Miner Crushed Under Roof Cave-in in Wyoming

SUMMARY

A 42 year old male trona miner died from injuries received when the roof of a cave fell on him. The victim was part of an eight man team removing styrofoam stoppings with a two-man 6' drill auger to establish ventilation in preparation to drive a bleeder system to the south of the area. As he and his co-worker were moving into place to remove the stopping, a slab dropped from the ceiling, striking the victim and knocking him down. A co-worker that was in the process of being relieved was struck by falling rock which pinned his legs to the floor.

Other workers who were waiting their turn at the operation called for help and crew members quickly began trying to remove the injured workers from the debris. Within a few minutes after the cave-in, porta-power devices and a mechanical jack were brought in to remove debris, and the victim was freed about 50 minutes after the incident occurred. CPR was started after the victim had been removed from under the slab and was continued until he had been brought to ground surface approximately 30 minutes after having been freed from the debris. He was pronounced dead at the scene, from thoracic trauma due to crushing impact to the chest.

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

- **Increase the size and strength of pillars and roof bolts used to secure ceilings in tunnels**
- **Install temporary supports to supplement permanent braces when removing or replacing stoppings**
- **Enhance safety briefings and training programs to place more emphasis on preventions and hazards of potential roof cave-ins.**

INTRODUCTION

At around noon on Wednesday, December 6, 1994, a miner bolter operator was part of a crew that was removing styrofoam stoppings from a mine tunnel in preparation for driving a bleeder system to the south of the area where the stopping was being removed. Due to the existence of a belt line which caused too much floor heave to allow normal operation of ramming the material with a front-end loader to knock the stopping loose, the crew was cutting the styrofoam with a 6' long drill auger and then removing it by hand. Because of the strenuous nature of the removal technique, two-man cutting teams were rotated every five minutes.

The victim was one of the two men relieving the prior team at the time of the incident, and was in the process of moving in to position when a slab fell from the roof, knocking him down and burying him with debris.

INVESTIGATION

Through a reciprocal notification agreement with the State Mine Inspector of the Department of Employment, the WY- Wyoming FACE Project was notified of the incident on the morning of 12/7/94. Reports were requested from the investigating law enforcement and coroner's office and an investigation was begun.

Prior to entering the shaft to begin the replacement, workers participated in a "For Safety's Sake" area check as the day's first procedure. Due to the strenuous nature of the work of removing the stopping by hand, the 8-person crew worked in 2-man shifts, with the shifts alternating every five minutes.

The routine procedure for removing stopping is to use a front-end loader to ram the surface, knocking the stopping loose. Due to the presence of a belt line in the area, the procedure was changed to cut the stopping loose with axes and a 2-man 6' drill auger and then to remove it by hand. The two-man team that had been working immediately prior to the incident had stopped work and were due to be relieved by another two-man team when a 3-4' slab of soda ash, weighing several tons, fell onto the victim, knocking him down and falling on top of him. His co-worker was struck by a 70-80£ rock that pinned his legs down.

Other workers, hearing the sound of the roof giving way and seeing the two men pinned under the debris attempted to rescue them and to get outside help from the on-site ambulance crew. The victim way lying face down under the slab with only his hand and the top of his head visible.

Rescuers arrived in the tunnel with a mechanical jack and porta-power devices to lift the slab off the victim. He was removed from under the slab approximately 50 minutes after it fell, and CPR was attempted by trained company personnel. CPR attempts were continued while the victim was brought to ground surface.

After 30 minutes of attempted CPR, the victim had failed to respond and the procedure was discontinued. The coroner arrived and pronounced the victim dead at the scene approximately 2½ hours after the incident occurred.

CAUSE OF DEATH

The Medical Examiner listed the cause of death as thoracic trauma due to crushing impact to chest.

RECOMMENDATIONS/DISCUSSION

This incident could have been prevented by providing stronger supports between the roof and floor, or by using temporary supports during the period in which vigorous activity was being conducted. It appears that the people involved in this activity were safety conscious and that no unusual indicators appeared to warn workers of the pending disaster. Witnesses stated that the roof-bolts did not show signs of weight and that the area was visually checked for signs of roof weakness or ground movement.

The workers appeared to have been knowledgeable in regard to personal safety and to have been properly attired in personal protective gear apropos to the situation. Ambulance personnel were available on-site and appear to have been properly trained and capable of administering CPR properly.

Promptly following the roof fall and, after insuring their own immediate personal safety, workers responded properly by calling for outside help and beginning rescue operations in a safe manner. As they pulled the injured co-worker from the rubble, care was taken to lift him by the belt in case of back injury. Rescuers looked quickly for blocks to use toward lifting the fallen slab of soda ash, and lifting equipment was brought quickly to the scene.

From a preventive standpoint, when incidents like this one are potential, workers should be reminded to pay particular attention to the status of the work in progress as they are changing teams. During that period of transition, some settling might occur that would have been noticed by a worker whose thoughts were trained on the next step in the process, but whose attention may be elsewhere when leaving the work area. Incoming workers may be less conscious of hazards than they would be after a few minutes intimate activity in the immediate work area.

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 erforming, 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, 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.