

Cranberry Farm Worker Dies of Injuries Sustained From A Fall Through a Sluice Gate Cover

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SUMMARY

On June 23, 1992, a 60 year-old male water foreman was critically injured after falling approximately three feet through a sluice gate cover. The incident occurred at a cranberry farm while the worker was standing on top of a sluice gate that controls the flow of water into the cranberry bogs. As the worker was using a gate hook to open the gate, the wooden cover he was standing on broke, causing him to fall into the gate and break his leg. The victim was hospitalized but died of complications related to his injury on August 27, 1992, two months after the incident. NJDOH FACE investigators concluded that, in order to prevent similar incidents in the future, employers should follow these safety guidelines:

- **Employers should conduct a job hazard analysis of all work activities with the participation of the workers.**
- **Employers should study methods for improving safety while opening sluice gates.**
- **Employers should develop, implement, and enforce a comprehensive employee safety program.**

INTRODUCTION

New Jersey FACE personnel were notified of this fatality through our surveillance system of collecting death certificates of work-related injuries. On March 31, 1993, FACE investigators visited the incident site to photograph the scene and interview the employer. Additional information on the incident was obtained from the OSHA file and hospital discharge summary.

The employer was a large cranberry and blueberry farm located in a rural area of southern New Jersey. The 300 acre farm is family owned and operated and employed 12 full time workers. The farm has been in operation since 1850 and was incorporated in 1912. The victim was a 60 year-old male who had worked at the farm all his life, approximately 45 years. For the past 10 years he worked as the water foreman and was in charge of monitoring the water levels in the cranberry bogs. The employer described him as a careful and competent worker.

INVESTIGATION

The incident occurred at a 300 acre farm that primarily grows cranberries and a small amount of blueberries. Cranberry farming is a complicated process that requires periodically covering the plants with water to protect them from frost and aid in harvesting. This is done by growing the cranberry vines

in 10 foot deep bogs dug into the earth that can quickly be flooded or drained with water. Each bog was provided with at least two sluice (water) gates to control the water flow into the field. Water is supplied to the bogs through a canal that runs through the farm and is mechanically drained from the bogs using pumps.

The farm uses three types of sluice gates in the bogs. All are the same basic design but are made of different materials, i.e. wood, metal, and concrete (see figure 1). The gates are located on the banks of the bogs and canals and stand approximately one to four feet above the water. Connected to the gate is an underground water tunnel (sluice) that is approximately 30 feet long and leads to another bog or canal. Gates are usually built on both ends of the sluice to control the flow of water in the each direction. To open the gate, a worker stands on top of the gate which is covered with one to three wood planks. Using a long pole called a gate hook, he manually removes the boards from the front of the gate that block the water from entering the tunnel. He likewise replaces the boards to close the gate. As the water levels in the bogs are critical to the cranberries, each of the bogs are checked at least twice a day. If necessary, the water levels are adjusted by opening or closing the gates.

The day of the incident was sunny and warm. The victim came to work at about 7 a.m. that morning and went about his usual duties which involved checking the water levels and maintaining the sluice gates. At about 11:10 a.m., he went to open one of the metal frame gates that stood about three feet from the surface of the ground. As he was apparently pulling against a gate pole to open the gate, the rotting wooden boards of the gate cover he was standing on broke and gave way. He fell into the gate, breaking the femur of his right leg. The victim was then able to crawl back to his truck and radio for help. His co-workers went immediately to help him and contacted the local EMS who transported him the the local hospital. Because of previous breaks to the same leg, they were not able to perform surgery on the leg and he was placed in traction. After a short time, the victim developed pneumonia which did not respond to treatment. A septic infection then developed which led to multiple organ failure. The victim died of complications related to his injury on August 27, 1992, two months after the incident.

In the months that followed the accident, the owners of the farm inspected all the sluice gates and replaced the wooden covers of the metal frame gates with larger covers made of pressure treated (weather resistant) wood. The farm also investigated different types of sluice gate designs and is replacing the 20 year old metal gates with wooden ones.

CAUSE OF DEATH

An autopsy was not performed at the request of the family. The death certificate listed the immediate cause of death as septic shock due to pseudomembranous colitis due to pneumonia as a consequence of a broken femur.

RECOMMENDATIONS AND DISCUSSION

Recommendation #1: Employers should conduct a periodic job hazard analysis of all work activities with the participation of the workers.

Discussion: In this case, the employee apparently failed to recognize the rotting sluice cover as a hazard. To prevent this, it is recommended that employers should conduct a periodic job hazard analysis of the work place with the employees to identify and correct any potential hazards. This should not only include an examination of the work area for fall hazards, but should include other hazards such as pesticides, heavy machinery, electrical, and other hazards that may be present at the farm. After identifying the hazards, the workers should be instructed on how to correct or avoid them.

Recommendation #2: Employers should study methods for improving safety while opening sluice gates.

Discussion: Although the employer acted to correct the problem with the rotting gate covers, it became apparent during our walkthrough that there was still a minor fall hazard from most of the sluice gates. Even though the distance from the top of the gates to the ground was only about one to three feet, many of the gates had a single plank to stand on which would increase the risk of a fall. To prevent potential falls, the employer should study methods for improving worker safety on these gates. Several possible options include:

- Increasing the size of the gate covers and platforms to provide a large and stable area for the employee to stand on while opening the gates. The existing gates can be easily retrofitted by adding additional boards to the covers and platforms.
- Expand the use of wooden gates with raised sides and recessed platforms to stand on. The sides of the gate act as rail to help stabilize the worker. Many of these type of gates were seen in use at the farm.
- Providing guard rails to the metal frame gates with a fall hazard greater than three feet. The metal frame gates do not provide any surface for a worker to grab onto if he falls. A guard rail build onto the larger gates would increase safety.
- Using slip resistant materials on the gate covers and platforms where the workers stand. This would help to prevent falls due to slips from wet surfaces or shoes.

Recommendation #3: Employers should develop, implement, and enforce a comprehensive employee safety program.

Discussion: Employers should emphasize worker safety by developing, implementing, and enforcing a comprehensive safety program to reduce or eliminate hazardous situations. The safety program should include, but not be limited to, the recognition and avoidance of fall hazards and include appropriate worker training.

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