

Rofer Falls From Top of 18' Building in Wyoming

SUMMARY

A 54 year old roofer died from injuries suffered when he fell while working with four co-workers in applying a coating material to the roof of an 18' building at a mine site. The victim was a member of a four person crew that was applying a liquid roofing product to the sloping metal roof of a building at a mine site. He was one of two workers that were using rollers to press the liquid into metal seams by backing down the slope of the roof from the peak to the roof edge. No tie-downs or roof railing was available or in use. The victim had been involved in a discussion with his supervisor about the procedure of applying the material, and was telling a co-worker what he considered to be the procedure as he worked. While working backwards and talking about the procedure, the backed off the roof and fell to the ground.

The victim was transported by air ambulance to a hospital some 60 miles from the incident site. He was conscious and oriented from the time co-workers reached him at the site through arrival at the hospital emergency room. He was treated for multiple injuries received from the fall, and had been through multiple surgeries to repair damage received in the fall. He was in surgery two weeks after the incident occurred, when he developed a bradycardia which went on to cardiac arrest. Full resuscitation was instituted immediately and continued for 1½ hours. He was pronounced dead in the operating room.

Employers may be able to minimize the potential for occurrence of this type of incident through the following precautions:

- **Whenever workers are involved in high level work duty they should be protected by tie-downs or roof-railing to protect them from dangerous falls.**

INTRODUCTION

On a Monday afternoon, September 20, 1993, a male roofer was part of a four person crew that was applying a coating material to a building at a mine site. The construction company that was the victim's employer was sub-contracted by a mine to apply a coating to a slanted metal roof of a building on the premises. The coating material had been applied and the victim and a co-worker were using rollers to work the liquid material into the roof seams by backing slowly from the top slope to the edge of the roof and rolling the seams.

The project superintendent had been discussing with two other workers (including the victim) how heavy the material should be rolled. Then the superintendent and the other worker left to get additional roller handles so that they could help with the rolling, while the victim and the fourth worker began the rolling process with the two rollers that were there. While they were rolling the material, the victim was telling his co-worker how the rolling should be done.

The victim stopped in mid-sentence and the co-worker looked up to see the victim at the roof edge trying to regain his balance, then fall from the roof. The other workers had moved approximately 20' away from the two rollers when they heard a roller handle hit the metal roof. Looking back, they did not see the victim and asked where he was. The co-worker told them he had fallen off the edge. The three co-workers then descended by ladder with one of the workers rushing directly to the victim while the superintendent went into the building to get help. The 1st Aid officer responded and called for an air ambulance.

The victim had fallen approximately 15 minutes after the roofing procedure had begun. The two workers that were rolling the roofing material were working approximately 6' apart, moving back-wards from the slope of the roof to the edge. The roof edge is on the south side of the building and is 18'6" above the ground. As the victim fell, he dropped his roller, which hit the metal roof. He broke the antenna off the roof during the fall, and landed on his left side. The co-worker looked over the edge of the roof and saw the victim's hard-hat bounce on the ground, then saw that the victim was moving.

When the workers reached the victim they saw that he was alert and was moving and talking. His wrist appeared to have had been injured, his eyes were swollen, and there was blood on his face.

INVESTIGATION

Through a reciprocal notification agreement with the Director of the Occupational Safety and Health Division of the Department of Employment, the WY-Wyoming FACE Project was notified on October 7, 1993. Since the incident had occurred on mine property, it was not under OSHA jurisdiction and would not be investigated by them.

The air ambulance was dispatched less than 15 minutes after the incident occurred and arrived 46 minutes after dispatch. The site is approximately 60 miles distant from the starting point of the helicopter. The victim was assessed as complaining of left wrist, right shoulder and facial injuries with swelling about the eyes and nose and blood around the nose and mouth, apparent deformation of the left wrist and knee. He was alert and talking, instructing his co-worker to log additional work-time as he had spent extra time loading his truck on the previous day, and to take his binoculars into the house when he took his pickup to his residence.

He was treated at the scene and transported by air ambulance to a hospital emergency room, arriving in the emergency room less than three hours after the incident occurred. He was alert at the emergency room, answering questions and relating that he could not remember falling or hitting the ground, feeling that he may have blacked out during the fall. The emergency room assessment found a history of facial fractures from a prior fall and a recent eye surgery.

The initial Emergency Room Assessment included:

1. Fall with multiple orthopedic injuries including a comminuted fracture of the right humerus and the left wrist.
2. Fracture, left patella, with complete disruption of the ligaments of the left knee.
3. Facial fractures as demonstrated on CAT scan.
4. Frontal lobe contusion by CAT scan.
5. Possible fracture, left hip.

6. Multiple abrasions.

On the day of the victim's arrival he was taken to surgery where a closed reduction on a left wrist fracture was carried out successfully. At the same time, closed reduction of the fractured left femur was attempted and, due to the patient's multiple severe injuries, a temporary internal fixation was applied. Also during that operation, a partial patellectomy and repair of a fracture of the left patella, carpal tunnel decompression, exploration of the median nerve and volar fasciotomy of the left forearm were carried out. A week later, the patient was returned to surgery for an open reduction and internal fixation, complex fracture dislocation of the right shoulder. In the interim, an open reduction and internal fixation of the complex facial fracture was performed.

The victim was returned to surgery two weeks after admission to the hospital for removal of the temporary fixation from the left femoral neck fracture and revision to an endoprosthesis. As the surgeon started to make a posterior exposure on the hip joint, the anesthesiologist noted a severe bradycardia. Resuscitation was started immediately and continued for over 1½ hours. Initial symptoms suggested a massive saddle embolus, but later symptoms gave evidence of massive pulmonary embolus and/or myocardial infarction.

CAUSE OF DEATH

The Medical Examiner listed the cause of death as pulmonary embolism/ myocardial infarction due to convalescing from trauma, due to accidental fall from roof.

RECOMMENDATIONS/DISCUSSION

This incident could have been prevented by the use of tie-downs or roof-railing to prevent the victim from backing off the edge of the sloping metal roof. In the absence of such devices to protect workers, some form of visual observation by the supervisor or his designee could have saved the worker's life.

FATAL ACCIDENT CIRCUMSTANCES AND EPIDEMIOLOGY (Wyoming FACE) PROJECT

The National Institute for Occupational Safety and Health (NIOSH), Division of Safety Research (DSR), performs Fatal Accident Circumstances and Epidemiology (Wyoming FACE) investigations when a participating state reports an occupational fatality and requests technical assistance. The goal of these evaluations is to prevent fatal work injuries in the future by 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.

States participating in this study include: Kentucky, Maryland, North Carolina, Ohio, Pennsylvania, South Carolina, Tennessee, Virginia, and West Virginia.

NIOSH Funded/State-based Wyoming FACE Projects providing surveillance and intervention capabilities to show a measurable reduction in workplace fatalities include: Alaska, California,

Colorado, Georgia, Indiana, Iowa, Kentucky, Massachusetts, Maryland, Minnesota, Missouri, Nebraska, New Jersey, Wisconsin and Wyoming.

Additional information regarding this report is available from:

Wyoming Occupational Fatality Analysis Program
522 Hathaway Building - 2300 Capitol Avenue
Cheyenne, WY 82002
(307) 777-5439

Please use information listed on the Contact Sheet on the NIOSH FACE web site to contact [In-house FACE program personnel](#) regarding In-house FACE reports and to gain assistance when State-FACE program personnel cannot be reached.