belt that evenly distributed the feed into a 100 foot long feeding trough. It is not known what happened, but the farmer may have been trying to service the machine when his head was caught between the moving conveyor and a wooden support beam. NJDHSS FACE investigators concluded that, to prevent similar incidents in the future, these safety guidelines should be followed:

- o Farmers should shut down and lock out all machinery before doing maintenance.

- o Farmers should ensure that machinery is setup and maintained according to the manufacturers instructions.

- o All feeder operating controls should be in one centralized location and equipped with an emergency stop button.

- o Manufacturers of feeding machines should consider installing a device to stop the machine if the conveyor becomes jammed.

INTRODUCTION

On September 30, 1996, NJ FACE personnel were notified by an OSHA compliance officer of a machine-related fatality at a dairy farm. After contacting the victim's family, FACE investigators conducted an on-site investigation on October 23, 1996. The site visit included interviewing the victim's brother and nephew, who co-owned and worked at the farm. The incident site and machine were also examined and photographed. Additional information was obtained from the police and medical examiner's reports. Federal OSHA did not investigate this incident as it was out of their jurisdiction.

The victim was a 61-year-old full-time dairy farmer who co-owned the farm with his brother and nephew. They were the only employees of the farm, which had been owned and operated by the family since 1843. The 327-acre farm had about 200 dairy cows and grew fields of hay and corn for feeding the cattle. The victim, who was described by his brother as an aggressive worker, had been a farmer all his life and was a well-known and respected member of the community. Being a family business, the farm did not have any written safety procedures.

INVESTIGATION

The incident occurred outdoors at the cattle feeding trough located near a group of barns at the center of the farm. Constructed of concrete blocks and wooden planks, the trough measured approximately 100 feet long by 5 feet wide by 26 inches high. A wooden roof sheltered the trough from the rain, and the sides were open to allow the cattle to feed. One side was open to the fields, while the opposite side was part of a fenced-in holding pen. The trough was only used during the colder months of October through April when the cattle could not graze in the fields.

Built into the structure over the trough was a center drive feeding machine, also called a bunk or chain feeder. This machine, which was about 20 years old, was essentially a moving conveyor designed to evenly distribute feed into the feeding trough (see Figure 1). Silage (corn) was conveyed from a nearby silo to a hopper at the center of the feeding trough. This hopper was directly above a 50-foot long, 20-inch wide conveyor belt mounted about four feet above the trough. Silage was gravity fed from the hopper onto the conveyor, where it moved to the end of the belt and dropped into the trough. To fill the trough evenly, the entire conveyor belt mechanism moved on tracks that stretched the length of the trough. As the conveyor moved slowly across the tracks, the silage poured off the end of the belt and into the trough. This allowed the 50-foot conveyor to fill half the 100-foot trough. The machine was reversed when

the conveyor reached the end of the tracks, allowing the feed to come off the opposite end of the conveyor and fill the second half of the trough. The feeder's motor, drive mechanisms, and operating switch were located in the center of the machine under the silage hopper.

The morning of the incident, a Monday, was clear and warm. As usual, the three farmers started work at 5:30 a.m. A short time later, the victim's brother left the farm to do some chores. The nephew started to fuel a tractor while the victim went to the barn to feed the calves. After tending to the calves, the victim went to feed the cattle. With the weather getting colder, the farmer had started to use the feeding machine to feed the cattle, and was operating the machine for the fourth or fifth time that season. He first activated two switches to start the conveyors that brought the feed down from the silo. He then had to climb over or around the trough to reach the opposite (fenced-in) side to start the feeding machine. His usual procedure was to stand by the feeding machine switch and manually reverse the feeder after every cycle. It took about 80 seconds for the feeder to complete one 50-foot cycle.

There were no witnesses to the incident. There were no cows in the pen when the victim started the feeding machine. His nephew stated that he heard the machine start as was fueling the tractor. At about 9:35 a.m., the nephew drove the tractor over to the trough where he saw silage piling up at the end of the feeder conveyor. Knowing something was wrong, he found the victim lying in the trough with severe head injuries. The nephew called the police and EMS, who arrived and found the victim unresponsive. The victim was pronounced dead at the scene at 10:10 a.m.

It is not known how the victim was injured. An examination by the police found blood on the end of the conveyor and one wooden beam in the trough. The police also found that one of the conveyor's roller wheels had jumped the track. The FACE investigation found that several lengths of wooden side rails had fallen into the trough, and that the cows were climbing into the trough to try to eat the feed on the conveyor. The victim's brother speculated that the victim was running the machine when he noticed that the roller wheel had jumped the track, possibly due to a cow pushing against the conveyor. The victim apparently tried to lift the moving conveyor back onto the track and was caught between the conveyor and wooden beam. He fell into the trough as the machine continued to the end of the track, where silage continued to pour off the end of the conveyor belt and into a pile. It is also possible that the victim was caught as he climbed under the feeder while crossing over the trough.

CAUSE OF DEATH

The county medical examiner attributed the cause of death to “multiple fractures of the skull due to a crushing injury to the head.”

RECOMMENDATIONS AND DISCUSSION

Recommendation #1: *Farmers should shut down and lock out all machinery before doing maintenance.*

Discussion: It is not known exactly what the victim was doing when he was crushed by the moving conveyor mechanism. His brother states that he may have been trying to lift the machine back onto the rollers, something that he had done many times in the past. To prevent future incidents, NJ FACE recommends that all machines be shut down before performing maintenance. An additional precaution is to lock-out the machine’s operating controls, which prevents others from accidentally reactivating the machine while it is serviced. An example of lock-out is to shut down the machine at the circuit breaker box, and locking the box with a padlock. These procedures, commonly known as lock-out / tag-out, are recommended in the manufacture’s operator manual.

Recommendation #2: *Farmers should ensure that machinery is setup and maintained according to the manufacturers instructions.*

Discussion: It was noted during the investigation that several side rails were missing from the trough, allowing the cows to climb onto the trough to get to the feed on the conveyor. Also, the feeder’s automatic reverse mechanism appeared not have been operating properly, as indicated by the farmer’s manually operating the machine and the pileup of silage when the conveyor failed to reverse itself after the incident. To ensure safe and efficient machine operation, FACE recommends that all machines be maintained as to manufacturers’ instructions. As this machine is taken out of service during the warmer months, FACE also recommends that it should receive a complete inspection before being put back into service in the fall. The manufacturer’s manual for the feeder gives detailed instructions on setting up the trough, installing the feeder, and maintaining the machine.

Recommendation #3: All feeder operating controls should be in one centralized location and equipped with a emergency stop button.

Discussion: To operate the feeder, the farmer first had to start the silo conveyor on one side of the trough, then cross over or around the trough to reach the feeder machine switch on the opposite side of the trough. To make it easier for the farmer to run the machine and to reduce contact with the conveyor, FACE recommends that all the control switches be placed in one centralized location. If possible, identical operating stations may be placed on both sides of the trough for ease of use. FACE also recommends that the operating stations be equipped with an emergency stop switch.

Recommendation #4: Manufacturers of feeding machines should consider installing a device to stop the machine if the conveyor becomes jammed.

Discussion: The feeding machine's moving conveyor was designed to operate near the heads of the feeding cattle. FACE recommends that manufacturer of feeding machines consider installing a device that would stop the machine if it accidentally jammed. If practical, this device may help to protect farm workers and livestock that may become entangled in the machine. It would also prevent damage to the machine mechanism if a jam occurred.

DISTRIBUTION LIST

Immediate Distribution

NIOSH

Employer

Decedent's Family

Machine Manufacturer

NJ State Medical Examiner

County Medical Examiner

Local Health Officer

NJDHSS Census of Fatal Occupational Injuries (CFOI) Project

General Distribution

USDOL-OSHA New Jersey Area Offices (4)

NJDOL Public Employees OSHA

NJDHSS Public Employees OSHA

NJDOL OSHA Consultative Service

NJ State Safety Council

NJ Institute of Technology

NJ Shade Tree Federation

NJ Utilities Association

NJ School Boards Association

University of Medicine & Dentistry of NJ

Public Service Electric and Gas Company

Liberty Mutual Insurance Company Research Center

Private Consultants (3)

Private Companies (8)

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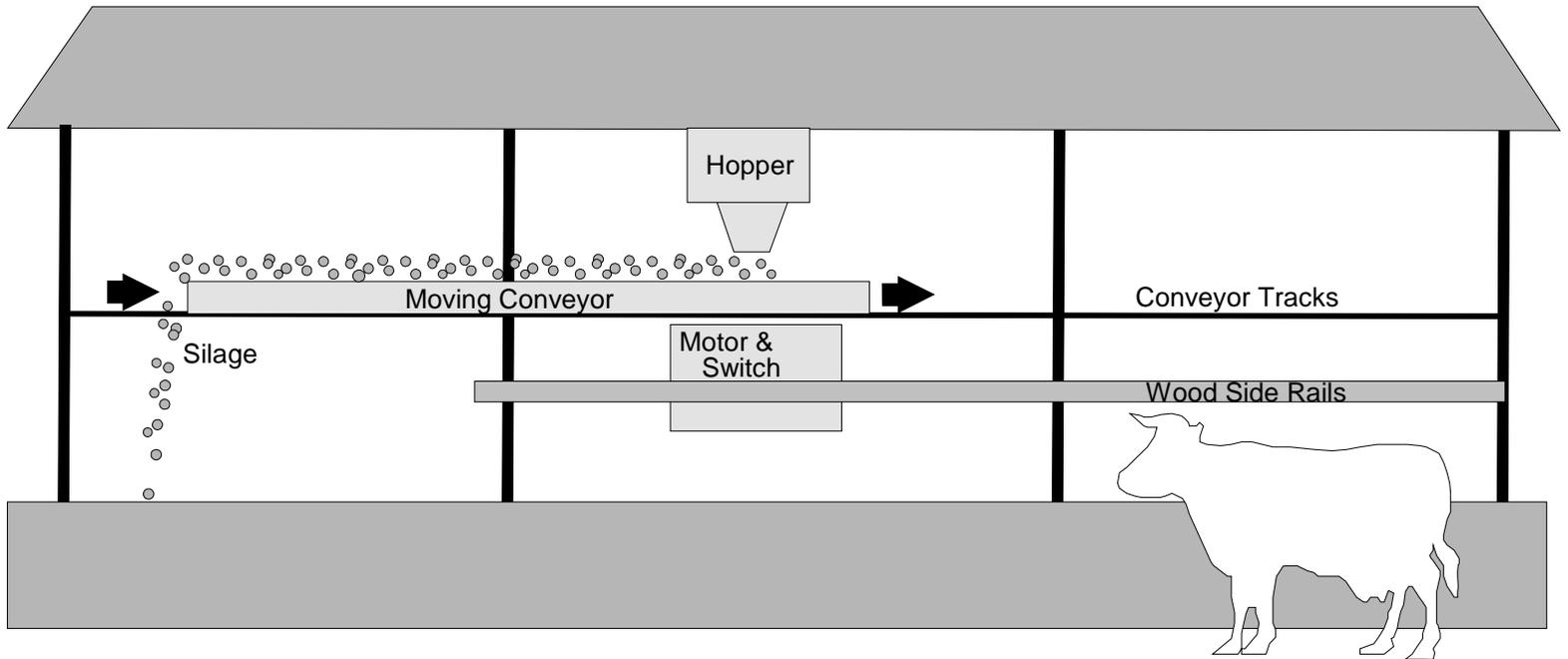


Figure 1
Center Trough Feeding Machine

Not to Scale

P. Bost