Mining Program

August 2018

What are our priorities?

The National Institute for Occupational Safety and Health (NIOSH) Mining Program works with partners in industry, labor, trade associations, professional organizations, and academia. The program focuses on these areas:

- Reducing exposures to harmful mine dusts, airborne pollutants, heat, noise, and repetitive motion.
- Preventing injuries and fatalities from machinery, rock falls, materials handling, slips and falls, and other mining workplace hazards.
- Improving the likelihood of rescue and miner survivability if disaster strikes.

What do we do?

- Develop state-of-the-art dust, aerosol, heat, and noise control technologies, monitoring techniques, and best practices.
- Develop solutions to prevent musculoskeletal disorders from materials handling and slips, trips, and falls.
- Develop and make available new technologies and recommended practices that will reduce injuries and fatalities involving powered haulage equipment and machinery.
- Enable a robust and resilient disaster prevention system by developing innovative control technologies, practices, and procedural changes.
- Develop design criteria and engineering solutions for ground support systems that protect underground miners during seismic events or failure of weak rock.

What have we accomplished?

- Designed and released specifications for the NIOSH "Saturn" LED area light (see photo). This effort assists the production of this useful new technology, making it commercially available to underground mining equipment companies.
- Released practical infographics and fact sheets on health and safety issues, including silica dust exposure reduction, heat stress, ladder use, slips, fall protection, and haul trucks.
- Released the Safety Pays in Mining web application, which allows mines to assess the economic benefits of preventing injuries.
- Provided recommendations to industry on explosion prevention through a series of webinars and publications regarding improved methods for ventilation of longwall faces.
- Released the Hazard Recognition Challenge, a web application for performing virtual examinations at surface stone mines.
- Communicated NIOSH findings on temperature and humidity in refuge alternatives to protect miners during a mine fire to the Mine Safety and Health Administration (MSHA), which were incorporated into their standard certification procedures.
- Commercialized canopy air curtains for dust exposure reduction now installed on 40 roof bolting machines in coal mines throughout the U.S.
- Provided recommendations to industry on longwall gateroad support to prevent ground fall injuries.

What's next?

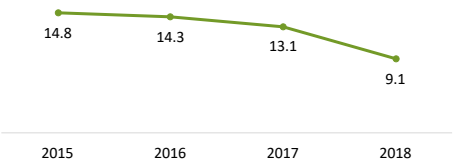
- Release EXAMiner software using panoramic images for hazard recognition in stone, sand, and gravel mines.
- Release software for an end-of-shift respirable crystalline silica monitoring procedure to improve exposure monitoring.
- Provide recommendations to MSHA for use of fiber optic sensors to monitor contamination in mine atmospheres after a fire or explosion.
- Provide recommendations to industry on mobile proximity detection systems to reduce struck-by injuries.
- Release interactive training modules on heat stress prevention.
- Release design criteria for shuttle car canopy air curtain technology.
- Release DRIFT software for planning hard rock mining blast patterns that reduce the likelihood of hazardous ground falls.

At-A-Glance

The Mining Program's mission is to eliminate occupational diseases, injuries, and fatalities among workers in the mining industry. This snapshot shows recent accomplishments and upcoming work.

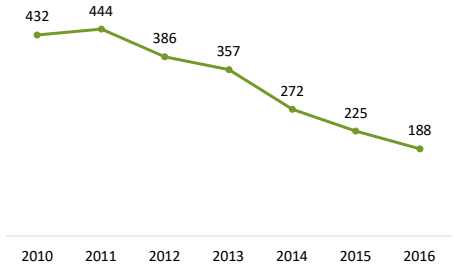
Model of the Saturn LED area light designed to improve visibility around underground coal mining machines

Percent of tailgate shearer operator samples that exceed the 2016 1.5 mg/m³ exposure limit



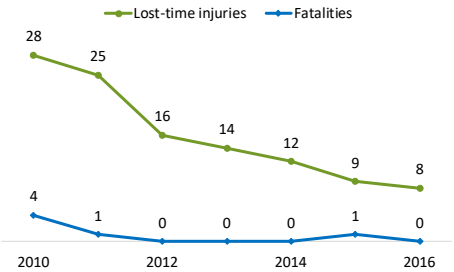
Source: Mine Safety and Health Administration (MSHA) compliance data. Data points are calculated using four-year averages.

Number of lost-time injuries related to machinery and powered haulage in underground coal mines



Source: MSHA Accident Injuries Data Set

Ground fall accidents in underground metal mines



Source: MSHA Accident Injuries Data Set

To learn more, visit https://www.cdc.gov/niosh/mining/researchprogram/index.html

https://doi.org/10.26616/NIOSHPUB2018156
DHHS (NIOSH) Publication No. 2018-156

Centers for Disease Control and Prevention
National Institute for Occupational Safety and Health