

2018 Fatal Comparison Chart (based on preliminary report data, fatalgrams, & final reports) Updated: 8/9/2018

MNM Total	7	Fatal #'s	Coal Total	5	Fatal #'s	Total
Underground	0		UG	4	1, 3, 4, 5	4
Surface & Sur of UG	7	1, 2, 3, 4, 5, 6, 7	Surface & Sur of UG	1	2	8
Other			Other			
Contractor	0		Contractor	0		0
Powered Haulage	4	1, 3, 5, 7	Powered Haulage	3	3, 4, 5	7
Non-Powered Haulage	1	6	Non-Powered Haulage	0		1
Machinery	1	2	Machinery	0		1
Roof, Rib, Highwall Fall	0		Roof, Rib, Highwall Fall	1	1	1
Electrical	0		Electrical	1	2	1
Slip & Fall of Persons			Slip & Fall of Person			
Fall & Sliding Materials			Fall & Sliding Materials			
Ignition/Exploding Gas	1	4	Ignition/Explosion			1
Hoisting			Hoisting			
Inundation			Inundation			
Exploding Vessel			Exploding Vessel			
Maintenance/Repair Involved	1	2	Maintenance/Repair Involved	3	1, 2, 4	4
Examiner, Supervisor, Owner	1	7	Examiner, Supervisor, Owner	0		1
Age 0-19			Age 0-19			
Age 20-29	1	4	Age 20-29	1	4	2
Age 30-39	1	1	Age 30-39	2	2, 3	3
Age 40-49	1	6	Age 40-49	1	5	2
Age 50-59	1	2	Age 50-59	1	1	2
Age 60+	3	3, 5, 7	Age 60+	0		3
Experience			Experience			
Less than 1 year	2	4, 6	Less than 1 year	0		2
1-9 years	2	1, 5	1-9 years	1	4	3
10-19 years	1	2	10-19	3	1, 3, 5	4
20+	2	3, 7	20+	1	2	3
Mine Site Experience			Mine Site Experience			
Less than 1 year	3	1, 4, 6	Less than 1 year	2	2, 5	5
1-9 years	2	3, 5	1-9 years	3	1, 3, 4	5
10-19	1	2	10-19	0		1
20+	1	7	20+	0		1
Job/Task Experience		#3&6 info not reported.	Job/Task Experience			
0-7 days	0		0-7 days	0		0
Less than 1 year	2	1, 4	Less than 1 year	1	2	3
1-9 years	2	2, 5	1-9 years	3	1, 3, 4	5
10-19	0		10-19	1	5	1
20+	1	7	20+	0		1
Shift Time (occurred)			Shift Time			
1 st Shift (7am-3pm)	5	2, 3, 5, 6, 7	1 st Shift (7am-3pm)	1	3	6
2 nd Shift (3pm-11pm)	2	1, 4	2 nd Shift (3pm-11pm)	1	2	3
3 rd Shift (11pm-7am)			3 rd Shift (11pm-7am)	3	1, 4, 5	3
Day of the Week:			Day of the Week:			
Sunday			Sunday			
Monday	0		Monday	1	5	1
Tuesday	3	2, 4, 7	Tuesday	1	1	4
Wednesday	1	5	Wednesday	2	2, 4	3
Thursday	2	1, 3	Thursday	0		2
Friday	0		Friday	1	3	1
Saturday	1	6	Saturday	0		1

Focus on your safety goal with purpose!

2018 - Month	MNM	Coal	Totals	Difference	Totals	2017 - Month	MNM	Coal
January	1	0	1	-1	2	January	1	1
February	0	2	2	-1	3	February	0	3
March	1	2	3	0	3	March	2	1
April	1	0	1	+1	0	April	0	0
May	1	0	1	-1	2	May	0	2
June	2	1	3	0	3	June	1	2
July	1	0	1	-3	4	July	3	1
August					2	August	0	2
September					3	September	2	1
October					4	October	3	1
November					0	November	0	0
December					2	December	1	1
2018 Total:	7	5	12	-5	28	2017 Total:	13	15

Product	Fatal #'s For 2018	2018 Total product	2017 Total product	2016 Total product
Alumina			2	0
Cement			2	2
Clay				0
Coal	1-5	5	15	8
Copper			1	0
Diatomaceous Earth			1	0
Dimension Stone				0
Gold Ore			2	1
Granite			1	1
Gypsum				0
Iron Ore				0
Kaolin				0
Lead Ore				0
Lime	4	1		0
Limestone			2	4
Magnesite				1
Phosphate				1
Salt				0
Sand & Gravel	1, 2, 3, 5, 6, 7	6	3	6
Sandstone				0
Shale				0
Silver Ore				0
Stone			1	0
Titanium				1

State (2018)	Total	MNM	Coal	Fatal #
Alabama	1	1	0	M4
Indiana	1	0	1	C3
Iowa	1	1	0	M1
Kentucky	1	0	1	C4
North Dakota	1	1	0	M7
Texas	3	3	0	M3, M5, M6
Utah	1	1	0	M2
West Virginia	3	0	3	C1, C2, C5

Part 48 = 5	Part 46 = 7
All Coal = 5 MNM: UG = 0 SUR = 0	Non Metal SUR# 1, 2, 3, 4, 5, 6, 7

Keep your
Thoughts and Behaviors
Focused on your Safety Goal!

Month	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009	2008	TOTAL	AVG
January	1	2	3	5	1	3	2	1	4	3	6	31	2.82
February	2	3	1	1	5	5	3	3	0	4	5	32	2.91
March	3	3	3	5	2	3	5	2	1	2	2	31	2.82
April	1	0	2	0	6	3	2	2	33	4	4	57	5.18
May	1	2	2	4	6	1	5	1	6	3	7	38	3.45
June	3	3	4	3	6	3	2	4	6	5	4	43	3.91
July	1	4	2	2	2	4	4	2	3	2	3	29	2.64
August		2	1	4	3	3	2	3	4	1	4	27	2.7
September		3	3	2	3	3	5	4	1	4	3	31	3.1
October		4	1	0	3	5	1	6	6	3	11	40	4
November		0	0	0	6	5	4	4	3	2	1	25	2.5
December		2	3	3	3	4	1	4	5	2	3	30	3
Total:	11	28	25	29	46	42	36	36	72	35	53	414	3.25/mo
									UBB				

Average over past 10 years (2008-2017) = 41 per year

Average over past 5 years (2013-2017) = 34 per year

Focus on your safety goal with purpose!

2018 - MNM Fatal

Fatal #1 – Powered Haulage

Iowa

On Thursday, January 25, 2018, a 38-year-old equipment operator with 4 years mining experience was fatally injured while hauling material from the pit to a stockpile. The articulated haul truck travelled through a berm and into an ice covered pond, submerging the truck's cab. The victim was not wearing the seat belt.

Regulations Cited: None.

Root Causes: None listed in the final report. The investigators were unable to determine why the driver was unable to maintain control of the haul truck.

Best Practices:

- Do not operate heavy equipment when fatigued. The effects of fatigue include tiredness, reduced energy, and physical or mental exhaustion. These conditions become progressively worse as fatigue increases.
- Maintain control and stay alert when operating mobile equipment. Monitor persons routinely to determine safe work procedures are followed.
- Conduct adequate pre-operational checks and correct any defects affecting safety in a timely manner prior to operating mobile equipment. Maintain equipment braking and steering systems in good repair and adjustment.
- Operate mobile equipment at speeds consistent with the conditions of roadways, tracks, grades, clearance, visibility, curves, and traffic.
- Ensure that all exits on mobile equipment cabs, including alternate and emergency exits, are maintained and operable.
- Use seat belts when operating mobile equipment.

<i>Use the following links to view additional information:</i>		
Preliminary Report	Fatal Alert	Final Report

2018 - MNM Fatal

Fatal #2 – Machinery - SUR

Utah

On Tuesday March 14, 2018, a 56-year-old maintenance worker with 15 years mining experience sustained a fatal injury to the head while installing discharge chutes on a vibrating screen deck. While the chute assembly was being lowered into place, it became hung up. While the victim and another miner were attempting to free it with 30-inch pry bars, the discharge chute assembly shifted, crushing the victim's head.

Regulations Cited: 56.16009

Root Cause:

- Management did not have policies, procedures and controls for miners removing and installing discharge chute assemblies, on vibrating screen decks. Once policies were developed all were trained on the new policies with emphasis on working under suspended loads.

Best Practices:

- Stay clear of a suspended load.
- Establish safe work procedures and identify and remove hazards before beginning repair or maintenance tasks. Follow the equipment manufacturer's procedures for the work being performed to ensure that all hazards have been addressed.
- Use welded lifting eyes that are specifically intended for lifting and adequately rated for the loads being lifted.
- Carefully inspect all rigging prior to each use.
- Train persons to recognize and control all hazards associated with performing repair or maintenance tasks.
- Position yourself only in areas where you will not be exposed to hazards resulting from a sudden release of energy.
- Attach taglines to loads that may require steadying or guidance while suspended. Stand clear of items of massive weights having the potential of becoming off-balanced while being loaded or unloaded.
- Do not place yourself in a position that will expose you to hazards while performing repair or maintenance tasks.

Use the following links to view additional information:

Preliminary Report	Fatal Alert	Final Report
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2018 - MNM Fatal

Fatal #3 – Powered Haulage - SUR

Texas

On Thursday, April 12, 2018, a 60-year-old customer truck driver died when he fell from, and was run over by, his truck while scanning into the operator's check-in system. The victim was found underneath the belly dump of the semi-trailer, and the truck was still in gear.

Best Practices:

- Implement check-in system technology that can be scanned remotely from inside the vehicle such as a RFID tag or indicator.
- Commercial and customer truck drivers should remain in their trucks while on mine property, unless a safe area for tarping and checking their loads has been designated.
- Operators should place their equipment in neutral and set the parking brakes before exiting the operator compartment.
- Rules establishing safe operating procedures should be posted.
- Ensure workers who operate heavy equipment are adequately informed, instructed, trained, and supervised.

Use the following links to view additional information:

Preliminary Report	Fatal Alert	Final Report
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2018 - MNM Fatal

Fatal #4 – Ignition/Explosion of Gas or Dust - SUR Alabama

On Tuesday, May 9, 2018, a 27-year-old kiln technician with 32 weeks experience was seriously burned while attempting to relight a rotary kiln. During the relighting, the kiln experienced a blowback and engulfed the victim in flames. The victim died on May 28 due to his injuries.

Best Practices:

- Remove flammable and combustible materials from areas prior to cutting, welding, or other hot work. A qualified person should monitor nearby areas where heavy vapors could migrate and accumulate.
- Ventilation systems should be properly designed, installed, and maintained.
- Install fixed monitoring systems with alarms in areas with potential for flammable and other hazardous atmospheres and calibrate and maintain them regularly. The systems should have redundant controls and system readouts located inside and outside of hazardous areas.
- Process equipment and systems should be properly designed and completely installed prior to use.
- Inerting systems should be properly designed, installed, adequately filled, and maintained.
- Do not work in areas where concentrations of vapors can be immediately fatal (Lower Explosive Limit), Immediately Dangerous to Life or Health, or where they exceed permissible exposure limits (PELs) to produce adverse health effects.
- Minimize or eliminate hazards by using appropriate engineering and administrative controls.

Use the following links to view additional information:

Preliminary Report	Fatal Alert	Final Report
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2018 - MNM Fatal

Fatal #5 – Powered Haulage - SUR

Texas

On Wednesday, June 13, 2018, a 65-year-old truck driver with 4 years experience died after his truck traveled over a berm and into an impoundment of water. Divers recovered the victim in 20 feet of water.

Best Practices:

- Maintain control and stay alert when operating mobile equipment.
- Conduct adequate pre-operational checks and correct any defects affecting safety in a timely manner prior to operating mobile equipment. Maintain equipment braking and steering systems in good repair and adjustment.
- Operate mobile equipment at speeds consistent with the conditions of roadways, tracks, grades, clearance, visibility, curves, and traffic.
- Ensure that berms are adequate for the vehicles present on site, including but not limited to height, material, and built on firm ground.
- Consider storing personal flotation devices in equipment that is being operated near water.
- Ensure that all exits from cabs on mobile equipment, including alternate and emergency exits, are maintained and operable.
- Use seat belts when operating mobile equipment.

Use the following links to view additional information:

Preliminary Report	Fatal Alert	Final Report
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2018 - MNM Fatal

Fatal #6 – Non-Powered Haulage - SUR

Texas

On Saturday, June 23, 2018, a 46-year-old electrician with 10 weeks of experience was fatally injured while trying to stop runaway railcars. The miner ran to the front of a set of moving railcars and jumped on in order to set the hand brake. The miner then attempted to jump clear and was fatally injured when he was run over by the moving railcars.

Best Practices:

- Apply a mechanical hand brake to ensure a railcar does not move when it is stopped for loading, unloading, or storage. Use wheel chocks or derail devices for added protection against accidental movement.
- Never attempt to mount, crossover, cross under, or dismount a railcar while it is moving.
- Train personnel in the safe procedures of working with railcars. Establish safe work procedures and ensure all personnel involved communicate clearly with each other.

Use the following links to view additional information:

Preliminary Report	Fatal Alert	Final Report
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Accident Classification information:

NON-POWERED HAULAGE - Accidents related to motion of non-powered haulage equipment. Included are accidents involving wheelbarrows, manually pushed mine cars and trucks, etc.

Fatal #7 – Powered Haulage – SUR

North Dakota

Preliminary: On July 31, 2018, a 62-year-old foreman with over 40 years mining experience died while placing a 20-foot long steel tube onto the screen feed conveyor. The victim was crushed between a front-end loader bucket and the screen feed conveyor structure.

MSHA investigates all deaths on mine property; however, some deaths are unrelated to mining activity and are not counted in the statistics MSHA uses to assess the safety performance of the mining industry. These deaths are termed "non-chargeable" and include homicides, suicides, deaths due to natural causes, and deaths involving trespassers.

MSHA uses a formal Fatality Review Committee to determine whether a questionable death is chargeable. *One (1) MNM mining accidents are pending chargeability determination.*

2018 - Coal Fatal

Fatal #1 – Fall of Rib

West Virginia

On Tuesday, February 6, 2018 (3:45 am), a 52-year-old electrician with over 13 years experience was servicing a continuous-mining machine when a large portion of the rib fell and struck him.

Cited Regulation: 75.202(a)

Root Cause:

- The rib support system used at the mine was not adequate for the geologic conditions at the location of the accident. *Corrective Action:* The mine operator revised the roof control plan to require the installation of rib bolts in all entries on development.

Best Practices:

- Be aware of potential hazards when working or traveling near mine ribs, especially when geologic conditions, or an increase in mining height, could cause roof or rib hazards. Take additional safety precautions while working in these conditions.
- Correct all hazardous conditions before allowing miners to work and travel in these areas. Adequately support or scale any loose roof or rib material from a safe location. Use a bar of suitable length and design when scaling.
- Train all miners to conduct thorough examinations of the roof, face, and ribs in their work areas, including more frequent examinations when conditions change.
- Install rib bolts with adequate surface area coverage, during the mining cycle, and in a consistent pattern for the best protection against rib falls.
- Know and follow the approved roof control plan. The roof control plan only contains minimum safety requirements. Additional support may be required when roof or rib fractures, or other abnormalities are detected.

Use the following links to view additional information:

Preliminary Report	Fatal Alert	Final Report
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2018 - Coal Fatal

Fatal #2 – Electrical

West Virginia

On February 21, 2018 (5:15 pm), a Highwall Mining Machine Operator with 21 years mining experience was electrocuted when he came in contact with an energized connection of a 7,200 VAC electrical circuit. The victim was troubleshooting the electrical system that supplies electrical power to the mining machine. He entered the transformer station on the mining machine and contacted an energized connection on the visual disconnect.

Cited Regulation: 77.501 and 77.103(g)

Root Cause:

- The mine operator did not perform test and repair work on electrical equipment and circuitry in a safe manner. The mine operator did not use proper lock out/tag out procedures.

Best Practices:

- Only qualified personnel should perform electrical work.
- Lock-Out and Tag-Out the electrical circuit yourself and NEVER rely on others to do this for you.
- Follow these steps BEFORE entering an electrical enclosure or performing electrical work: Locate the circuit breaker or load break switch away from the enclosure and open it to de-energize the incoming power cable(s) or conductors.
 - Locate the visual disconnect away from the enclosure and open it to provide visual evidence that the incoming power cable(s) or conductors have been de-energized.
 - Lock-out and tag-out the visual disconnect.
 - Ground the de-energized conductors.
- Wear properly rated and well maintained electrical gloves when troubleshooting or testing energized circuits. After the electrical problem has been found, follow the proper steps before performing electrical work.
- Use properly rated electrical meters and non-contact voltage testers to ensure electrical circuits have been de-energized.
- Install warning labels on line side terminals of circuit breakers and switches stating that the terminal lugs remain energized when the circuit breaker or switch is open.
- Electrical work must be performed by a qualified electrician or someone trained to do electrical work under the direct supervision of a qualified electrician.

Use the following links to view additional information:

Preliminary Report	Fatal Alert	Final Report
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2018 - Coal Fatal

Fatal #3 – Powered Haulage

Indiana

On Friday, March 16, 2018. A 34-year-old mechanic with 16 years mining experience was fatally injured while operating diesel personnel carrier on the haulage road. The vehicle hit the right rib and rolled onto its left side. The victim became trapped between the canopy and the mine floor.

Cited Regulation: 75.1916(b), 75.1403

Root Cause:

- The mine operator did not assure that equipment operators maintain full control of the equipment while it was in motion.
- The mine operator did not provide safety features to prevent persons in outby personnel carriers from being ejected.

Best Practices:

- Operate all mobile equipment at speeds that are consistent with the type of equipment, roadway conditions, grades, clearances, visibility, and other traffic.
- Consider installing mechanical devices that limit the top speeds of fast-moving equipment.
- Travel at safe speeds so that mobile equipment can be stopped within the limits of visibility.
- Maintain haulage roadways free from bottom irregularities, debris, and wet or muddy conditions that affect the control of the equipment.
- Maintain steering and braking components so that mobile equipment can be controlled at all times.
- Properly maintain brakes, lights, and warning devices on mobile equipment. Perform functional tests of the brakes and other safety devices during the pre-operational examination.
- Install safety devices, including seat belts, and ensure they are properly used and/or worn.
- Conduct task training for each type of personnel carrier or equipment being operated.

Use the following links to view additional information:

Preliminary Report	Fatal Alert	Final Report
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2018 - Coal Fatal

Fatal #4 – Powered Haulage

Kentucky

On Wednesday, March 28, 2018, a 29-year-old belt foreman with 8 years mining experience was fatally injured while he and a co-worker were in the process of splicing an underground conveyor belt when the conveyor belt inadvertently started. The victim became entangled with the belt clamp ratchet chain when the conveyor belt moved.

Cited Regulations: 75.1725(c) and 75.512

Root Causes:

- Repair and maintenance work was performed on a conveyor belt without properly locking and tagging-out to ensure the electrical power was off while the work was being performed.
- The operator performed an improper repair of the remote cable and belt switch wires, which had been damaged during the on-shift examination. The repair caused the belt to start. The mine examiner had not been trained to repair the electrical circuit

Best Practices:

- Before splicing conveyor belts, perform the following steps:
 - Open the circuit breaker that supplies power to the conveyor belt drive.
 - Open the visual disconnect for the cable that supplies power to the conveyor belt drive.
 - Lock-out and tag-out the visual disconnect yourself and **NEVER** rely on someone to do this for you.
 - Release the tension in the conveyor belt take-up/storage unit.
 - Block the conveyor belt against motion.
- Keep the key to the lock at all times while repairs and/or maintenance are performed.
- Ensure that you are the only person who removes the lock after repairs and/or maintenance are completed.
- Ensure that no miner is in harm's way before starting the conveyor belt(s).
- Provide a visible and/or audible system, with a start-up delay, to warn persons that the conveyor belt will begin moving.
- Establish, follow, and enforce policies and procedures for performing specific tasks on conveyor belts and ensure all miners are trained.

Use the following links to view additional information:

Preliminary Report	Fatal Alert	Final Report
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2018 - Coal Fatal

Fatal #5 – Powered Haulage - UG

West Virginia

On Monday, June 4, 2018, a 43-year-old shuttle car operator with 10 years mining experience received fatal injuries while exiting the mine in a diesel-powered personnel carrier. The personnel carrier travelled over a roof jack lying in the roadway. The roof jack propelled into the passenger compartment and struck the victim in the head.

Best Practices:

- Conduct thorough examinations of roadways and remove material that may pose a hazard to equipment operators, passengers, or other miners.
- Maintain roadways free of excessive water, mud, and other conditions which have an impact on an equipment operator's ability to control mobile equipment.
- Establish safe operating procedures for mobile equipment and a maintenance schedule for roadways.
- Secure loads being hauled to prevent them from falling off haulage vehicles.
- Ensure each item being hauled reaches the intended destination.
- If items are lost during transport, immediately search for them and warn other mobile equipment operators.

Use the following links to view additional information:		
Preliminary Report	Fatal Alert	Final Report

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MSHA uses a formal Fatality Review Committee to determine whether a questionable death is chargeable. **Four (4) coal mining accident is *pending* chargeability determination.**