MAI-2005-18

UNITED STATES
DEPARTMENT OF LABOR
MINE SAFETY AND HEALTH ADMINISTRATION

REPORT OF INVESTIGATION

Surface Nonmetal Mine
(Sand and Gravel)

Fatal Powered Haulage Accident
July 21, 2005

Matthewsville Excavating
Matthewsville Gravel Pit
Pima, Graham County, Arizona
Mine I.D. No. 02-02880

Investigators

Thomas E. Barrington
Mine Safety and Health Inspector

Sidney J. Garay
Mine Safety and Health Inspector

Benjamin W. Gandy
Mining Engineer

Originating Office
Mine Safety and Health Administration
Rocky Mountain District
P.O. Box 25367, DFC
Denver, Colorado 80225-0367
Irvin T. Hooker, District Manager

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OVERVIEW

Lon J. Matthews, plant operator, age 31, was fatally injured on July 21, 2005, when he became entangled in an unguarded tail pulley. Matthews had removed a tail pulley guard to repair the feed hopper conveyor belt. He then started the conveyor belt and was working near the tail pulley when his left arm became caught.

The accident occurred because management failed to establish procedures that required guards to be reinstalled prior to starting machinery. Failure to recognize the hazard of performing work near moving machine parts contributed to the accident.

GENERAL INFORMATION

Matthewsville Gravel Pit, a surface sand and gravel operation, owned and operated by Matthewsville Excavating, was located about one half mile south of US Route 70, on Patterson Mesa Road, northwest of Pima, Graham County, Arizona. The principal operating official was Allen E. Matthews, owner and the victim's brother. The mine was normally operated one 10-hour shift a day, five days a week. Total employment at the mine was two persons.

Sand and gravel was extracted from the pit with a front-end loader. The material was crushed, screened, and stockpiled. Finished products were sold for use in the construction industry.

The last regular inspection of this mine was completed on June 23, 2005.

DESCRIPTION OF THE ACCIDENT

On the day of the accident, Lon Matthews, (victim) reported for work about 7:20 a.m., his normal starting time. Matthews' duties included feeding material into the plant hopper as well as maintenance, repair work, and safety inspections for the entire operation. He also loaded over-the-road haul trucks owned and operated by the company. Allen Matthews operated an over-the-road haul truck and was delivering material to a customer located near the operation.

About noon, Lon Matthews contacted Allen Matthews and told him that the splice in the feed hopper conveyor belt needed replaced. After lunch, he started splicing the belt. At 4:30 p.m., Allen Matthews picked up his last load of material for the day and saw Lon Matthews splicing the conveyor belt. Sometime after Allen Matthews left, the victim completed splicing the conveyor belt, walked a short distance to the motor control trailer, and started the conveyor belt.

Approximately 6:30 p.m., Allen Matthews drove past the pit and noticed Lon Matthews' pickup truck parked at the feed hopper. He pulled into the pit to see if his brother needed any help. Allen Matthews parked his truck, approached the feed hopper, and saw the victim's left arm entangled in the tail pulley. He immediately called for emergency medical assistance. He ran to the motor control trailer and attempted to reverse the direction of the belt. The conveyor belt stalled and the starter overloads tripped. He reset the starter overloads, reversed the motor leads on two of the three conductors to reverse the rotation of the motor and belt, and started the conveyor, freeing the victim.

Allen Matthews administered cardio pulmonary resuscitation until local emergency personnel arrived. The victim was transported to a nearby medical center where he was pronounced dead. Death was caused by asphyxiation, attributed to trauma.

INVESTIGATION OF THE ACCIDENT

MSHA was notified of the accident at 9:40 p.m., on July 21, 2005, by a telephone call from Mike Gojkovich of the Pima, Arizona, fire department, to Michael T. Dennehy, acting assistant district manager. An investigation was started the next day. An order was issued under the provisions of Section 103(k) of the Mine Act to ensure the safety of the miners. MSHA's accident investigators traveled to the mine, made a physical inspection at the accident scene, interviewed the owner, and reviewed conditions and work procedures relevant to the accident.

DISCUSSION

Location of the Accident

The accident occurred at the sand feed hopper conveyor unit. The victim was entangled in the southeast corner of the conveyor tail pulley.

Equipment

The sand feed hopper was 14-1/2 feet long. The conveyor belt was positioned directly beneath the feed hopper and was 22-1/2 inches wide and approximately 15-1/2 feet long.

The head and tail pulleys were both one-foot in diameter. The conveyor speed was 93 feet per minute in an east to west direction. The tail pulley guard had been removed and was lying on the ground adjacent to the tail pulley. When installed, the guard effectively prevented access to the pinch point at the tail pulley and also allowed access to the conveyor adjustment screws.

The conveyor was chain driven with a five horsepower, 6.6 amps, three-phased 480-volt A.C. electric motor. The electric control trailer for the operation was located approximately 65 feet from the tail pulley. The electrical control system was inspected, tested, and found to be functioning properly.

Weather

When the accident occurred, the temperature was approximately 106 degrees Fahrenheit and the sky was clear.

Training and Experience

Lon Matthews had been employed intermittently for approximately two years and had received training in accordance with 30 CFR, Part 46.

ROOT CAUSE ANALYSIS

A root cause analysis was conducted and the following causal factors were identified:

Causal Factor: Procedures had not been established that required guards to be installed upon completion of repair work. Guarding was removed to facilitate the splicing of the conveyor belt and had not been replaced prior to operating the conveyor.

Corrective Actions: Management should develop and implement a policy requiring all guards to be securely in place prior to machinery being operated.

Causal Factor: Management failed to recognize the hazards associated with performing work near moving conveyor belts.

Corrective Action: Employees should be trained to Stop, Look, Analyze, and Manage (SLAM) each task to evaluate possible hazards and ensure steps are taken to safely perform the task.

CONCLUSION

The accident occurred because management failed to establish procedures that required guards to be reinstalled prior to operating machinery. The victim failed to recognize the hazards of performing work near moving machine parts and had started the conveyor prior to reinstalling the tail pulley guard.

ENFORCEMENT ACTIONS

Order No. 6308583 was issued on July 22, 2005, under the provisions of Section 103(k) of the Mine Act:

> A fatal accident occurred at this operation on July 21, 2005, when a miner was entangled in a tail pulley conveyor. This order is issued to ensure the safety of all persons at this operation. It prohibits all activity at the conveyor area until MSHA has determined that it is safe to resume normal mining operations in the affected area. The mine operator shall obtain prior approval from an authorized representative for all actions to recover and/or resume operations in the affected area.

This order was terminated on July 24, 2005. Conditions that contributed to the accident have been corrected and normal operations can resume.

Citation No. 6317320 was issued under the provisions of Section 104(a) of the Mine Act for violation of 56.14112(b):

> A fatal accident occurred at this operation on July 21, 2005, when an employee became entangled in a tail pulley of a conveyor belt. The guard had been removed and not put securely in place while the machinery was being operated.

This citation was terminated on August 15, 2005. The tail pulley guard was installed securely on the conveyor belt.

Approved by, Date: September 13, 2005

Irvin T. Hooker
District Manager

APPENDIX A
Persons Participating in the Investigation

Matthewsville Excavating

Allen Eugene Matthews	owner

State of Arizona

Timothy Evans	senior deputy mine inspector
Wes Cruea	deputy mine inspector

Mine Safety and Health Administration

Thomas E. Barrington	mine safety and health inspector
Sidney J. Garay	mine safety and health inspector
Benjamin W. Gandy	mining engineer