U.S. Department of Labor
MSHA
Mine Safety & Health Administration

Stakeholder Meeting
January 2017

U.S. Department of Labor
Mine Safety and Health Administration

1/17/17

Coal Mine Safety & Health
Fatal Accidents
CY 2016

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Coal Fatalities

- Surface Mines – 0
- Underground Mines – 9
  - Surface of an Underground Mine – 2 of 9

- Classifications
  - Powered Haulage – 3
  - Machinery – 3
  - Fall of Rib – 2
  - Ignition/Explosion of Gas -1

Coal Fatalities by State

- West Virginia – 4
- Kentucky - 2
- Pennsylvania – 1
- Illinois – 1
- Alabama - 1

Coal Fatalities by Occupation

- Continuous Mining Machine Operator – 3
- Belt Foreman – 1
- Maintenance Foreman – 1
- Shuttle Car Operator - 1
- Contract Laborer – 1
- Motorman– 1
- Technical Representative - 1

Fatal No. 1. - On January 4, 2016, a 53-year-old belt foreman received fatal injuries when he became entangled in a moving underground belt. The victim was preparing to change out a hold up roller when he was caught by the moving belt and roller.

Best Practices

- Never perform work on a moving conveyor belt.
- Ensure that power is off with a visual disconnect before any work is performed.
- Use your own lock and tag to lock out and tag the visual disconnect.
- Ensure that machinery is blocked against motion before performing maintenance or repairs.

Fatal No.2. - On January 16, 2016, a 31-year-old continuous mining machine operator was fatally injured when a section of coal/rock rib pinned him to the mine floor.

Best Practices

- Train all miners and supervisors to conduct thorough examinations of the roof, face, and ribs where persons will be working and traveling. Correct all hazardous conditions before allowing persons to work or travel in such areas.
- Be aware of potential hazards at all times when working or traveling near ribs. Take additional safety precautions when mining heights increase to prevent development of rib hazards.
- Avoid areas of close clearance between ribs and equipment.
- Know and follow the approved roof control plan and provide additional support when roof or rib fractures, or other abnormalities are detected. Remember, the approved roof control plan only contains minimum requirements.

Best Practices, Cont'd

- Install rib bolts with adequate surface coverage hardware on cycle and in a consistent pattern for the best protection against rib falls. In addition to rib bolts and mesh, setting post on 4 foot centers along questionable rib lines will provide additional protection against rib rolls.
- Be alert for changing conditions, especially after activities that could cause roof disturbance. Report abnormal roof or rib conditions to mine management.
- Adequately support or scale any loose roof or rib material from a safe location. Use a bar of suitable length and design when scaling.
- Danger off hazardous areas until appropriate corrective measures can be taken.

Fatal No.3. - On January 19, 2016, a 36-year-old continuous mining machine operator was fatally injured between the mining machine and the coal rib.

Best Practices

- Avoid “RED ZONE” areas when operating or working near a remote controlled continuous mining machine. Ensure all personnel; including the equipment operator is outside the machine turning radius before starting or moving the equipment. STAY OUT of RED ZONES.
- Maintain a safe distance from any moving equipment. Position the conveyor boom away from the operator or other miners working in the area or when moving the machine.
- Perform the manufacturer’s required or recommended pre-operation examinations each shift to ensure the proximity detection system is in proper working order. This will verify that the shutdown zones are sufficient to stop the machine before it could contact a miner.
- Always ensure continuous mining machine pump motors are disabled before handling trailing cables and never defeat machine safety controls.

Fatal No.4. - On March 25, 2016, a 48-year-old continuous mining machine operator was fatally injured when a section of rib fell and pinned him against the haulage equipment.

Best Practices

- Be aware of potential hazards at all times when working or traveling near mine ribs, especially when conditions exist that could cause roof or rib disturbance. Take additional safety precautions in these conditions and when mining heights increase.
- Do not stand between ribs and remote-controlled face equipment.
- Know and follow all provisions of the approved roof control plan. Recognize that this plan has minimum requirements and additional measures must be taken as mining conditions warrant.
- Train all miners to conduct thorough examinations of the roof, face, and ribs where miners will be working or traveling. Correct all hazardous conditions before allowing miners in such areas.
- Continuously watch for changing conditions and conduct more frequent examinations when abnormal conditions are present.

Best Practices, Cont'd.

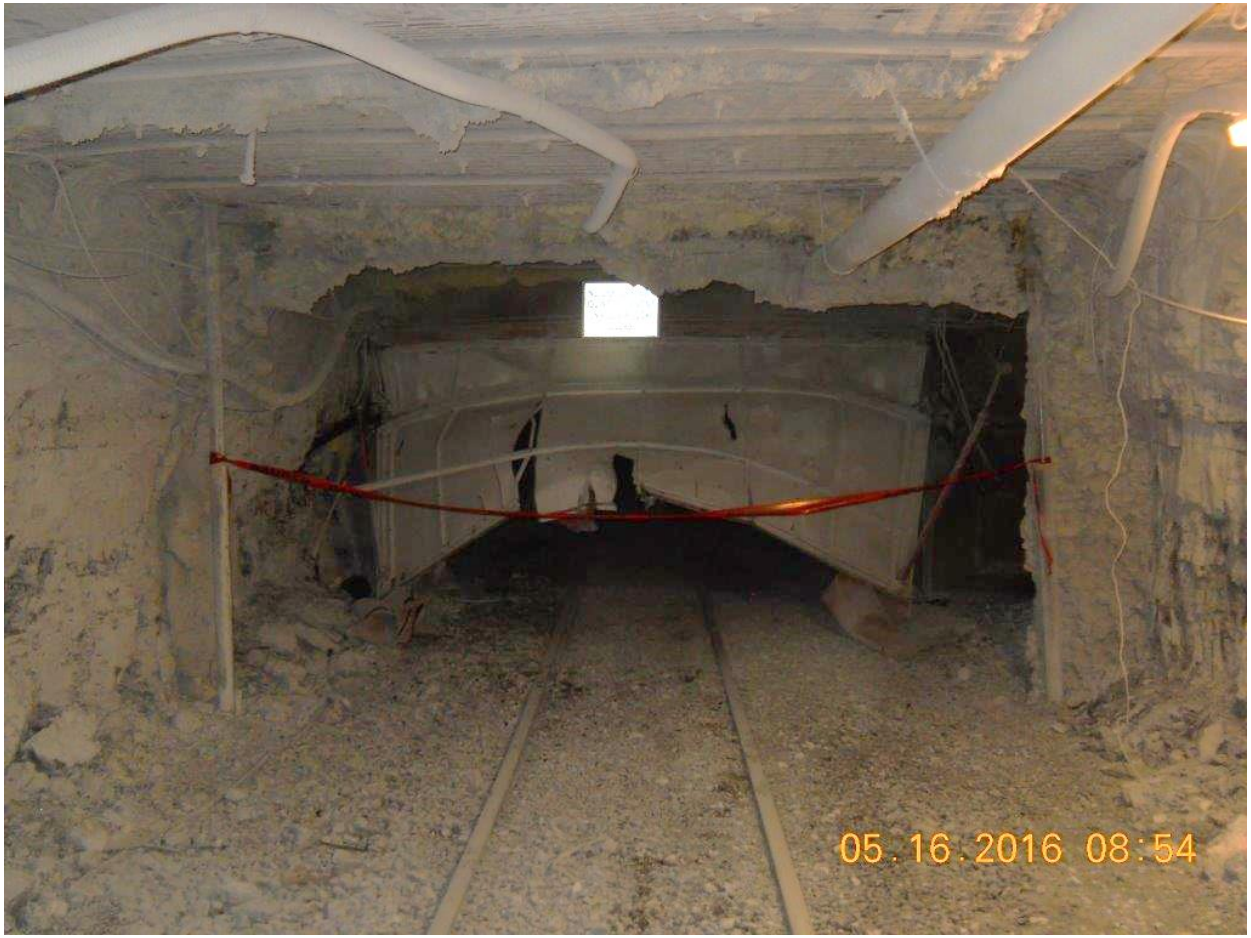
- Pay particular attention to deteriorating roof and rib conditions when working in, or traveling through, older areas of the mine. Provide additional training for specialized work, such as outby construction, emphasizing best practices for each specific task.
- Perform a site-specific risk assessment for underground construction projects since unusual hazards may be encountered. Identify and correct hazardous conditions related to falls of the roof, face, and ribs.
- Install rib bolts on cycle and in a consistent pattern for the best protection against rib falls.
- Provide additional support when fractures or other abnormalities are detected and use appropriate standing support beneath overhanging brows if they cannot be taken down or adequately bolted.
- Adequately scale any loose rib material from a safe location with a bar of suitable length.
- Historically, rib related accidents occur in areas where the mining height exceeds 7 feet and the cover is more than 700 feet. In such areas, make frequent examinations and take proactive measures to assure adequate, effective rib support is installed and maintained.

Fatal No. 5 - On June 6, 2016, a 34-year-old contract laborer with 7 years of mining experience was fatally injured when a diesel-powered front-end loader fell on him. Working together, another miner and the victim lowered the bucket and put downward hydraulic pressure on the bucket to raise the middle of the loader. Both miners then crawled under the loader. The hydraulic pressure released, allowing the loader to lower, pinning both miners. A mine examiner, who was nearby, lowered the bucket again to raise the loader off the miners. One miner was freed and assisted in removing the unresponsive victim from under the loader. Cardiopulmonary resuscitation (CPR) was performed, but the victim could not be revived.

Best Practices

- Do not work under a suspended load.
- Never depend on hydraulics to support a load. Use the manufacturer's recommendations to lift and block equipment against hazardous motion BEFORE starting any repairs.
- DO NOT proceed with repairs until all safety concerns are adequately resolved, especially if potential hazards or prescribed procedures are unclear.
- Conduct examinations, from safe locations, to identify hydraulic leaks and assure repairs are conducted in accordance with the manufacturer's recommendations. Verify the release of, or fully control, all stored energy before initiating repairs.
- Treat the suspended load as unblocked until blocks or jack stands are in place, fully supporting the weight, and equipment stability has been verified.
- 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. Use the proper tools and equipment for the job.
- Train all miners in the health and safety aspects and safe work procedures related to their assigned tasks.

Fatal No. 6 - On May 16, 2016, at approximately 4:00 a.m., a 50-year-old motorman, with over 14 years mining experience, was fatally injured when the diesel locomotive he was operating crashed through a closed air lock door. The diesel locomotive was pulling six drop deck cars.



Best Practices

- Communicate your position and intended movements to other locomotive operators and other miners that may be in the area.
- Always look in the direction of equipment movement and ensure travelways are clear.
- Exercise caution in low clearance work areas and maintain adequate clearance for equipment.
- Keep all body parts within the operator's compartment while the equipment is in motion.
- Maintain control of equipment so that it can be safely stopped.
- Assure dead-man controls are fail-safe and maintain brakes and dynamic retarding controls.

Fatal No. 7 - On July 29, 2016, a 58-year-old miner with 40 years of mining experience sustained fatal injuries when an ignition occurred in the shaft he and another miner were working above. Two miners were welding threaded blocks to secure guarding around the drive-shaft between a motor and dewatering pump. Methane ignited within the shaft, and the victim was in the direct line of the ignition force. On August 4, 2016, the victim died from the injuries received during the accident.

Best Practices

- Do not weld, cut, or solder with an arc or flame where methane is detected in excess of 1% by volume. Provide supplemental ventilation in work areas where methane may be encountered.
- Conduct proper examinations for methane immediately before and periodically during welding, cutting, or soldering, especially in areas likely to contain methane. Perform examinations with properly calibrated methane detectors that are capable of detecting concentrations greater than 5%.
- Ensure smoldering metal or sparks from welding, cutting, or soldering do not result in the ignition of combustible materials or methane. Install non-combustible barriers below welding, cutting, or soldering operations in or over a shaft.
- Provide adequate training on the characteristics of mine gases and in the use of handheld gas detectors, including the use of extendable probes or pumps.
- Always use non-sparking tools when working where there is a potential for flammable or explosive methane concentrations and, when practicable, utilize options which do not involve welding or cutting when working near these areas.

Fatal No. 8 - On September 23, 2016, a 46-year-old miner was fatally injured in a vehicle accident that occurred along a portion of a mine's access/haul road. The victim (passenger) and a coworker (driver) were traveling down an inclined portion of the road when the driver apparently lost control of the pickup truck, causing it to strike the road berm and roll over in the roadway.

Best Practices

- Always wear a seat belt when operating mobile equipment, including personal trucks and automobiles.
- Operate vehicles and equipment at safe speeds, maintain control at all times, and adjust speed for the prevailing conditions (road grade, visibility, inclement weather, etc).
- Avoid using hand-held cell phones or texting while operating any mobile equipment.
- Ensure that traffic rules, speed limits, and warning signs are posted in visible locations along the roadway. Ensure the rules are obeyed.
- Ensure that access roads on mine property used by miners in personal vehicles are maintained and are free of hazards.
- Provide proper training to all employees on roadway hazards.
- Maintain steering and braking systems in good repair and adjustment.

Fatal No. 9 - On December 2, 2016, a technical representative for a shield manufacturer, with 13 years of experience, received fatal injuries while adding components to the hydraulic system of a longwall shield. The victim was positioned inside the shield near the hinge point when the shield collapsed and crushed him.

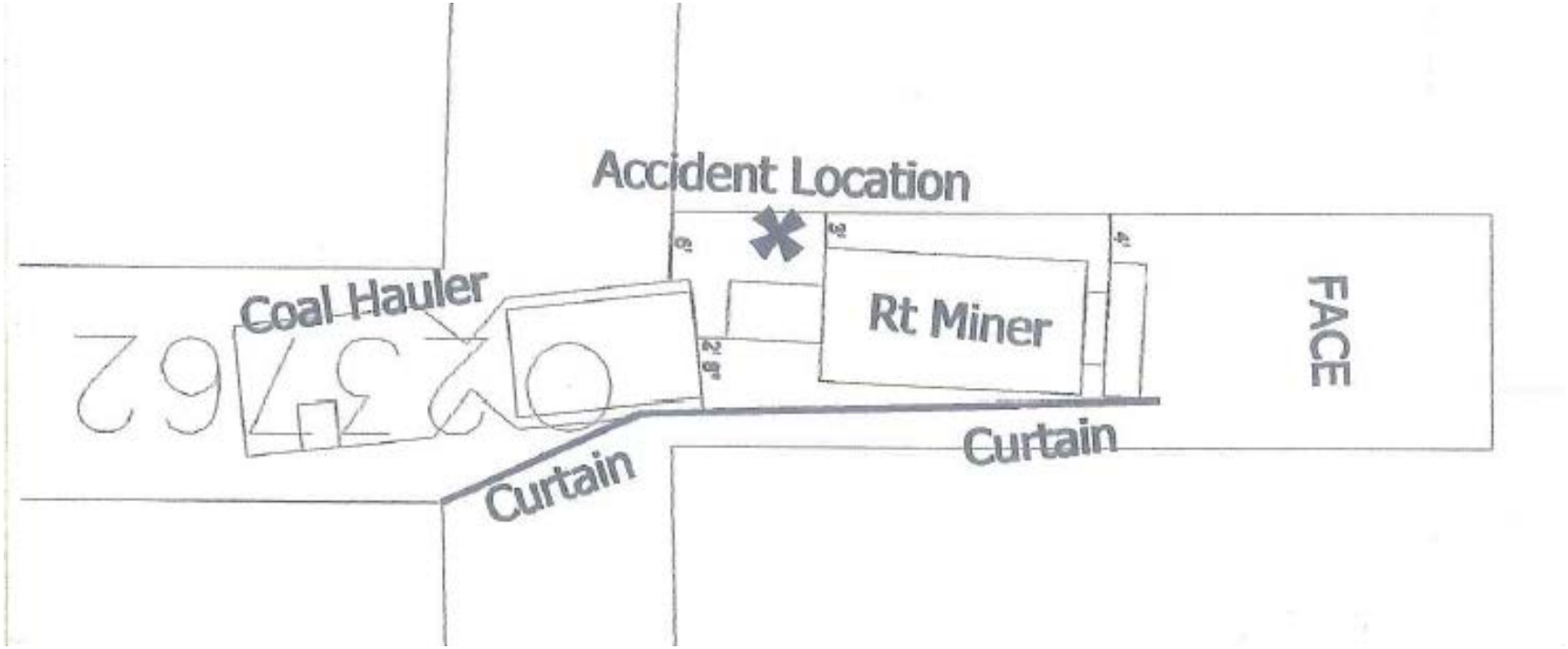
*This photo is representative of the accident area, not the actual accident scene.

Best Practices

- Ensure that miners who install, remove, or maintain shields are trained on proper procedures.
- Never remove hydraulic components without first determining if they are pressurized and/or supporting weight. Ensure all stored energy is released or controlled before initiating repairs.
- Never work on hydraulic components of both supporting cylinders of longwall shields simultaneously. A shield can collapse if hydraulic components from both cylinders are removed, even if both cylinders have functioning pilot valves.
- Never work on a component that supports a raised portion of the shield unless the shield is blocked against motion.
- Be aware of potential pinch points when working on or near hydraulic components. Examine work areas for hazards that may be created as a result of the work being performed.
- Maintain good communication with co-workers. Make sure those around you know your intentions.

Serious Accidents

On October 18, 2016, a continuous mining machine operator was seriously injured when he was pinned against the coal rib by the conveyor boom of the mining machine. The mining machine was equipped with a proximity detection system. A cut had been completed in the working face. At the time of the accident, the mining machine was being used to “clean up” on the left side of the entry in the working place.



Best Practices

- Avoid “RED ZONE” areas when operating or working near a remote controlled continuous mining machine. Ensure all personnel; including the equipment operator is outside the machine turning radius before starting or moving the equipment. STAY OUT of RED ZONES.
- Maintain a safe distance from any moving equipment. Position the conveyor boom away from the operator or other miners working in the area or when moving the machine.
- Perform manufacturer’s pre-operation examinations each shift to ensure the proximity detection system is in proper working order to verify that the shutdown zones are sufficient to stop the machine before contacting a miner.

Best Practices Cont'd.

- Be aware that radio frequency interference and Electromagnetic Interference generated by mining electrical systems can disrupt communications between the Miner Wearable Components (MWC) and the Proximity Detection System.
- MWCs should be worn securely at all times according to manufacturer recommendations and in a manner so that warning lights and sounds can be seen and heard.
- Always ensure continuous mining machine pump motors are disabled before handling trailing cables and never defeat machine safety controls.
- Develop procedures to assist the continuous mining machine operator when repositioning or moving the machine.

A miner attempted to start a 400 horsepower, 460 VAC pump motor (435 full load amperes) when two phases short-circuited causing an electrical arc. The heat from the arc escaped the starter enclosure and caused second-degree burns. The short circuit occurred because the high amperage of the motor caused the phase connections to the circuit breaker to loosen over time.

Best Practices

- Ensure electrical circuits and switches are safely designed and installed.
- Perform complete and thorough electrical examinations.
- Properly maintain electrical circuits to ensure continued safe operation.

A roof bolter was attempting to drill a hole in the roof when his arm and hand became intertwined with the drill steel causing severe injuries to his right arm and hand.

Best Practices

- Never touch or hold a rotating drilling tool, wrench, or bolt.
- Ensure that proper drill feed and rotation pressures are being used. Pressures should be only as high as necessary to efficiently drill the roof.
- Ensure that emergency shut-off switches (panic bars) are properly working.

Metal and Nonmetal Fatal Accidents CY 2016

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Metal and Nonmetal Fatals in 2016

- Surface – 16
- Underground – 1
- Classifications
  - Powered Haulage – 4
  - Machinery – 4
  - Inundation – 2
  - Slip or Fall of Person – 2
  - Falling Material – 2
  - Blasting and Breaking Agents – 1
  - Electrical – 1
  - Fall of Highwall – 1

Metal and Nonmetal Fatals in 2016

- Company Employees – 13
- Contractors – 4

Metal and Nonmetal Fatals in 2016

- Mississippi – 2
- Texas – 2
- Utah – 1
- Iowa – 1
- Arkansas – 1
- Alabama – 1
- Arizona – 1
- Kentucky – 1
- Tennessee – 1
- North Carolina – 1
- Virginia – 1
- Nevada – 1
- Georgia – 1
- Washington – 1
- Michigan – 1

Metal and Nonmetal Fatals in 2016

- Limestone – 4
- Sand & Gravel – 4
- Sand – 2
- Cement – 2
- Copper Ore – 1
- Gold Ore – 1
- Titanium – 1
- Granite – 1
- Magnesite – 1

Metal and Nonmetal Fatals in 2016

- Truck Operator – 4
- Hydraulic Excavator Operator – 2
- Maintenance – 2
- Leadman/Contractor – 1
- Drill Operator – 1
- Mine Superintendent – 1
- Dozer Operator – 1
- Hydromet EW Operator – 1
- Contractor – 1
- Leadman – 1
- Front-end Loader Operator – 1
- Heavy Equipment Operator – 1

On February 26, 2016, a contract truck driver delivering multiple sections of polyurethane pipe was struck by a section of pipe during the unloading process. A forklift removed two sections of pipe from the passenger side of the truck, and then left the area with the two sections. While the forklift was away, a single, unsecured section of pipe rolled off on the driver's side of the truck and struck the victim. Each section of pipe was approximately 50' long and weighed approximately 1,750 pounds. Miners began first aid but the driver was unresponsive. He was transported to the local hospital and later died.

On March 8, 2016, a 54-year old miner with 5 years of mining experience was killed at a surface sand mine. The miner backed his haul truck over a dump site and he was found at the bottom of the embankment, 60 feet below the dump point. The victim was found unresponsive and partially submerged in water. CPR was attempted, but the victim was not able to be resuscitated.

On Tuesday, March 22, 2016, a leadman was struck and killed by flyrock during blasting operations. The victim was over 1,000 feet from the blast site and was waiting in his truck to prevent others from accessing the blast site.

On April 9, 2016, a 25-year old plant operator with 4 years of mining experience was fatally injured at a surface copper ore mine. He was found unresponsive, kneeling with his face against a stainless steel flange that was connected to a high-density polyethylene pipe. The medical examiner ruled the cause of death as probable electrocution.

On April 11, 2016, a 61-year old contract dozer operator with 18 years of mining experience was fatally injured at a surface titanium ore mine. The victim had been using a dozer to perform maintenance on the haul road into the pit. The victim either fell or stepped onto the left-side dozer track as the machine started moving backwards down a slope. He was found laying approximately 30 feet in front of the dozer's stopping point.

On May 10, 2016, a 46-year old maintenance man with 6 years of experience was fatally injured at a cement plant. The victim went to the top of the slurry tank to start the rake system. He fell 50 feet through a 3-foot by 4-foot opening in the walkway into the empty slurry tank below.

On June 3, 2016, a 24-year old haul truck operator, with 9 months of experience, and a 56-year old hydraulic excavator operator, with 6 years of experience, were killed at a sand and gravel operation. The two miners were working in a pit next to an abandoned roadway embankment, which partially bound an old pit. Waste clay and sand had been placed in the old pit for reclamation purposes. The embankment failed and the waste clay and sand engulfed both miners.

On June 27, 2016, a 61-year old Mine Superintendent, with 24 years of experience, was killed at a limestone quarry. The victim was building a ramp to the lower bench and was positioning his haul truck to dump a load of material near the edge of a highwall and rolled backwards over the 90 foot highwall.

On July 25, 2016, a 59 year old Excavator Operator, with 17 years of experience, was killed at a limestone quarry. Prior to the accident, the victim was loading shot rock into haul trucks. While waiting for the haul trucks to return, the victim was separating out over sized rocks when the cab of his excavator was struck by falling material from the highwall.

On August 9, 2016, a 33 year old Leadman Contractor, with 4 years of experience, was killed at a cement plant loadout. The victim was attempting to replace the lift cable pulleys on the barge loadout chute, when the anchor point for the temporary rigging separated from the loadout chute and it unexpectedly fell. The falling loadout chute caused the lift cables to tighten and the lift cables pinned the victim to the loadout chute causing fatal injuries.

On September 8, 2016, a 58-year old Haul Truck Operator with 23 years of experience was killed at a granite mine. The victim was operating a Caterpillar 773E haul truck and was returning to the pit to be loaded with shot rock. The truck veered from the right side of the haul road to the left and traveled over the berm at the top of the highwall. The truck landed upside down approximately 150 feet below. The victim was found outside the haul truck.

On September 21, 2016, a 52 year old contract Drill Operator contractor, with 27 years of experience, was killed at a limestone mine. The victim was performing maintenance on a truck-mounted rotary drill when a wrench he was using broken free piercing his abdomen. As the victim attempted to climb down an adjacent step ladder, he was observed falling to the ground and striking his head on a breakaway wrench which was laying on the ground. The victim was transported to a hospital and underwent surgery. He died later that day as a result of his injuries.

On September 15, 2016, a 60 year old Mechanic, with 28 years of experience, was fatally injured at a Magnesite facility. The victim was working on a front end loader. The miner had completed his assigned tasks and was dismounting the machine when he fell knocking him unconscious for several minutes. The victim was revived and transported to a local hospital however his condition worsened and was placed on life support systems before he passed away on September 26, 2016.

On December 19, 2016, a 62-year old Front-end Loader Operator with 6 years of mining experience was fatally injured at a sand and gravel surface mine. The victim was engulfed by sand when entered a hopper to remove a blockage.

On October 9, 2016, a 61 year old Equipment Operator, with 3 years of experience, was fatally injured at a sand surface mine. The victim was attempting to attach a screen plant to a front-end loader by hooking them together with a steel cable when the equipment moved pinning the victim. The victim was later discovered injured and leaning against the loader bucket. The victim died of his injuries the following day.

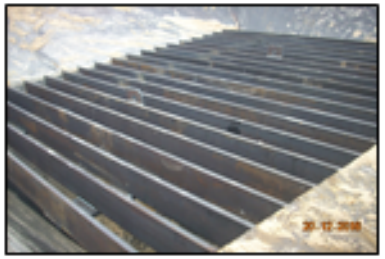
On December 21, 2016, a 39 year old contract Truck Driver, with 11 months of experience, was fatally injured on the surface of an underground gold mine. The victim was hauling gold ore in an over-the-road truck from the mine to the plant. While descending the roadway from the mine, the victim lost control of his truck. He traveled up an embankment and over an approximate 20 foot drop, landing back in the roadway. The victim was transported to the hospital and died of his injuries several days later.

Best Practices

- Use either two hands and one foot, or one hand and two feet when mounting and dismounting equipment.
- Do not place yourself in a position that will expose you to hazards while performing a task.
- Always wear a seat belt when operating a haul truck or mobile equipment.
- Consult and follow the manufacturer's recommended safe work procedures for the maintenance task.
- Look, Listen and Evaluate your highwall and pit conditions daily, especially after each rain, freeze, or thaw.
- Utilize ground control methods, such as berms and dumping short to maintain distance from a drop off.
- Make sure that embankments containing ponds of water, tailings, processing waste, or other fluids are designed and constructed to be stable, and that mining operations are kept a safe distance away.
- Protect openings near travelways by installing railings, barriers, or covers.
- Set the parking brake and lower the bulldozer blade to the ground before dismounting equipment.
- Thoroughly examine the work area before beginning the job.
- Establish and discuss safe work procedures before beginning work.

MSHA Hazard Alert

MSHA HAZARD ALERT
THINK QUICKSAND



A front end loader operator was loading sand into the feed hopper. He dismounted from the cab to retrievetwo 55-gallon drum lids from the hopper, when he fell into the hopper and became engulfed by the sand.

Mine operators should equip feed hoppers with mechanical devices, grates/grizzlies or other effective means of handling material so that persons are not required to work where they are exposed to entrapment by sliding material. This short video, **Quicksand,** illustrates engulfment hazards.

quicksand.wvx

MSHA standards 30 CFR §§56/57.16002(b) address bins, hoppers, silos, tanks and surge piles. They state, "**Where persons are required to move around or over any facility listed in this standard, suitable walkways or passageways shall be provided.**" 30 CFR §§ 56/57.16002(c) require a safety belt or harness equipped with a lifeline suitably fastened.

Mine operators must always comply with the following additional standards:

- 30 CFR §§56/57.9301 - Dump site restraints;
- 30 CFR §§56/57.9304 - Unstable ground;
- 30 CFR §§56/57.11001 - Safe access; and
- 30 CFR §§56/57.15005 - Safety belts and lines.

BEST PRACTICES

- Signs that warn, "CONFINED SPACE, ENGULFMENT HAZARD", should be posted at all access points to hoppers, bins, silos, tanks and surge piles.
- Mobile or stationary platforms from which miners may work should be made available at locations where there is risk of being engulfed by sliding material.
- Assign a safety harness and lanyard to each individual miner who may work at an elevated height, or who may work on or near locations where an engulfment hazard exists.
- Construct stable, durable and secure anchor points to which miners can attach a fall protection lanyard at all locations where an engulfment hazard exists, and inspect these anchor points frequently. Post signage, "FALL PROTECTION IS REQUIRED HERE".

Have a Safe 2017

U.S. Department of Labor MSHA Mine Safety & Health Administration

72 Metal and Nonmetal Fatal Accidents (10/13/13 – 12/31/16)

- 12 Underground – 60 Surface
- 20 Contractors – 52 Mine Employees
- Classifications
  - 16 Powered Haulage
  - 14 Machinery
  - 11 Falling/Sliding Material
  - 11 Fall of Person
  - 4 Explosives
  - 3 Fall of Rib
  - 3 Electrical
  - 3 Other (Drowning & asthma exacerbate)
  - 2 Hoisting
  - 2 Inundation
  - 1 Fall of Roof
  - 1 Striking or Bumping
  - 1 Explosion of Gas

Fatal Accidents by Commodity

Construction Sand and Gravel	18
Crushed, Broken Limestone	9
Cement	7
Gold Ore	7
Crushed, Broken Granite	4
Sand, Industrial	4
Silver Ore	3
Gypsum	2
Lime	2
Salt	1
Phosphate Rock	1
Lead-Zinc Ore	1
Magnesite	1
Titanium Ore	1
Ground Silica	1
Copper Ore NEC	1
Common Clays NEC	1
Kaolin and Ball Clay	1
Dimension Sandstone	1
Alumina	1
Crushed, Broken Sandstone	1
Iron Ore	1
Fire Clay	1

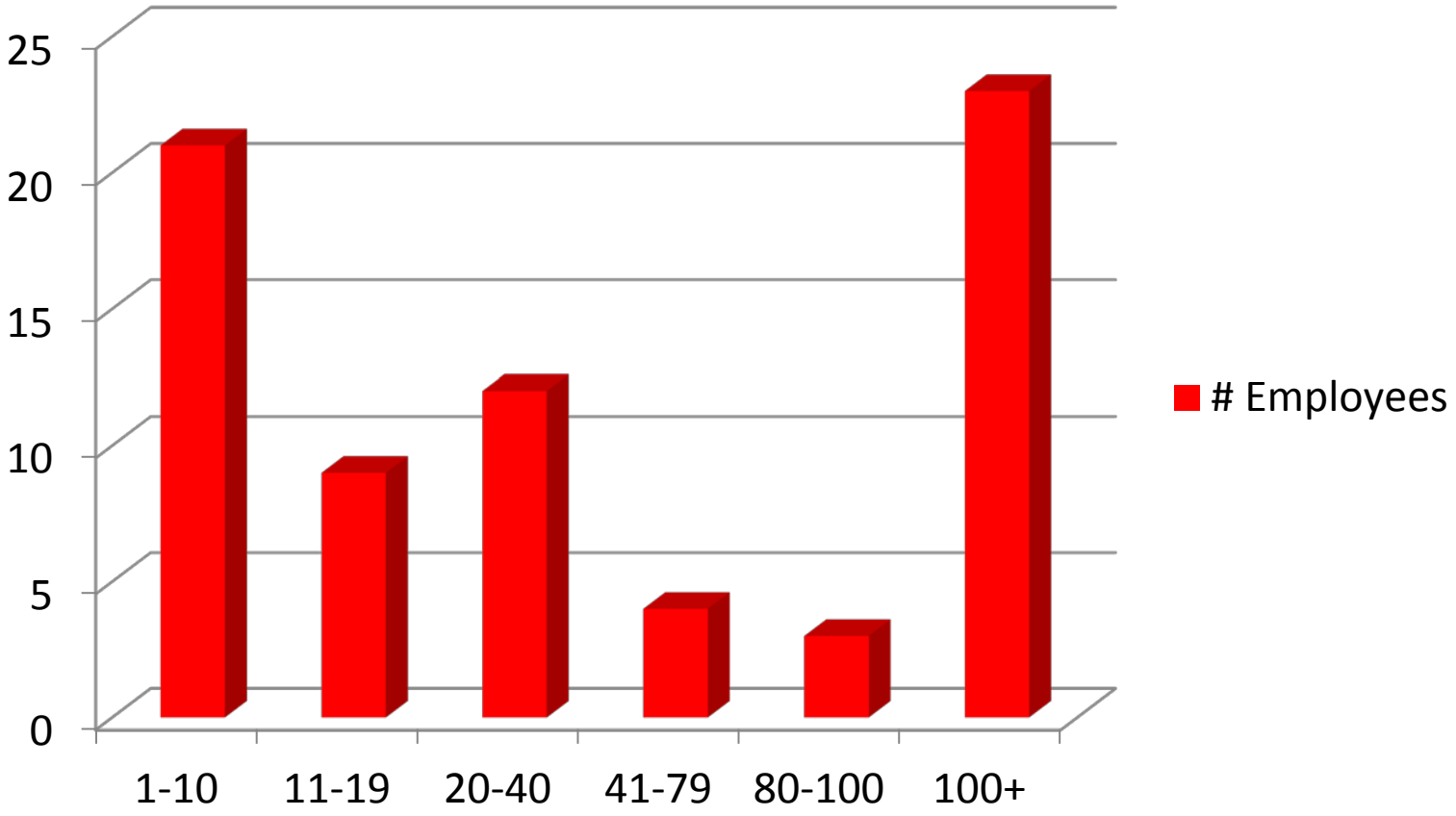
States with 3 or greater fatalities

- Nevada 7
- Texas 7
- Kentucky 4
- Missouri 4
- Virginia 4
- Florida 3
- Georgia 3
- Pennsylvania 3
- Utah 3
- Iowa 3

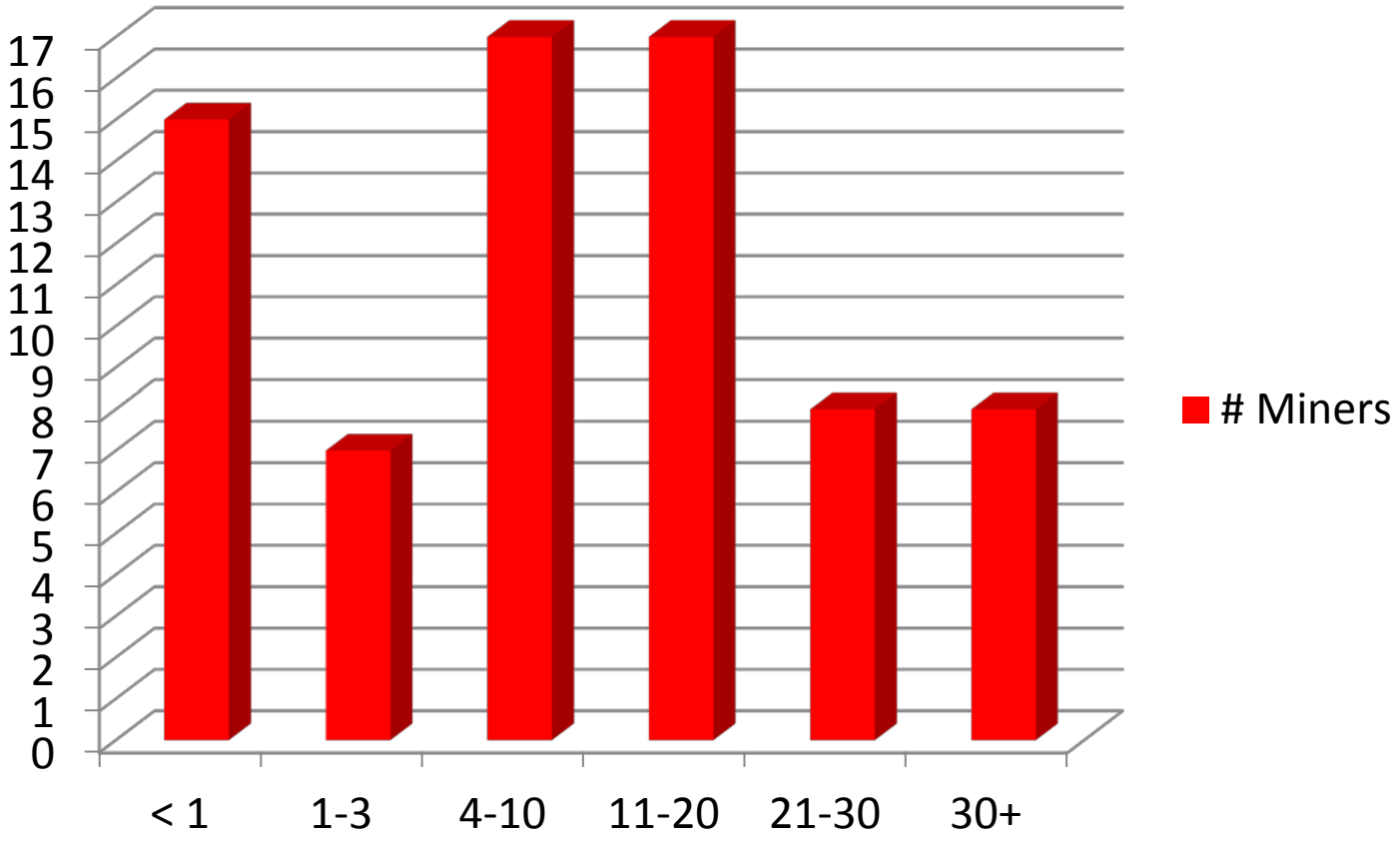
Fatal Accidents by Occupation

Haul/Off road/Coal/Ore/Pit/Quarry/Rock/Rubber tire truck driver, Transportation truck driver	16
Maintenance man, Mechanic, Repair/Serviceman, Boilermaker, Fueler, Tire tech, Field service tech	8
Laborer, Blacksmith, Bull gang, Parts runner, Roustabout, Pick-up man, Pitman	8
Bulldozer operator, Universal operator, Heavy equipment operator, Operating engineer	5
Warehouseman, Bagger, Palletizer/Stacker, Store keeper, Packager, Fabricator, Cleaning plant operator	4
Superintendent	4
Outside foreman, Leadman	3
Mine manager, Mine foreman, Mine owner	2
Shaftcrew, Shaft repair, Skip tender, Station tender	2
Laborer, Bull gang, Faceman, Parts runner, Roustabout, Roof trimmer/scaler	2
Steel worker, Iron metal worker, Iron worker	1
Stoper miner	1
Clerk, Timekeeper, Office worker, Director of sales	1
Groundman, Yardman	1
Miner, Prospector, NEC	1
Beltman, Conveyor man, Conveyor belt worker, Mobile bridge carrierman, Feeder operator, Conveyor rider	1
Rotary bucket excavator operator	1
Backhoe operator, Trackhoe operator	1
Belt foreman, Maintenance foreman, Maintenance supervisor	1
Utility man, Errand boy, Service truck operator	1
Laborer, Bull gang, Parts runner, Roustabout, Roof trimmer/scaler	1
Barge/Boat/Dredge/ Towbarge / Towboat/Leach operator, Riverman, Deck hand	1
Assistant mine foreman, Assistant mine manager	1
Safety director	1
Ledgeman/hand, Quarry man	1
Scoop tram operator, Load/Haul/Dump operator	1
Rock driller	1
Electrician, Lineman	1

Fatal Accidents by Mine Size



Fatal Accidents by Total Experience



Fatal Accidents by Experience at Activity