

## Summary of 2014 (Mid-year) Fatal Accidents at Coal Mines and Preventative Recommendations

During the first half of 2014, eight miners were killed in accidents in the coal mining industry. Four miners died in **Machinery** accidents and two miners were killed in **Powered Haulage** accidents. Two miners died in a double fatality in a **Fall of Rib** (coal outburst) accident.

Five of the eight fatalities occurred in the second quarter of 2014. The double fatality and a **Machinery** fatality occurred in May. Another **Machinery** fatality and a **Powered Haulage** fatality occurred in June. 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:

### **Four miners were killed in Machinery accidents.**

A 24-year-old continuous mining machine operator with 5½ years of mining experience was killed when he was pinned between the end of the boom of a continuous mining machine and the right coal rib. The miner was tramming the remote controlled continuous mining machine in the last open crosscut toward the No. 1 entry.

A 41-year-old mechanic trainee with 23 weeks of mining experience was killed while working on a belt feeder. The victim was cutting through the inner left side plate of the crawler assembly that connects the hopper jack assemblies to the crawler frame. When the cut was completed, the crawler assembly pivoted upward, pinning the victim between the crawler track and the frame of the feeder.

A 25-year-old roof bolter operator with 1 year and 44 weeks of mining experience was killed when he was pinned between a roof bolting machine and the coal rib. The victim and another roof bolter were in the process of tramming the roof bolting machine in the outby direction in the No. 3 entry on the No. 1 Longwall Tailgate. They had trammed the roof bolting machine from the 151 crosscut to approximately the 89½ crosscut when the accident occurred. The victim was found on the left side of the roof bolting machine between the machine and the coal rib.

A 25-year-old contract equipment operator with 24 weeks of experience was killed when he was crushed between the hood and frame of an impact crusher. The victim had just finished clearing a large rock from the crusher area when the accident occurred.

### **Two miners were killed in Powered Haulage accidents.**

A 20-year-old general inside laborer with 2 years of mining experience was killed when he was struck by a feeder. The victim was standing between the coal rib and the feeder when the securing post dislodged, allowing the tailpiece unit to shift and pin him between the rib and the frame of the feeder. The victim had just finished connecting a chain between the feeder and the tailpiece when the accident occurred.

A 58-year-old truck driver, with 5 years of mining experience, was killed when the haul truck he was operating traveled through a berm and descended approximately 75 feet into a spoil "V."

### **Two miners were killed in a Fall of Rib (coal outburst) accident**

A 48-year-old continuous mining machine operator with 26 years of mining experience, and a 46-year-old mobile roof support operator/roof bolter with 3½ years of mining experience, were fatally injured as a result of a coal rib outburst. The section crew was retreat mining in the No. 6 entry of the 4 East Mains Panel. They were mining the second lift of the left pillar block when the accident occurred.

### **Best Practices**

Miners do not need to die while working at coal mining operations. These fatalities can be prevented. No miner should die while working. Effective safety and health management programs save lives. Workplace examinations can identify and eliminate hazards that kill and injure miners. Effective and appropriate training help ensure that miners recognize and understand hazards and how to control or eliminate them.

While some of the specific circumstances of these accidents remain under investigation, here is what we know at this time:

### **Machinery Accidents**

**These deaths can be prevented by following well-known precautions:**

- Install and maintain proximity detection systems to protect personnel and eliminate accidents of this type. See the proximity detection single source page on the MSHA website.
- Ensure everyone, including the equipment operator, is outside the machine's turning radius before starting or moving equipment.
- Develop policies and procedures for starting and tramming self-propelled equipment and especially remote controlled continuous mining machines. Implement measures to assure their use which includes training all miners that are exposed to the hazards.
- Avoid the "RED ZONE" areas when operating or working near a continuous mining machine especially when setting over or place changing a remote controlled continuous mining machine.
- Use low speed tram when moving continuous mining machines where the left and right traction drives are operated independently.

- Assign another miner to assist the continuous mining machine operator when it is being moved or repositioned.
- Frequently review, retrain, and discuss avoiding the "RED ZONE" areas.
- Walk behind moving mobile equipment when traveling in the same entry and maintain a safe distance between yourself and any equipment that is moving.
- Never position yourself in an area or location where equipment operators cannot readily see you.
- Never defeat any of the machine controls. Ensure that all operating devices function as designed.
- Ensure that all stored energy is released or controlled before initiating repairs.
- Securely block equipment against all hazardous motion at all times while performing maintenance work. Take extra precautions if it is possible for the equipment to move in multiple directions.
- Always be aware of your location in relation to machine parts that can move. Examine work areas for hazards that may be created as a result of the work being performed.
- Establish and discuss safe work procedures before beginning work. Identify and control all hazards associated with the work to be performed to ensure miners are protected.
- Study the manufacturer's maintenance manual for safety precautions and recommended blocking securing procedures BEFORE initiating repairs.
- If specified, always use the manufacturer's safety device(s) or features for securing components against motion.
- Establish policies and procedures for safely clearing plugged material in a feeder hopper or crusher.
- De-energize and lock-out/tag-out all power sources before working on equipment.
- Maintain equipment in safe working condition. Ensure safety devices are working properly.
- Monitor all personnel, with an emphasis on miners new to a task, routinely to determine that safe work procedures are followed.

### **Powered Haulage Accidents**

**These deaths can be prevented by following well-known precautions:**

- De-energize and lock out the conveyor belt before repositioning the tailpiece.
- 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.
- Use equipment or material capable of supporting the tailpiece.
- Ensure any bracing, such as a post, is hitched into the rib properly.
- Ensure the tailpiece is anchored securely before re-energizing the conveyor.

- Operate the belt before allowing miners around the repositioned tailpiece. Keep miners at a safe distance and avoid pinch points until it is determined that the tailpiece is secure.
- Maintain control of equipment at all times during operation.
- Ensure seat belts are provided, maintained, and worn at all times when equipment is in operation. Incorporate engineering controls that require seat belts to be properly fastened before equipment can be put into motion.
- Conduct pre-operational checks to identify and fix any defects that may affect the safe operation of equipment before it is placed into service.
- Know the truck's capabilities, operating ranges, load limits and safety features.
- Provide and maintain adequate berms on the banks of roadways where a drop-off exists.
- Ensure all grades and haulage roads are appropriate for the haulage equipment being used.
- Train miners to understand the hazards associated with the work being performed.
- Monitor work habits routinely and examine work areas to ensure that safe work procedures are being followed.

### **Fall of Rib (coal outburst)**

#### **These deaths can be prevented by following well-known precautions:**

- Conduct frequent and thorough examinations of the roof, face, and ribs. Be alert for changing conditions. When hazardous conditions are detected, danger off access to the area until it is made safe for work and travel.
- Ensure that the approved roof control plan support provisions are suitable for the geological conditions at the mine and that the plan is followed.
- Train all miners in the requirements of the approved roof control plan and instruct miners to follow the plan at all times.
- Ensure that the pillar dimensions and the mining method are suitable for the conditions and that roof and rib control methods are adequate for the depth of cover. Consider the potential effects of any mines above or below the active workings.
- Develop a map of geological features and unusual conditions in order to develop the best mining plan that addresses the potentially adverse roof and rib conditions that may be present.

Violations of the priority standards identified as **Rules to Live By** continue to play key roles in mine fatalities. While the fatality investigations have been completed, not all of the violations have been identified, and not all of the associated citations and orders have been issued, it currently appears that violations of the Rules to Live By standards were still involved in several of those fatalities. MSHA's inspectors will be especially mindful of these issues while performing inspections. They will be talking to miners and mine supervisors in

mines throughout the country to discuss these kinds of fatalities, and the ways to prevent them.

### **Contractors**

One contractor was killed at mining operations in the first six months of 2014. Contractors and mine operators should ensure that contractor employees are properly trained and follow the mine's safety policies and procedures. Contractors and mine operators should coordinate operations at the mine to ensure that safety and health management programs are in place and are effective, all workplace examinations are performed, and safe work procedures are followed.

The importance and value of effective **safety and health management programs** cannot be overstated. A thorough, systematic review of all tasks and equipment to identify hazards is the foundation of a well-designed safety and health management program. Modify equipment, processes, work procedures and management systems to eliminate or control identified hazards. Operators and contractors should create effective safety and health management programs, ensure that they are implemented, and periodically review, evaluate, and update them.

If an accident or near miss does occur, find out why and act to prevent recurrence. If changes to equipment, materials or work processes introduce new risks into the mine environment, address them immediately.

Conducting **workplace examinations** before beginning a shift and during a shift – every shift – can prevent deaths by finding and fixing hazards. All required workplace examinations must be performed and identified hazards eliminated to protect miners.

Providing effective and appropriate **training** to miners is a key element in ensuring their safety and health. Mine operators and Part 48 trainers need to train all miners to recognize the conditions that lead to deaths or injuries and ensure that measures are taken and followed to eliminate hazardous conditions. Training all miners to follow safe work procedures and stay focused on the task they are performing cannot be stressed enough.

Miners deserve a safe and healthy workplace and the right to go home safe and healthy at the end of every shift, every day. Working together makes that happen.