

## Summary of 2013 4<sup>th</sup> Quarter Fatal Accidents at Coal Mines and Preventative Recommendations

During the fourth quarter of 2013, six miners were killed in accidents in the coal mining industry. Three miners were killed in **Powered Haulage** accidents. Two miners died in **Machinery** accidents, and one miner died as a result of a **Fall of Face** accident. None of the fatalities involved contractors.

Five of the fatalities occurred in underground mines and one was at a surface mine. One of the powered haulage deaths may have been prevented through the use of a proximity detection system.

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:

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

A 44-year old bulldozer operator, with approximately 10 years of experience, sustained fatal injuries when the dozer he was operating went over the edge of a highwall.

A 32-year-old longwall shieldman with 5 years of mining experience was killed when he was struck by high pressure hydraulic fluid from a pan line valve bank. The victim was advancing shields and the pan line when a hydraulic hose extending from the pan line to a shield became positioned between a shield pontoon and the mine floor. As the shields and pan line advanced, a fitting on the hydraulic hose broke where it was attached to pan line valve bank.

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

A 62-year-old longwall maintenance coordinator, with 42 years of mining experience, was killed while supervising the face conveyor chain installation on a longwall set up. A battery-powered scoop was being used in conjunction with a sheave block and wire rope to pull the top conveyor chain through the pan line toward the tail drive. The chain became fouled and the victim positioned himself to observe the cause of the problem. As the scoop continued to tram, the sheave assembly and wire rope, which were under tension, came loose and propelled forward. The sheave assembly struck the victim.

A 47-year-old laborer with approximately 15 years of mining experience was killed when the battery powered personnel carrier he was driving overturned and pinned him underneath the vehicle.

A 59-year-old shuttle car operator, with approximately 22 years of mining experience, was killed when a shuttle car struck him. The victim was in the crosscut between the No. 6 and No. 7 entries. This crosscut and adjoining entries were being used to gain access to rooms being mined on the right side of the section.

### **One miner was killed in a Fall of Face accident**

A 36-year-old longwall chief, with 16 years of experience, was killed while shoveling loose coal and rock between the coal face and the pan line on a longwall section. The victim received crushing injuries when a solid piece of coal and cap rock fell from the coal face, striking and pinning him against the face side of the pan line. The coal/rock combination measured approximately 4 feet and 10-inches long, by 2 feet and 3 inches wide, and up to 24 inches thick.

### **Best Practices**

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:**

- Task train miners adequately on the equipment they will operate.
- Train all employees on safe work procedures, hazard recognition, and hazard avoidance.
- Maintain a safe distance from the edge of the highwall.
- Ensure adequate berms are in place.
- Be familiar with your work environment. Before beginning work, look at the area, walk around it, and plan the safest way to move the material and maneuver the equipment.
- Ensure illumination is adequate when work is performed during non-daylight hours.
- Maintain control of equipment at all times during operation.
- Ensure that personnel operating mobile equipment always wear a seat belt.
- Keep all high pressure hydraulic hoses free from pinch points, sharp edges and abrasive areas.
- Always check for defective hydraulic hoses and replace damaged hydraulic hoses immediately.
- Use whip checks at connection points.
- Train miners regarding the dangers associated with hydraulic hoses on long wall faces.
- Remove pressure from any hoses being replaced.

### **Powered Haulage Accidents**

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

- Ensure that chains, wire ropes, and hooks are properly attached or rigged.

- Ensure persons are positioned in a safe location before tension is applied when pulling or lifting with chains, wire rope, or other rigging. This includes staying out of a potential line of flight of components in case of an equipment failure.
- Inspect devices for signs of wear such as rust, metallic loss, fraying of rope, broken strands in cables, elongation of metal, etc.
- Never weld hooks on equipment in order to attach ropes or chains for towing or hoisting.
- Operate all powered haulage, along with trailers and sleds, at speeds consistent with conditions and the equipment used.
- Control equipment so that it can be stopped within the limits of visibility.
- Maintain off-track haulage roadways from bottom irregularities, debris, and wet or muddy conditions that affect the control of the equipment.
- Sound audible warnings when making turns, reversing directions, approaching ventilation curtains, and any time the operator's visibility is obstructed. Ensure the sound level of audible warnings is significantly higher than that of ambient noise.
- Maintain mechanical steering and control devices to provide positive control at all times.
- Provide all self-propelled rubber-tired haulage equipment with well-maintained brakes, lights, and warning devices.
- Use proximity detection systems to protect personnel from accidents of this type. See the proximity detection single source page on the MSHA web site.
- Always ensure that visibility is not obstructed in the direction of travel and across the equipment being operated.
- Use transparent curtain for check and line curtains in the active face areas.
- Come to a complete stop and sound an audible warning before proceeding through ventilation controls.
- Shine equipment lights in the direction of travel when operating haulage equipment.
- Never position yourself in an area or location where equipment operators cannot readily see you.
- Always communicate your position and intended movements to mobile equipment operators.

### **Fall of Face Accident**

**This death can be prevented by following well-known precautions:**

- Conduct a thorough examination of the roof, face, and ribs, including a visual examination and a sound and vibration test prior to miners being assigned to work or travel through an area.
- Correct hazardous roof, face, or rib conditions before any work or travel is permitted in the affected area.
- Use a bar of suitable length and design for removing loose or unconsolidated material.

- Support the exposed longwall roof, face, and ribs by mechanical means in the immediate work area.
- Train all miners in hazard recognition and safe work practices that are assigned to perform work on the longwall face.
- Apply additional safety precautions in areas where geological changes and anomalies in strata are present.
- Post a certified foreman at the work area when maintenance is being performed.
- De-energize the face conveyor, notify the headgate operator, and disconnect power at the control station while work is being performed on the face conveyor (pan). Do not energize the conveyor until all persons are off the face side of the conveyor and the conveyor is supported adequately from inadvertent movement.

Violations of the priority standards identified as **Rules to Live By** continue to play key roles in mine fatalities. While the mine site portion of 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.

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 return home injury free at the end of every shift. We must all continue to work together to make that happen.