

## 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, government, 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, trips, 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?

- Delivered the [EXAMiner software](#) to mineworkers, giving them an effective training tool for hazard recognition in stone, sand, and gravel mines. EXAMiner trainees perform a virtual workplace examination with the goal of finding as many hazards as possible.
- Posted [FAST software](#), which mine operations are using to estimate quartz in respirable dust samples as part of field-based respirable crystalline silica monitoring.
- Printed and posted [guidelines](#) for mine operators and machine manufacturers on environmental enclosures for protecting workers from exposure to airborne contaminants. The guidelines have been incorporated into several filtration systems and machine cab designs.
- With industry stakeholders, co-authored a second edition of the [Dust Control Handbook for Industrial Minerals Mining and Processing](#) with new technologies and effective solutions.
- [Published results](#) of tests demonstrating that a fiber optic methane monitor can effectively monitor methane levels in conditions similar to those present following an underground coal mine fire or explosion.
- Published a trade journal article containing [recommendations and guidelines](#) for determining occupancy ratings for refuge alternatives in underground coal mines.
- Published a journal article containing [design criteria](#) for shuttle car canopy air curtain technology that reduces respirable dust levels by up to 83%. An earlier development of the canopy air curtain technology for roof bolting machines has been installed on approximately 50 machines in operating mines.
- [Published results](#) of cemented backfill studies to provide mines with a better means of assessing the safety of their backfill mix designs and the stability of their backfill ground support applications.
- Posted [DRIFT software](#) for planning hard rock mining blast patterns that reduce the likelihood of hazardous ground falls.

## What's next?

- Post *Fatalities Cost in Mining*, an interactive web application for determining the financial burden of fatal mine events.
- Release ground support design software for underground metal mines to calculate safety factors more efficiently.
- Post a new version of the *Support Technology Optimization Program (STOP)* for preventing ground falls.
- Publish infographics on preventing fatigue-related mine accidents.
- Deliver a toolkit of training materials and design guidelines to prevent slips, trips, and falls.
- Conduct a workshop with guidance on preparing miners and responders for emergency decision-making.

## At-A-Glance

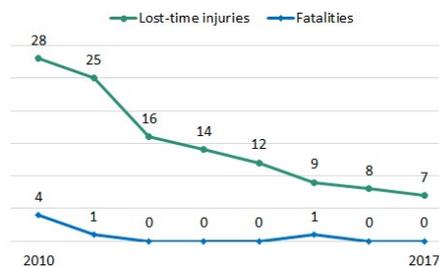
The Mining Program's mission is to eliminate occupational diseases, injuries, and fatalities among workers in the mining industry. This snapshot shows recent accomplishments and upcoming work.

### Average respirable dust exposures for coal mines, 4-year rolling averages (mg/m<sup>3</sup>)



Source: MSHA Open Government Data Set

### Ground fall accidents in underground metal mines



Source: MSHA Accident Injuries Data Set

### Canopy air curtain designed to reduce respirable dust exposure for operators of underground coal mining machines



To learn more, visit  
[www.cdc.gov/niosh/mining/researchprogram](http://www.cdc.gov/niosh/mining/researchprogram)

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