

Summary of 2010 fatal accidents at coal mines and preventative recommendations

In 2010, the disaster at West Virginia's Upper Big Branch (UBB) Mine killed 29 coal miners. This tragic event accounted for 60 percent of the coal mine fatalities last year. However, we must be mindful that last year other miners lost their lives at mines around the country.

An **additional** 19 coal miners lost their lives needlessly from coal mine accidents in 2010: Six coal miners were killed working in **close proximity** to mining or haulage equipment; **roof falls and rib rolls** crushed six coal miners; four surface truck drivers were killed in **powered haulage** accidents when they lost control of their trucks and either struck another truck, turned over their trucks, or a truck went through a berm and over a highwall; two coal miners are dead because they were **struck-by** moving or falling objects; and one coal miner lost his life in an **explosion or fire**.

Action is needed to prevent additional fatalities. A detailed investigation report on each fatality is posted on the MSHA at <http://www.msha.gov/fatals/fab.htm> when completed.

Here is a brief summary of these accidents:

Six coal miners were killed working in close proximity to mining or haulage equipment.

A continuous mining machine operator was crushed between the conveyor boom of the mining machine and the coal rib.

A miner was killed when a loaded shuttle car turned into the last open crosscut, while the miner was positioned in the outside turn radius of the shuttle car. The victim was crushed between the shuttle car and the coal rib.

A continuous mining machine operator was killed after he was crushed between the coal rib and the mining machine.

A section electrician was run over by a shuttle car, after the loaded shuttle car began tramming to the dump point.

A production foreman was run over by a battery powered ram car.

A miner helper was struck by a shuttle car while installing a ventilation curtain.

Roof falls and rib rolls crushed coal six miners.

A continuous mining machine operator was killed when a rib roll occurred.

Two miners were killed by a roof fall while loading rock out of an extended cut. The fall was 70 to 75 feet in length, extending towards the face area.

A section foreman died while installing rib support, when a section of rib fell behind him, striking a floor jack, which fell and struck the miner.

A roof bolter operator was killed by a rib roll.

A continuous miner helper died after a roof/rib brow fell and hit him.

Four surface truck drivers were killed in powered haulage accidents.

A rock truck driver was killed after he drove over a berm and the truck fell 72 feet.

A rock truck driver drove his truck into the rear of another truck and was killed.

A coal truck driver died when he lost control of his truck and either jumped or was ejected from the truck.

A contract truck driver was killed when the loaded truck struck a berm on the elevated roadway and over-turned on the road, trapping the victim under the cab.

Two coal miners are dead because they were struck-by moving or falling objects.

A mechanic died while working under a truck, supported by jack stands, when another started the truck to assist with bleeding the brakes. The assisting miner's foot slipped off the clutch, causing the truck to lurch forward, fall off the jack stands and crush the mechanic.

A contract iron worker was installing pre-fabricated metal stairs on the side of a fan housing, and died when the stairway unit slipped and struck the iron worker.

One coal miner lost his life in an explosion or fire.

A service truck operator was refueling a drill rig and died when an ignition from refueling resulted in fatal burns.

Mining deaths from 2001 to 2010/best practices

Coal mine fatalities have continued to occur in several perennial and familiar categories. Since 2001, twenty-one miners are dead because of a **Rib fall or Bounce**. **Roof falls** crushed an additional 47 miners. Forty-nine miners were killed in **Powered Haulage accidents** while driving or working around trucks. Twenty-five miners were killed by continuous mining machines or underground haulage-type equipment.

Fatalities can be prevented. They are not inevitable in mining. Effective safety and health management programs save lives. Workplace examinations for hazards – pre-shift and on-shift **every shift** – can identify and eliminate hazards that kill and injure miners. And effective and appropriate training will 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 do know at this time:

Rib Fall or Bounce

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

- Remain familiar with and always follow the Approved Roof Control Plan
- Conduct adequate examinations prior to performing any work hazards found during examinations.
- Correct any hazards found during examinations.
- Use equipment that is properly designed to install rib support.
- Using mining methods that are consistent with geological conditions.
- Properly train miners on any changes to the Approved Roof Control Plan.

Roof Falls

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

- Remain familiar with and always follow the Approved Roof Control Plan.
- Revise the Roof Control Plan when new geological conditions warrant changes.
- Conduct adequate examinations prior to performing any work.
- Correct any hazards found during examinations.
- Do not travel or work in by supported roof.
- Installing and obey visual warning devices posted to prevent travel in by supported roof.
- Properly train miners on any changes to the Approved Roof Control Plan

Trucks and Surface Haulage

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

- Assure truck drivers are trained properly before being allowed to operate trucks on mine sites.
- Set park brakes properly to prevent unplanned movement.
- Maintain berms at proper heights and keep haul roads and other roads for travel in good condition.
- Conduct proper pre-operational equipment examinations and safety checks of all mobile equipment.
- Correct hazards found during pre-operational examinations before the equipment is used.
- Test the braking system before descending steep grades.
- Adjust the speed to match the road and weather conditions.
- Operate vehicles in the appropriate gear when descending steep grades and post recommended gear ranges at the top of grades for haul trucks. Utilize auxiliary retarders to the fullest extent possible.
- Do not exceed a truck's capabilities, operating ranges, load-limits and safety features.
- Properly block equipment from motion to prevent unintentional movement.
- Use proper maintenance procedures when work or repairs are necessary on trucks or equipment.
- Properly design and maintain truck dump sites to prevent over travel.
- Equip trucks and other equipment with seat belts and always wear the seat belt when operating a haul truck or mobile equipment.
- Do not exit a moving vehicle.

**“Struck By” While in Close Proximity to Mining or Haulage Equipment
These deaths can be prevented by following well-known precautions:**

Haulage Equipment

- Install proximity detection systems on mobile face equipment.
- Use approved translucent check curtains designed to allow mobile equipment to tram through the curtains.
- Sound audible warnings when making turns, reversing directions, approaching ventilation curtains, and any time the operator's visibility is obstructed. The sound level of audible warnings must be significantly higher than that of ambient noise.
- Be aware of blind spots when traveling in mobile equipment travelways.
- Communicate your position and intended movements to mobile equipment operators. Shuttle car and scoop drivers should always try to see the entire travelway on which they are driving. Shuttle car and scoop drivers should always keep their hands, arms and legs inside the vehicle at all times. Always know the location of the shuttle cars and scoops operating near you.
- Pay attention to your surroundings.
- Miners should always wear reflective clothing so they can be clearly seen by the shuttle car and scoop drivers.
- Miners should always stay clear of moving shuttle cars and scoops.

- Always walk behind moving vehicles. Never walk in front of a shuttle car or scoop.
- Provide small permissible strobe lights for miners on foot.
- Ensure operator visibility by not overloading haulage equipment. Have the section foremen examine the working sections prior to any work to determine the safest route for miners on foot to prevent interaction with mobile equipment and communicate their findings to the miners.
- Schedule survey time when the section is not in production. Provide sufficient clearance at dumping points (at least 24 inches) between the rib and the operator's compartment to allow the operator to enter or exit the equipment safely.

Continuous Mining Machines

- Ensure the continuous mining machine operator is positioned beyond the turning radius, and away from the conveyor boom turning radius before starting or moving the equipment.
- Frequently review, retrain, and discuss avoiding the "Red Zone" Areas when operating or working near a remote controlled continuous mining machine.
- Install new technology, such as proximity detection devices, to protect personnel from accidents of this type.
- Minimize the number of miners working or traveling near continuous mining machines and maintain effective communications between miners and equipment operators.
- Train all production crews and management in programs, policies, and procedures for operating remote controlled continuous mining machines.

Violations of the priority standards identified earlier this year as **Rules to Live By and Rules to Live By II** continue to play key roles in mine fatalities. While not all 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 of the 19 coal fatalities that did not occur at UBB, **more than half involved violations of the Rules to Live By standards.** MSHA's inspectors will be especially mindful of these issues while performing inspections. They will be talking to miners and mine supervisors 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, they must be addressed immediately. Conducting workplace examinations before beginning a shift and during a shift – every shift – can prevent deaths by finding and fixing safety and health hazards. All required workplace examinations must be performed and identified problems resolved to protect workers.

Training – In 2010, excluding the UBB disaster, 16 of 19 (84 percent) of the miners killed had five years or less at the mine site and 6 of these miners (32 percent) had less than one year's experience at the mine. In addition, 13 of those 19 miners (68 percent) had less than five years experience at that job or task. Of those, 4 miners (21 percent) had less than one year at the job. Providing effective and appropriate training to miners is a key element in ensuring their safety and health. Miner operators and Part 46 and Part 48 trainers need to train miners and mine supervisors on the conditions that lead to deaths and injuries and measures to prevent them.

Miners deserve a safe and healthy workplace and the right to go home to their families and loved ones safe and well at the end of every shift, every day. We must all work together to make that happen.