

Summary of 2013 4th Quarter Fatal Accidents at Metal/Nonmetal Mines and Preventative Recommendations

During the fourth quarter of 2013, nine miners were killed in accidents in the metal and nonmetal mining industry.

Three miners are dead as a result of an **Explosives/Breaking Agents** accident. Two miners died in **Fall of Person** accidents. One miner died in a **Powered Haulage** accident, one miner was killed in an **Electrical** accident, one miner was killed in a **Falling/Sliding Material** accident, and another miner died in a **Drowning** accident. One person killed was a contract employee.

When completed, a detailed investigation report of each fatality is posted on the MSHA website at:

<http://www.msha.gov/fatals/fab.htm>

Here is a brief summary of these accidents:

Three persons were killed in Explosives/Breaking Agents accidents.

A 33-year old powderman trainee with 5 weeks of experience and a 59-year old shift supervisor with 36 years of experience were killed at a silver mine. The two miners were in an area of the mine where explosives had been detonated the day before. Other miners working in the area were able to evacuate. Mine rescue teams entered the mine and found the two miners. During the recovery operation, rescue teams detected fatal levels of carbon monoxide. The teams brought the victims to the surface. Twenty miners were taken to the hospital, and three were kept overnight.

A 63-year old lead man with 16 years of experience was killed at a crushed stone mine. The victim initiated a blast and was struck by flyrock from the blast. He was standing 153 feet from the nearest blast hole and was struck by rock as large as 19 inches long by 14 inches wide by 7 inches thick.

Two miners were killed in Fall of Person accidents.

A 52-year old electrician with 5 years of experience was injured at a cement operation. The victim was standing on a step ladder, pulling cable in a cable tray. The mounting bracket for the tray broke loose from the wall and the tray struck the step ladder. The victim fell 5 feet from the ladder, striking his head on the concrete floor. The victim was transported to a hospital where he died on October 19, 2013.

A 61-year old reagent handler with 39 years of experience was killed at an iron ore mine. The victim was working on top of a snow and ice covered railroad tanker car when he fell to a concrete floor approximately 12 feet below.

One miner was killed in a Powered Haulage accident.

A 46-year old equipment operator with 27 years of experience was killed at a granite mine. The victim was operating a haul truck when it veered off the left side of a haul road and traveled through a berm. The haul truck went over an embankment and overturned in a settling pond.

One miner was killed in an Electrical accident.

A 33-year old contract electrician foreman with 14 years of experience was injured at a crushed stone mine. The victim was working in an electrical enclosure, pulling cable for a new pump that was being installed, when he contacted energized conductors. He was transported to a hospital where he died on November 22, 2013.

One miner was killed in a Falling/Sliding Material accident.

A 53-year old utility worker with 19 years of experience was killed at a sand mine. The victim was standing near the edge of a bank when it collapsed engulfing him.

One miner was killed in a Drowning accident.

A 27-year old deck hand with 4 years and 8 months of experience drowned at a dredge operation. He was working on a dredge that had a barge attached to it. The victim stepped on the barge and fell into the water.

Best Practices

While some of the specific circumstances of these accidents remain under investigation, here are best practices that we can identify at this time to prevent accidents like these in the future:

Fall of Person Accidents

These deaths can be prevented by following these Best Practices:

- Follow the manufacturer's recommendations when installing a cable tray on a supporting structure.
- Ensure that the correct anchors are used and that the supporting structures are adequate when installing a cable tray.
- Always be aware of your surroundings and any hazards that may be present.
- Properly position ladders used to reach elevated areas.
- Establish and discuss safe work procedures. Identify and control all hazards associated with the work to be performed and the methods to properly protect persons.
- Task train all persons to recognize all potential hazardous conditions and ensure they understand safe job procedures for elimination of the hazards before beginning work.
- Remove snow and ice from work areas.

- Always use fall protection with a lanyard anchored securely when working where there is a danger of falling.

Powered Haulage Accidents

These deaths can be prevented by following these Best Practices:

- Provide and maintain adequate berms or guardrails on the banks of roadways where a drop-off exists.
- Conduct pre-operational checks to identify and correct any defects that may affect the safe operation prior to operating mobile equipment.
- Always wear a seat belt when operating self-propelled mobile equipment.
- Maintain control of self-propelled mobile equipment while it is in motion.
- Operate mobile equipment at speeds consistent with the conditions of roadways, tracks, grades, clearance, visibility, curves, and traffic.
- Stay alert while operating mobile equipment.
- Ensure traffic rules, signals, and warning signs are posted and obeyed.

Explosives/Breaking Agents Accidents

These deaths can be prevented by following these Best Practices:

- Conduct effective workplace examinations. Identify all hazards and take action to correct them.
- Ensure that all active working areas are ventilated prior to allowing miners to work in those areas.
- Monitor gases as frequently as necessary to determine the adequacy of control measures.
- Use properly maintained and calibrated gas detection instruments with alarms for concentrations outside of safe limits that are audible and visual.
- Ensure all miners are trained to recognize all potential hazards and emergency procedures, including evacuation procedures.
- Dispose of damaged or deteriorated explosive material in a safe manner in accordance with the instructions of the manufacturer.
- Establish and discuss safe work procedures before beginning work. Identify and control all hazards associated with the work to be performed and the methods to properly protect persons. Task train all persons in safe work procedures.
- Maintain and use all available methods of communication, such as sirens and radios, to warn persons of an impending blast. Establish methods to ensure that all persons are out of the blasting area.
- Guard or barricade all access routes to the blasting area to prevent the passage of persons or vehicles.
- Before firing a blast, give ample warning to allow all persons to be evacuated.
- Clear and remove all persons from the blasting area unless suitable blasting shelters are provided to protect persons from flyrock.

- Verify that the blasting procedures are effective and being followed at all times.

Electrical Accidents

These deaths can be prevented by following these Best Practices:

- Ensure that persons are trained on all electrical tests and safety equipment necessary to safely test and ground the circuit where work is to be performed.
- Positively identify the circuit on which work is to be conducted.
- De-energize power and ensure that the circuit is visibly open for circuits being worked on and circuits near the work area.
- Lock and Tag! Place YOUR lock and tag on the disconnecting device.
- Use properly rated Personal Protective Equipment (PPE) including Arc Flash Protection such as a hood, gloves, shirt, and pants.
- Verify the circuit is de-energized by testing for voltage using properly rated test equipment.
- Ensure ALL electrical components in the enclosure are de-energized.
- Ground ALL phase conductors to the equipment grounding medium with grounding equipment that is properly rated.
- Install warning labels on the terminal covers of bottom feed circuit breakers warning that "Bottom terminal lugs remain energized when the circuit breaker is open."

Falling/Sliding Material Accidents

These deaths can be prevented by following these Best Practices:

- Establish and discuss safe work procedures before beginning work. Identify and control all hazards associated with the work to be performed and the methods to properly protect persons.
- Task train all persons to recognize all potential hazardous conditions that can decrease bank or slope stability and ensure they understand safe job procedures for elimination of the hazards.
- Evaluate all pit, highwall, slope, and bank conditions daily. Be especially vigilant for these conditions after each rain, freeze, or thaw.
- Slope trenches back at a stable angle or install shoring when working in and around trenches.
- Correct hazardous conditions by working from a safe location.

Other (Drowning) Accidents

These deaths can be prevented by following these Best Practices:

- Task train all persons to recognize all potential hazardous conditions and ensure they understand safe job procedures for elimination of the hazards before beginning work.
- Always wear a life jacket where there is a danger of falling into the water.

- Remove snow and ice from work areas.
- Ensure safe access is provided where persons are required to work or travel. Maintain three points of contact.
- Install and use lifeline tie-off runs and fall protection.
- Provide communication devices and establish procedures requiring persons to alert coworkers when they are outside the dredge's handrails.

Violations of the priority standards identified as **Rules to Live By** continue to be cited during investigations of mine fatalities. While not all of the fatality investigations have been completed and enforcement action taken, Rules to Live By standards continue to be identified in many of those fatalities. During inspections, MSHA's inspectors continue to discuss, with miners and supervisors, the root causes of these fatalities and the ways to prevent recurrences.

The importance and value of effective **Safety and Health Management Programs** helps send miners home safely at the end of their shifts. A thorough, systematic review of all tasks and equipment to identify hazards is the foundation of a well-designed safety and health management program. Many root causes of fatal accidents show that management policies, procedures, and controls were inadequate and failed to ensure that persons were protected from hazards that could have been identified and then eliminated or controlled. Mine operators and contractors need to implement effective safety and health management programs and periodically review, evaluate, and update them. If an accident or near miss occurs, find out why and act to prevent a recurrence. If changes to equipment, materials, or work processes introduce new risks into the work environment, address them immediately.

Conducting **Workplace Examinations** every shift can prevent deaths when safety and health hazards are **found and fixed**. Miners are protected when workplace examinations are performed, problems are identified, and hazards are eliminated.

Miners deserve a safe and healthy workplace and the right to return home injury free at the end of every shift. We must all continue to work together to make that happen.