MINE HEALTH AND SAFETY ADMINISTRATION

MSHA POWERED HAULAGE SAFETY INITIATIVE

NIOSH AUTOMATION HEALTH AND SAFETY PARTNERSHIP MEETING

AUGUST 18, 2021

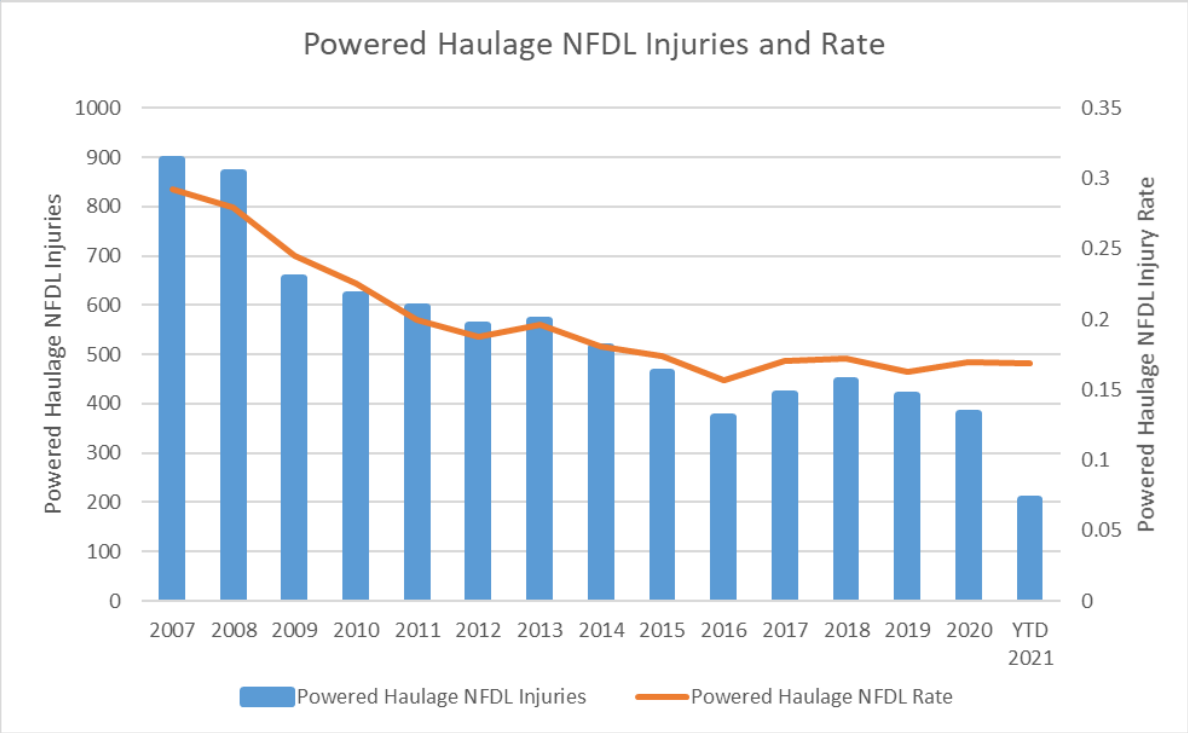
Accident Trends

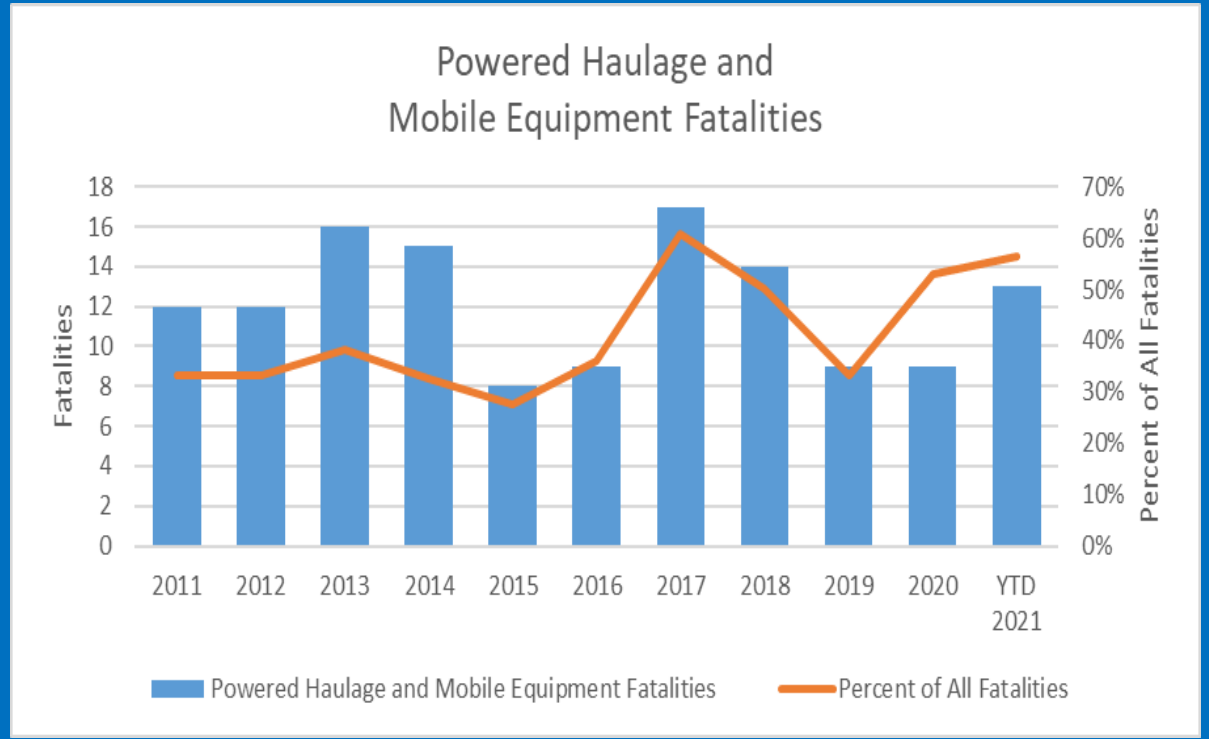
- 2021 year to date
  - 10 Powered Haulage accidents that resulted in 11 fatalities
  - Over 200 Powered Haulage injuries

    Highest rate of Powered Haulage fatalities since 2006

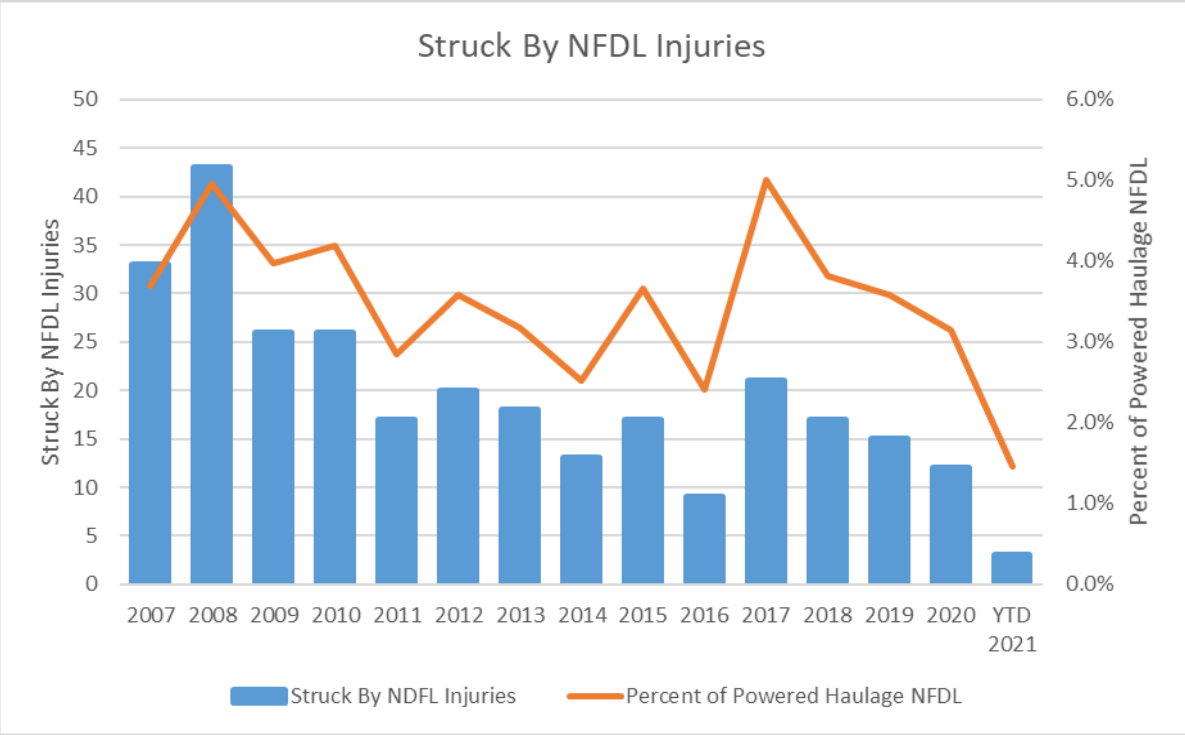
- Powered Haulage includes: motors and rail cars, conveyors, belt feeders, longwall conveyors, bucket elevators, vertical manlifts, self-loading scrapers or pans, shuttle cars, haulage trucks, front-end loaders, load-haul-dumps, forklifts, and others.

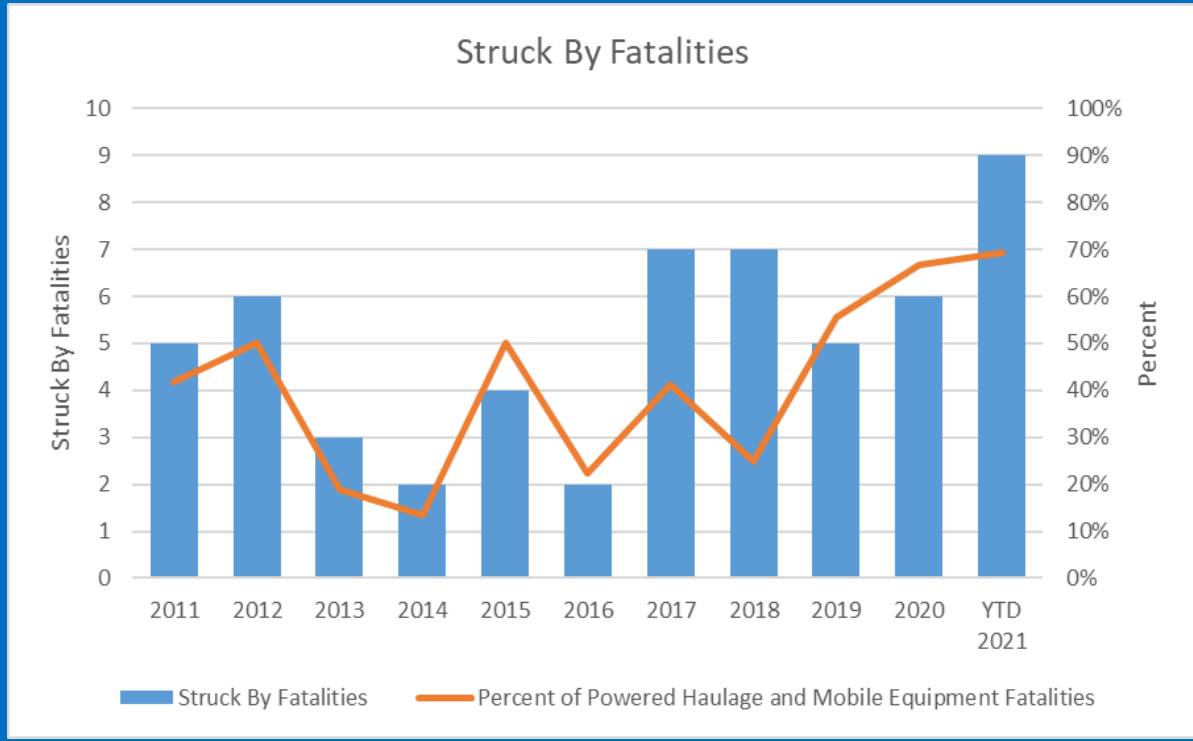
Accident Trends



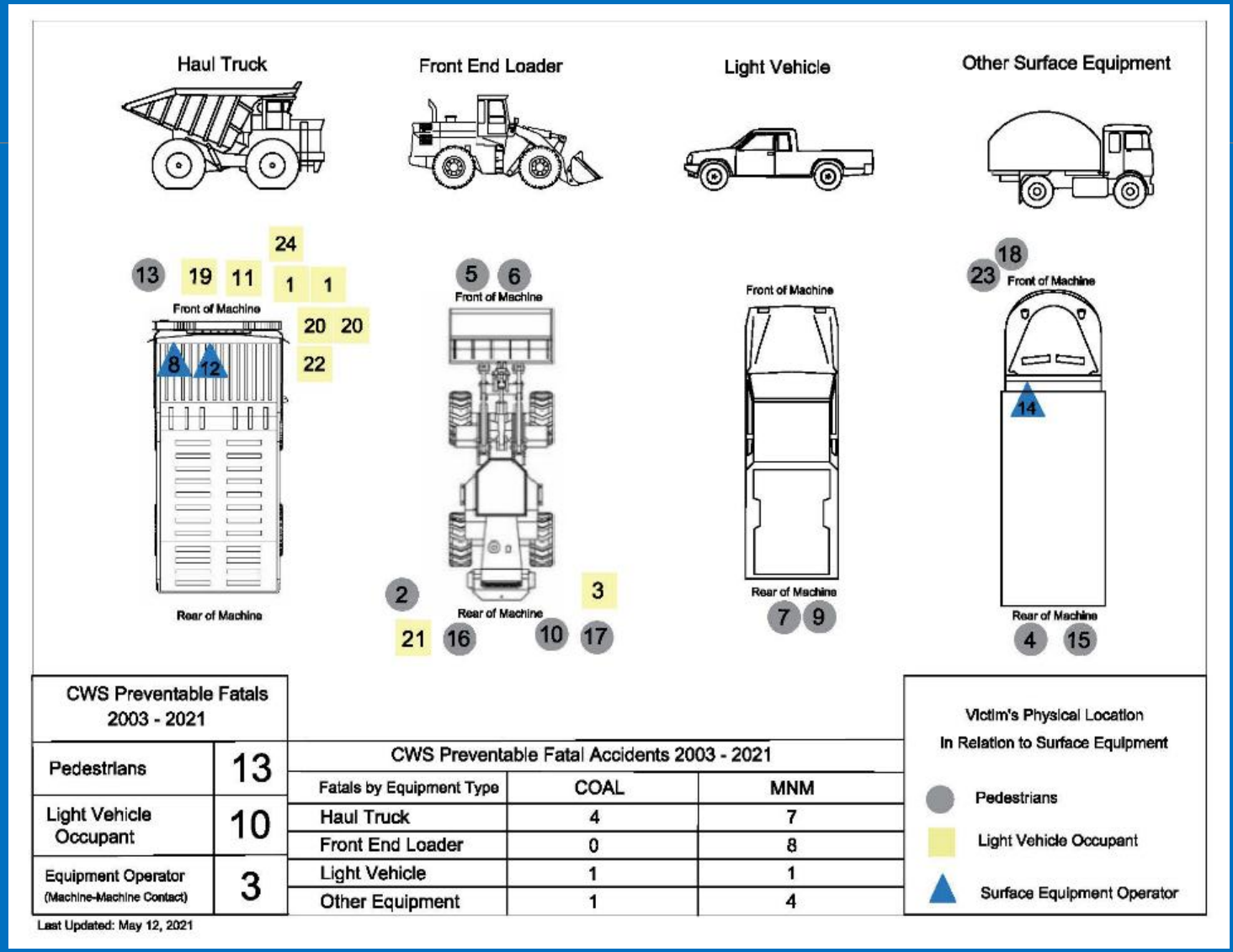


Accident Trends





Surface Equipment Accident Locations



CWS Preventable Fatals 2003 - 2021	
Pedestrians	13
Light Vehicle Occupant	10
Equipment Operator (Machine-Machine Contact)	3

Last Updated: May 12, 2021

CWS Preventable Fatal Accidents 2003 - 2021

Fatals by Equipment Type	COAL	MNM
Haul Truck	4	7
Front End Loader	0	8
Light Vehicle	1	1
Other Equipment	1	4

Victim's Physical Location In Relation to Surface Equipment

- Pedestrians
- Light Vehicle Occupant
- Surface Equipment Operator

MSHA Powered Haulage Safety Initiative

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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

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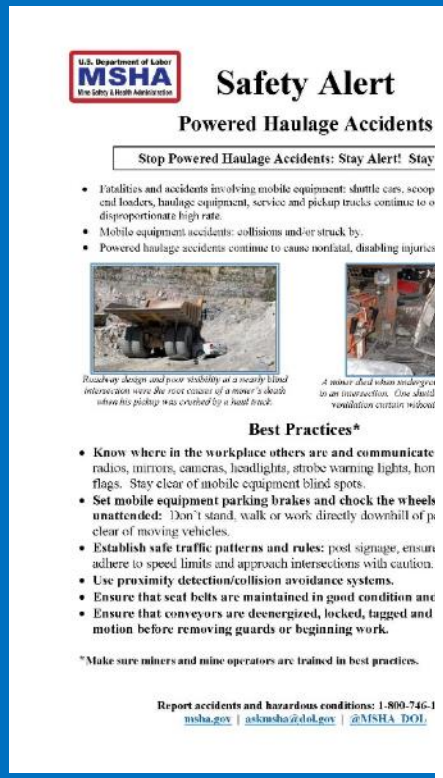
Materials Available on MSHA.gov



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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 o disproportionate high rate.
- Mobile equipment accidents: collisions and/or struck by.
- Powered haulage accidents continue to cause nonfatal, disabling injuries

Roadway design and poor visibility at a nearly blind intersection were the root causes of a miner's death when his pickup was crushed by a haul truck.

A miner died when undergrou to an intersection. One shutt ventilation curtain without

Best Practices*

- **Know where in the workplace others are and communicate** radios, mirrors, cameras, headlights, strobe warning lights, hon 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 p clear of moving vehicles.
- **Establish safe traffic patterns and rules:** post signage, ensur adhere 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: 1-800-746-1
msha.gov | askmsha@dol.gov | @MSHA_DOL

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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 o

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

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

This haul truck was dumping at the edge of an over-steepened stockpile. He was wearing a seat belt and suffered only minor injuries.

This water truck encountered a soft ro overturned and rolled down an embar operator was wearing a seat belt and w

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 w 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 fo
- **Maintain vehicles in good condition:** brakes; wheels and tires; steering/operating lights; windows; 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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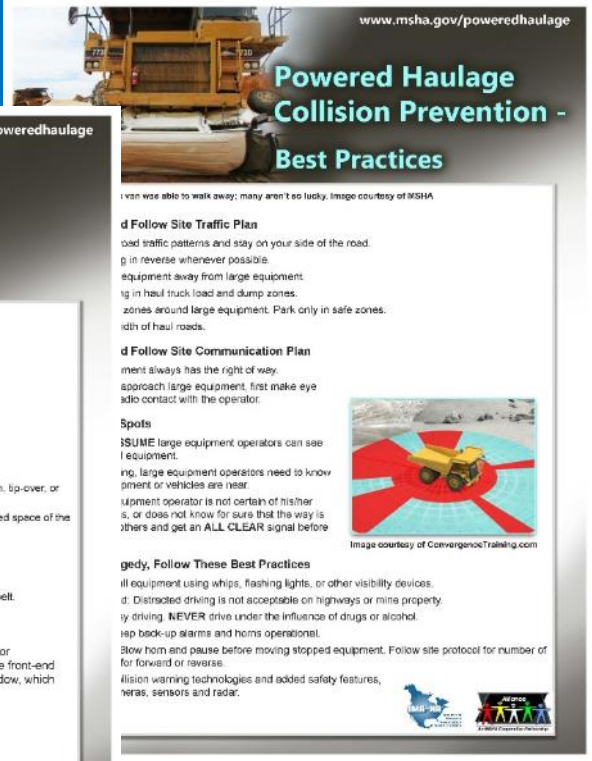
msha.gov | askmsha@dol.gov | @MSHA_DOL



https://www.msha.gov/news-media/special-initiatives/2021/07/12/powered-haulage-safety

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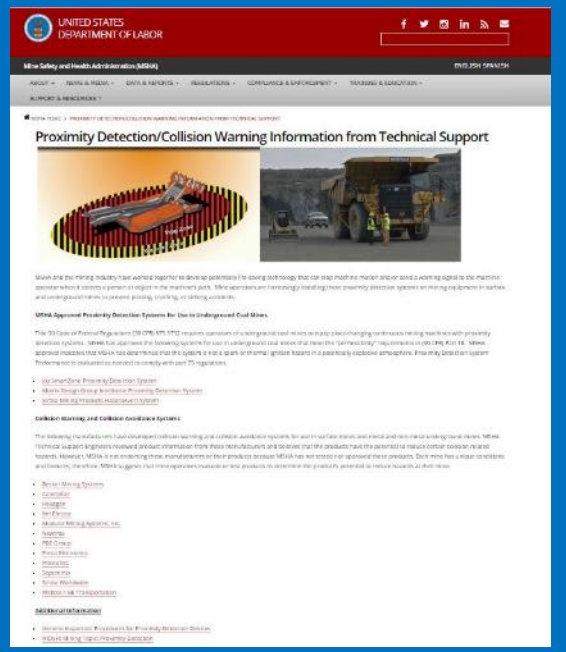
Proximity Detection/Collision Warning Information from Technical Support on MSHA.gov

- 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

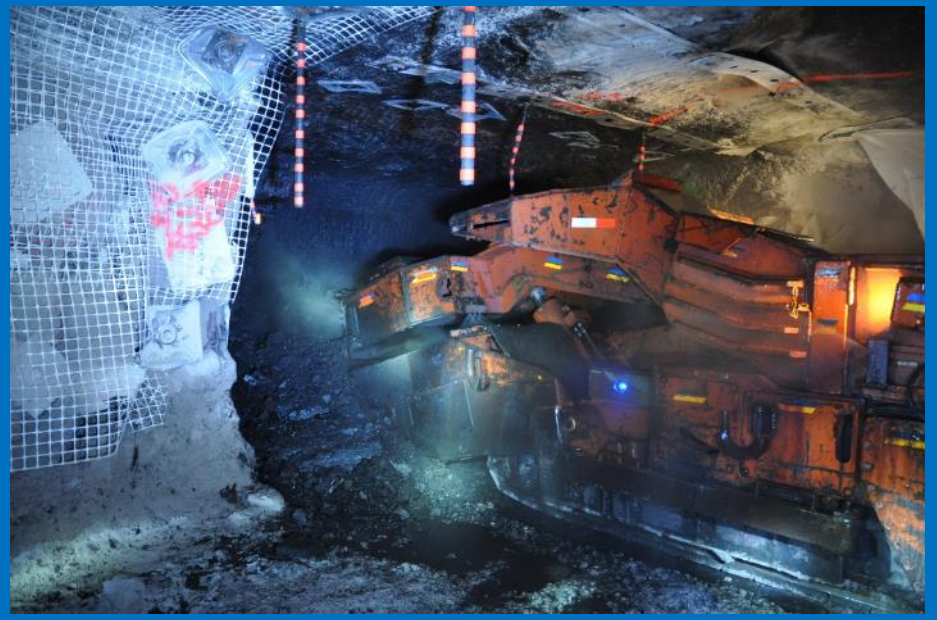
- Powered Haulage safety at surface mines
- Powered Haulage safety at underground mines
- Conveyor safety at surface and underground mines

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?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Engineering Support
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SUPPORT
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Laboratory Support