

MINE HEALTH AND SAFETY ADMINISTRATION

MSHA POWERED HAULAGE SAFETY INITIATIVE

NIOSH AUTOMATION HEALTH AND SAFETY PARTNERSHIP MEETING

AUGUST 18, 2021

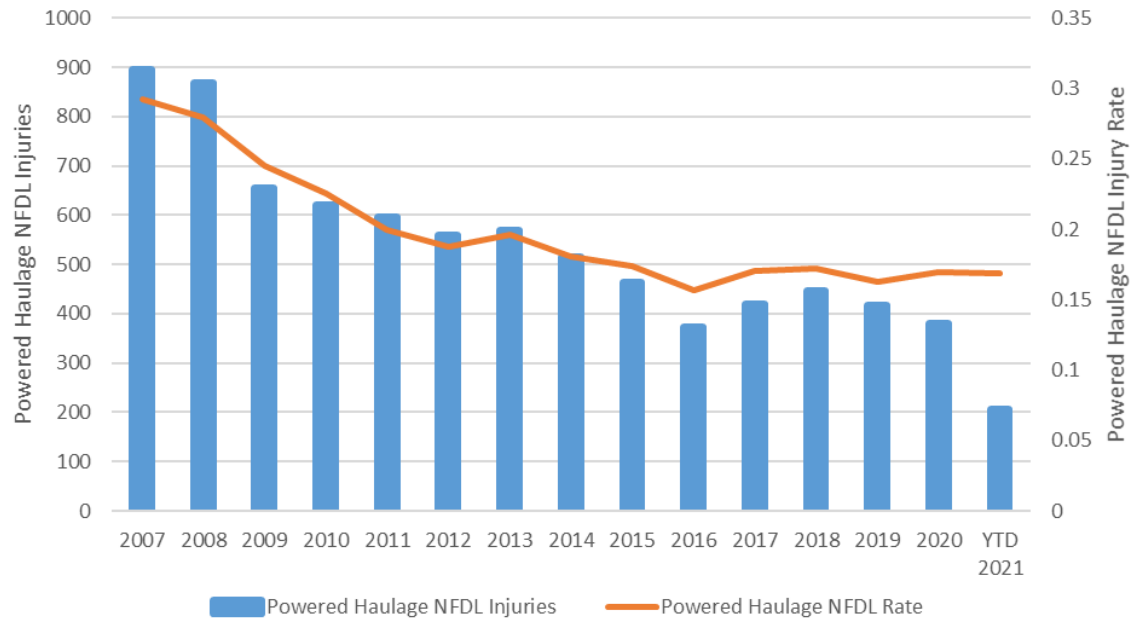


Accident Trends

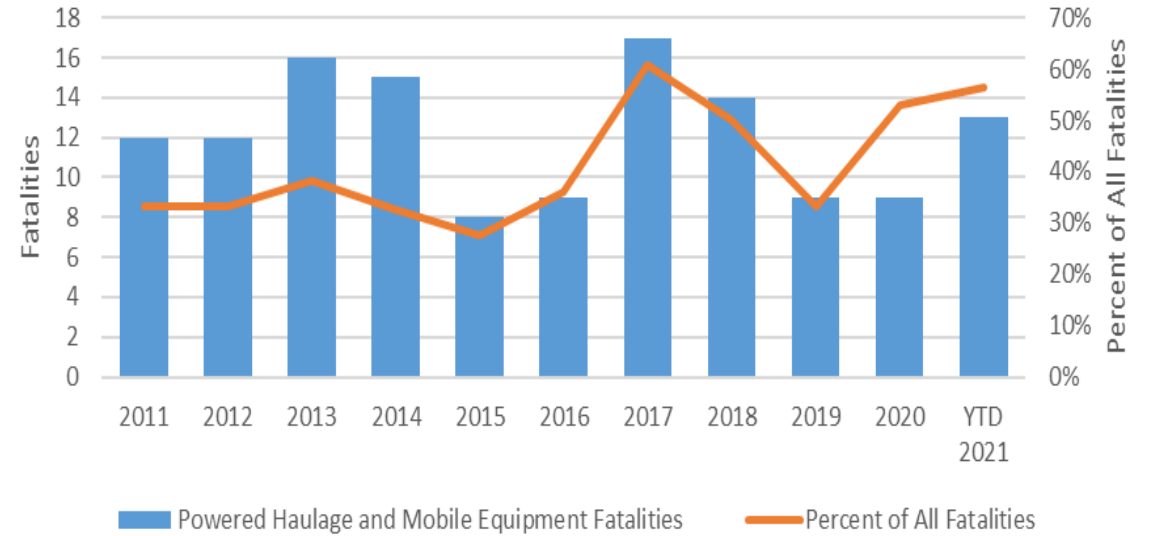
- 2021 year to date
 - 10 Powered Haulage accidents that resulted in 11 fatalities
 - Over 200 Powered Haulage injuries
 - Highest rate of Powered Haulage fatalities since 2006
- Powered Haulage includes: motors and rail cars, conveyors, belt feeders, longwall conveyors, bucket elevators, vertical manlifts, self-loading scrapers or pans, shuttle cars, haulage trucks, front-end loaders, load-haul-dumps, forklifts, and others.

Accident Trends

Powered Haulage NFDL Injuries and Rate

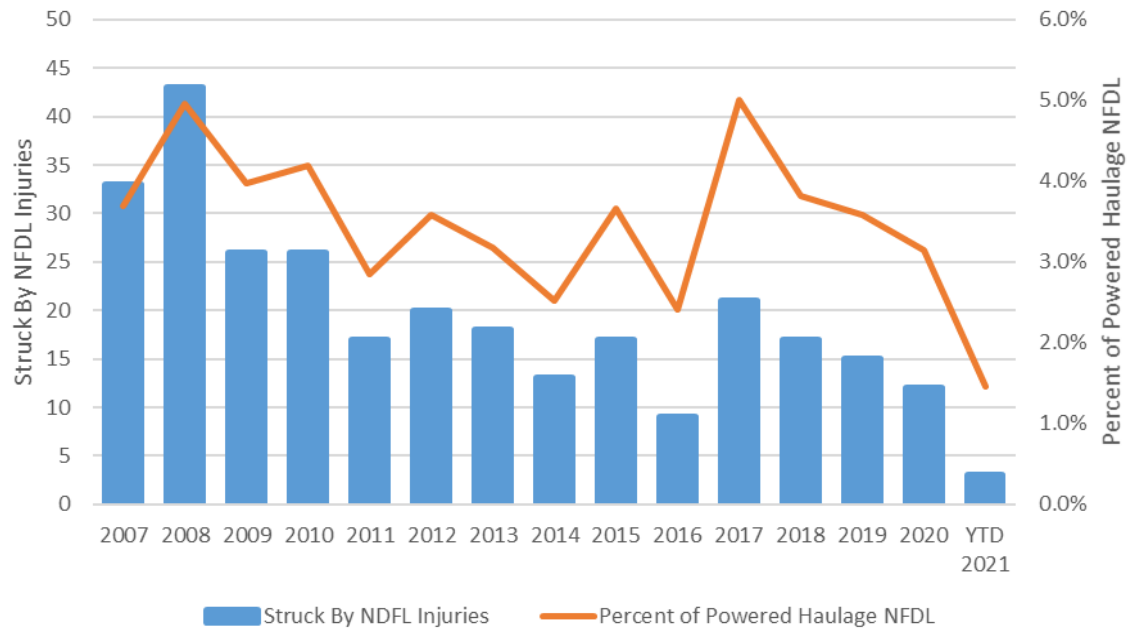


Powered Haulage and Mobile Equipment Fatalities

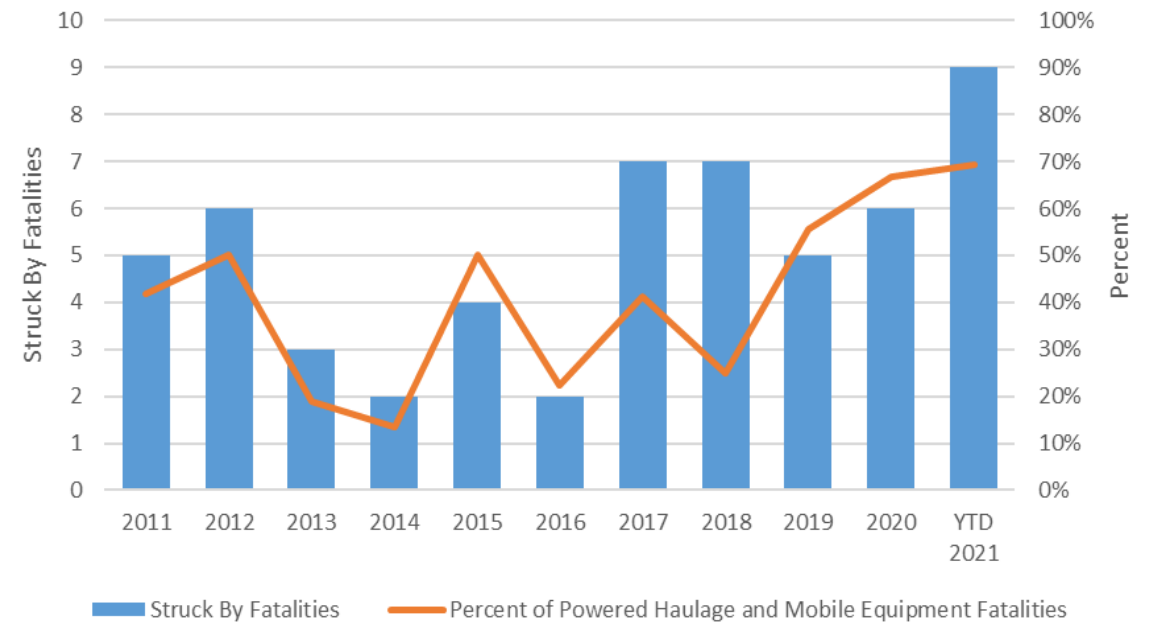


Accident Trends

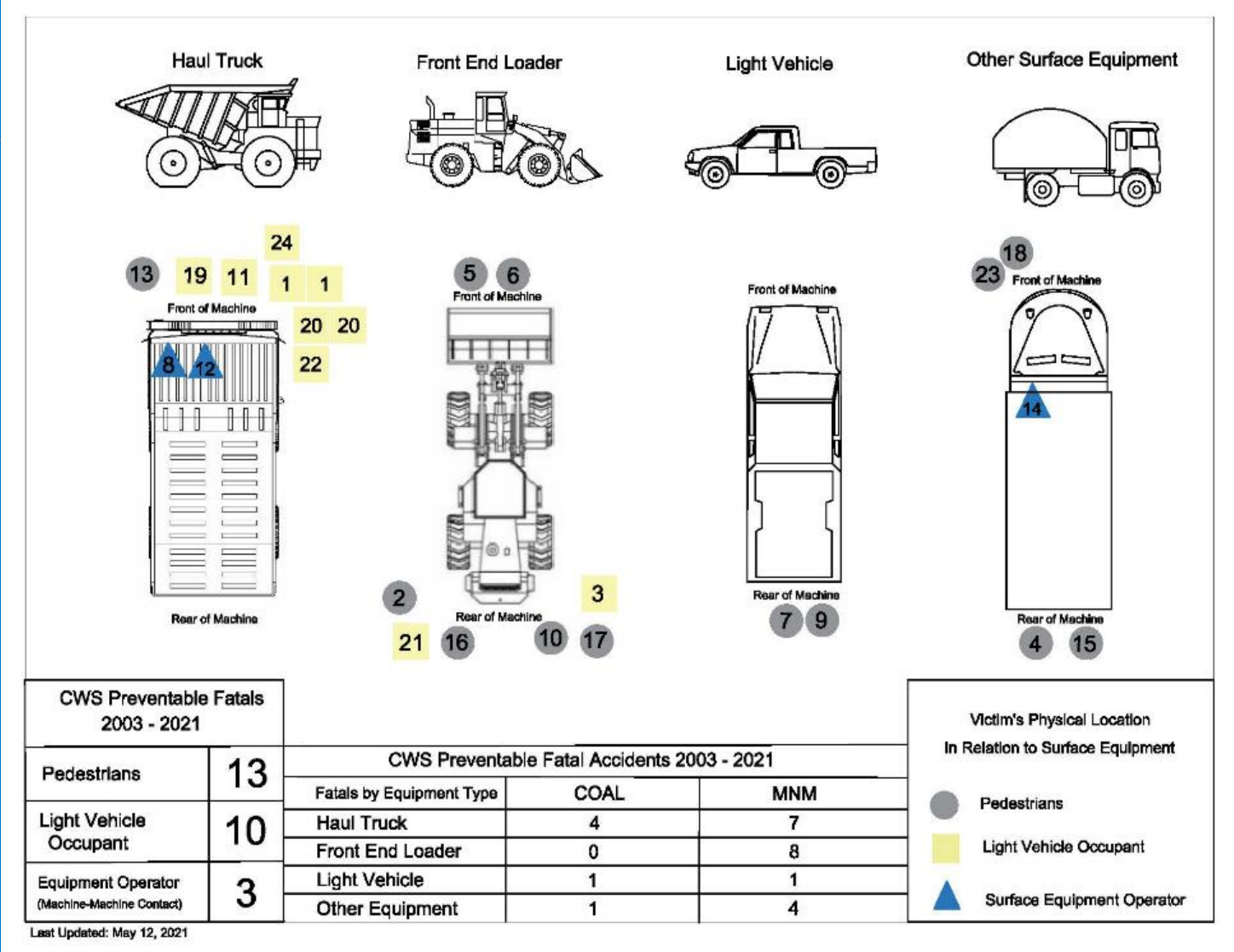
Struck By NFDL Injuries



Struck By Fatalities



Surface Equipment Accident Locations



MSHA Powered Haulage Safety Initiative

**STAND DOWN
FOR SAFETY**

POWERED HAULAGE



July 20, 2021

msha.gov/powerdhaulage

MSHA Powered Haulage Safety Initiative

Stand Down for Safety Day

- MSHA Enforcement visited 1,500 mine sites
 - MSHA District Managers
 - MSHA Assistant District Managers
 - Inspectors
 - Educational Field and Small Mines staffing
- Guidance to prevent Powered Haulage and rollover accidents
 - Best Practices
 - Videos
 - Training Resources
 - Stickers



MSHA Powered Haulage Safety Initiative



Safety Alert

Powered Haulage Accidents

Stop Powered Haulage Accidents: Stay Alert! Stay

- Fatalities and accidents involving mobile equipment: shuttle cars, scoop and loaders, haulage equipment, service and pickup trucks continue to be a disproportionate high rate.
- Mobile equipment accidents: collisions and/or struck by.
- Powered haulage accidents continue to cause nonfatal, disabling injuries.



Loose wheel design and poor stability at a nearby blind intersection were the root cause of a miner's death when his pickup was crushed by a haul truck.



A miner died when undergoing an intersection. One dust ventilation curtain without

Best Practices*

- Know where in the workplace others are and communicate radios, mirrors, cameras, headlights, strobe warning lights, horn flags. Stay clear of mobile equipment blind spots.
- Set mobile equipment parking brakes and chock the wheels unattended. Don't stand, walk or work directly downhill of a clear of moving vehicles.
- Establish safe traffic patterns and rules: post signage, ensure adherence to speed limits and approach intersections with caution.
- Use proximity detection/collision avoidance systems.
- Ensure that seat belts are maintained in good condition and ensure that conveyors are deenergized, locked, tagged and motion before removing guards or beginning work.

*Make sure miners and mine operators are trained in best practices.

Report accidents and hazardous conditions: 1-800-746-1553
[msha.gov](https://www.msha.gov) | askmsha@dol.gov | @MSHA_DOI



Materials Available on MSHA.gov



Safety Alert

Recent Vehicle Rollover Accidents

Miners continue to die in rollover accidents.

Fatalities occurred when vehicles flipped over backwards, rolled over, and tipped over on

- Deceased miners were operating haul trucks, excavators, bulldozers, front end loader service trucks while working or traveling near the edge of dump sites, elevated road embankments, ponds, and excavations.

Numerous other serious injury and close call accidents occurred involving haul trucks, excavators, motor graders and pickup trucks. Contributing factors included the non-use of seat belts; jumping from vehicles; brake failure; distracted driving; loss of vehicle control or working too close to unconsolidated roadways; inadequate berms; pushing through berms; failure to perform workplace examinations.



This haul truck was dumping at the edge of an over-sloped embankment. It was wearing a seat belt and suffered only minor injuries.



This haul truck encountered a soft surface, overturned and rolled down an embankment. The operator was wearing a seat belt and was

Best Practices*

- Examine and maintain the workplace: dump sites, roadways, ramps and berms. level, stable ground behind the dump berm or block, well back from the edge or with assistance.
- Maintain control of the vehicle: operate at safe speeds, especially on curves, and/or cornering; center the vehicle in the travel lane; avoid distractions.
- Establish traffic rules: post signage where necessary and ensure these rules are fully understood; windows and wipers.
- Maintain vehicles in good condition: brakes, wheels and tires; steering/operating lights; windshields, and wipers.
- Ensure that seat belts are maintained in good condition and worn at all times: the cab; never attempt to jump clear; consider the use of four-point seat belt system technology that provides early warning of tipping.

*Make sure miners and mine operators are trained in best practices.

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Conveyor Entanglement Hazards - Best Practices

www.msha.gov/powerdhaulage

Moving Conveyor Belts - Faster Than You and Unforgiving

- A typical conveyor belt travels about 300 feet per minute.
- This means the belt is moving at five feet per second.
- So, a moving conveyor belt will draw your tools, your loose-fitting clothing, your hand, or your arm five feet into a pinch point before you can react.
- In less than a second, a conveyor can grab you, pull you in, and not let go.

Equipment Guards Are There for a Purpose

- Keep guards securely in place when conveyors are operating or energized.
- Never reach around or through a guard.

Entanglement Incidents Are Life Altering and Frequently Fatal - Follow These Rules

- Never perform work on a moving conveyor belt. Don't let others do so.
- Never clean or otherwise contact idlers, head, tail, bend or take-up pulleys during conveyor operation.
- Understand that shoveling material onto a moving belt presents a risk.
 - Establish a safe shovel point:
 - Always shovel in the direction of belt travel;
 - Use shovels without a "D" grip (plain, smooth handle); and
 - Erect a barrier that prevents the shovel from reaching the edge of the belt, but allows material to pass over or through.
- Ensure that conveyor power is disconnected before performing maintenance or repairs.
- Follow proper Lock-Out, Tag-Out (LOTO) procedures. If you don't know what they are, ASK!
- Never cross under or over a conveyor unless at a designated and protected point.
- Do not touch, climb, walk or ride on a moving conveyor belt.
- Keep tools, clothing, body parts, and long hair away from moving conveyor belts.
- Know the location of emergency shut-off devices for conveyors and how to use them.
- Test emergency shut-off devices frequently.

Seat Belt Safety - Best Practices

www.msha.gov/powerdhaulage

Promote a Safety Culture

- Seat belts save lives.
- You expect your loved ones to wear their seat belts. They expect you to do the same.
- Be a buddy. Insist that coworkers also wear their seat belts.

Equipment Operators

- ALWAYS wear your seat belt.
- Wear your seat belt to the job, at the job, and from the job.

Rules to Live By

- Buckling up is the single most effective thing you can do to protect yourself in a collision, tip-over, or rollover.
- In the event of a collision, tip-over, or rollover your seat belt will keep you in the protected space of the machine cab or vehicle.
- Never jump from a moving vehicle. Remain in the seat with your seat belt secured.
- Inspect the seat belt and mounting hardware before operating the equipment.
- Replace any damaged or worn parts.
- You are responsible for buckling up. Make the right choice. ALWAYS wear your seat belt.

A seat belt saved this life!

After rolling over, the uninjured operator unfastened his seat belt and exited the front-end loader through the right side door window, which broke when the machine overturned.

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Powered Haulage Collision Prevention - Best Practices

www.msha.gov/powerdhaulage

I van was able to walk away; many aren't so lucky. Image courtesy of MSHA

Follow Site Traffic Plan

- Observe traffic patterns and stay on your side of the road.
- Give right of way whenever possible.
- Equipment away from large equipment.
- Stay clear of haul truck load and dump zones.
- Establish safety zones around large equipment. Park only in safe zones.
- Establish safety zones around haul roads.

Follow Site Communication Plan

- Always have the right of way.
- Approach large equipment, first make eye contact with the operator.

Spots

- Large equipment operators can see large equipment.
- Large equipment operators need to know when equipment or vehicles are near.
- Equipment operator is not certain of his/her location, or does not know for sure that the way is clear, or others and get an ALL CLEAR signal before proceeding.

Follow These Best Practices

- Use all equipment using whips, flashing lights, or other visibility devices.
- Distracted driving is not acceptable on highways or mine property.
- Never drive under the influence of drugs or alcohol.
- Use back-up alarms and horns operational.
- Slow down and pause before moving stopped equipment. Follow site protocol for number of forward or reverse.
- Use collision warning technologies and added safety features, such as, berms, sensors and radar.

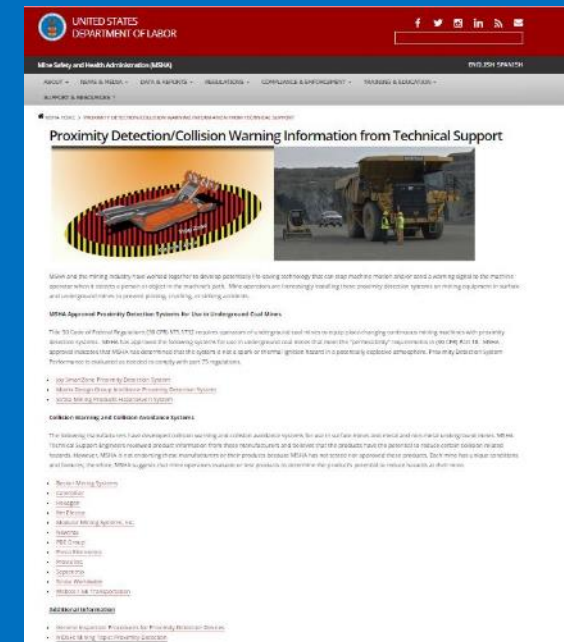
Image courtesy of ConvergentTraining.com

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MSHA Powered Haulage Safety Initiative

Proximity Detection/Collision Warning Information from Technical Support on MSHA.gov

- Regulation information
- Resource for mine operators to connect with technology providers
- Contact MSHA to request adding links to the page



<https://www.msha.gov/proximity-detectioncollision-warning-information-technical-support>

MSHA Powered Haulage Safety Initiative

Areas of Focus

- Powered Haulage safety at surface mines
- Powered Haulage safety at underground mines
- Conveyor safety at surface and underground mines

MSHA Powered Haulage Safety Initiative

- Powered Haulage safety at surface mines
 - Improving visibility
 - Communication
 - Traffic management
 - Seat belt use
 - Dumping practices



MSHA Powered Haulage Safety Initiative

- Powered Haulage safety at underground mines
 - Audible and visual warnings
 - Traffic management
 - Cameras and proximity detection
 - Communication and training



MSHA Powered Haulage Safety Initiative

- Conveyor safety at surface and underground mines
 - Equipment guards
 - Working around belt conveyors
 - Crossover safety
 - Conveyor design, installation, and housekeeping



MSHA Potential for Technology

- MSHA Technical Support analyzed fatal surface mining accidents that occurred from January 2003 to July 2021 and found 24 fatal accidents (26 fatalities) that collision warning systems could have prevented.
- MSHA Technical Support analyzed fatal underground mining accidents that occurred on the working section from January 1984 to July 2021 and found 91 fatal accidents that proximity detection systems could have prevented.

MSHA Potential for Technology

- Technology uses at underground and surface mines
- MSHA continues to fully support the increased usage of technology to prevent vehicle to vehicle and vehicle to pedestrian collisions.
 - Proximity detection systems
 - Collision avoidance systems
 - Collision warning systems

Summary

- MSHA Powered Haulage Safety Initiative
- MSHA Potential for Technology



Questions?



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

