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Farmer Dies After Falling Through Fiberglass Skylight Panel

Minnesota FACE Investigation 94MN04001

SUMMARY

A 62-year-old male farmer (victim) died from injuries sustained when he fell through a fiberglass skylight panel in the roof of a pole barn. On the day of the incident, he drove a tractor equipped with a front-end loader to the west side of the barn. He raised the loader to a height of 9 or 10 feet. After he raised the loader, he walked on the tractor hood and then climbed into the loader bucket. From the bucket, he climbed onto the roof and walked up the roof to the point where a rope was tied into the ridge vent. He held the rope in one hand as he pushed snow from the roof. As he worked near the south end of the barn roof, he stepped on a fiberglass skylight panel. The panel broke and the victim fell through the panel. He was unable to maintain his grip on the rope and fell to the concrete floor of the barn. After falling, the victim walked or crawled unassisted from the south end of the barn to a milkhouse in the northwest corner of the barn. After he reached the milkhouse, he collapsed on the floor and died. MN FACE investigators concluded that, in order to reduce the likelihood of similar occurrences, the following guidelines should be followed:

- **whenever work is performed at an elevation where the potential for a fall exists, fall protection equipment should be used;**
- **skylight panels in the roof of existing pole buildings should be removed; and**
- **pole building manufacturers should not provide fiberglass skylight roof panels as an option for allowing natural light inside buildings.**

INTRODUCTION

On June 24, 1994, MN FACE investigators were notified of a farm work-related fatality which occurred approximately February 14, 1994. The county sheriff's department was contacted and releasable information obtained. Information obtained included copies of their report and photos of the incident site. A site investigation was conducted by a MN FACE investigator on August 25, 1994. During the site investigation, information concerning the incident was provided by the victim"s cousin.

INVESTIGATION

On the day of the incident, the victim pushed snow off the roof of a pole barn. The single story pole barn did not have a loft, typical of traditional barns, for storage of hay and straw. The pole barn was built in 1973 and was originally used as a dairy barn. A milkhouse, approximately 14 feet by 18 feet, was located in the northwest corner of the barn. Although it contained a stainless steel bulk milk tank and other dairy equipment, the victim discontinued his dairy operation approximately two years ago. He used the barn as a shelter for a small herd of beef cattle which he raised.

The roof of the barn had a 4-12 pitch or slope and was covered with painted tin panels. Each side of the roof contained four fiberglass skylight panels to provide natural lighting inside the building. Each skylight was approximately 3 feet wide by 10 feet long. The skylights were uniformly spaced throughout the roof near the peak, with the long side of the panels perpendicular to the peak. Four lightning rods were mounted on top of the roof ridge vent.

Throughout his life, the victim was concerned about possible roof collapse from the weight of accumulated snow. As a result, he routinely pushed snow from the roof of the pole barn since it was built. He tied a rope, approximately ½ inch in diameter by 60 feet long, into the ridge vent of the barn. He installed the rope and left it permanently in place, as a safety line to prevent him from sliding off the roof.

On the day of the incident, he drove a tractor equipped with a front end loader to the northwest corner of the barn. After he raised the loader to a height of 9 or 10 feet, he climbed onto the tractor hood and then into the loader bucket. From the loader bucket, he climbed onto the roof and walked up the roof to the rope tied into the roof vent. He held the rope in one hand as he pushed snow from the roof. As he moved along the length of the building, he looped the rope over successive lightning rods. The victim thought this would ensure that the rope would prevent him from falling off the edge of the roof if he began to slide.

As he worked near the south end of the roof, he stepped on one of the fiberglass skylight panels. The panel broke and the victim fell through the fiberglass panel. He was unable to maintain his grip on the rope and fell to the concrete floor. The floor was covered with several inches of partially frozen manure. The rope was found hanging through the hole in the fiberglass panel. Approximately 6.5 feet directly below the hole in the fiberglass panel was a 2 inch x 4 inch roof truss stabilizer. The stabilizer extended horizontally between several trusses. The victim may have hit the truss stabilizer before falling an additional 10 feet to the barn floor.

After he fell through the skylight panel, the victim either walked or crawled, unassisted, from the south end of the barn to the milkhouse in the northwest corner of the barn. After he reached the unheated milkhouse, he collapsed on the floor and died. Since he lived alone, he was not discovered until approximately two weeks after he fell, when relatives became concerned after not hearing from him on a regular basis.

CAUSE OF DEATH

The cause of death listed on the death certificate was multiple fractures of pelvis, ribs and vertebrae.

RECOMMENDATIONS/DISCUSSION

Recommendation #1: Whenever work is performed at an elevation where the potential for a fall exists, fall protection equipment should be used.

Discussion: The victim was working at an elevation where the potential for a fall of more than 10 feet existed. Although the victim tied a rope into the barn roof ridge vent to prevent him from sliding off the roof, it did not provide adequate fall protection. Adequate fall protection equipment, such as lifelines, safety belts and lanyards, should always be used whenever the potential for a fall exists. If the victim had been using fall protection equipment (i.e., lifeline, safety belt, and lanyard), this fatality might have been prevented.

Recommendation #2: Skylight panels in the roof of existing pole buildings should be removed.

Discussion: Many pole buildings like the one involved in this incident have skylight panels in the roof to provide natural light inside the building. When new, these panels may have been strong enough to support the weight of a person walking on the roof. However, years of exposure to various environmental conditions, including extremes of heat and cold, may cause the fiberglass to become brittle and more susceptible to breakage. All fiberglass roof panels should be removed from existing buildings and the openings covered with metal panels. If owners of pole buildings want natural lighting inside the building, it should be provided by installing fiberglass panels along the sides of the building, directly below the roof eaves. If the skylight panels in the pole barn involved in this incident had been removed and the openings covered with tin panels, this fatality might have been prevented.

Recommendation #3: Pole building manufacturers should not provide fiberglass skylight roof panels as an option for allowing natural light inside buildings.

Discussion: Manufacturers of pole buildings generally provide three options for allowing natural light inside the buildings. Natural light may be provided through the use of fiberglass ridge vents/covers, fiberglass side panels, or fiberglass roof panels. Although fiberglass skylight panels are usually not installed in the roofs of new pole buildings, they are still an available option from some manufacturers. The use of a narrow fiberglass ridge vent/cover or installation of fiberglass panels on the building sides, directly below the roof eaves, eliminates the need to install skylight panels in the roof. If building manufacturers did not allow the installation of fiberglass panels in the building roof, the potential for someone to break through a roof panel would be greatly reduced, and fatalities like the one in this incident might be prevented.

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