

Article

How mine operators can prepare for MSHA’s final silica rule

What to know: By April 2026, metal and nonmetal mines must implement new measures to control silica dust. With careful fiscal and operational planning, mine operators can be ready.

While there is some uncertainty due to the new administration, the current timeline requires operators of metal and nonmetal mines to comply with new federal regulations concerning inhalable crystalline silica, commonly called silica dust, by April 8, 2026. A final rule recently adopted by the U.S. Mine Safety and Health Administration (MSHA) cuts in half the permissible exposure limit (PEL) for airborne silica dust and prescribes processes, methods, and milestones for protecting workers.

Why is the final rule necessary?

Silica, also known as quartz, is abundant in sand, soil, and rocks. It is harmless in its naturally occurring state, but silica dust is toxic when inhaled. Because excavating, drilling, and nearly every other mining activity generates silica dust, miners are at especially high risk for disabling or deadly illnesses, including silicosis, lung cancer, emphysema, and kidney disease.

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The federal government began to regulate silica dust exposure in the 1970s, setting a PEL of 250 micrograms per cubic meter (µg/m³) of air for mining. That limit remained in place for nearly half a century, despite persistent high rates of illnesses among miners. In 2017, for the first time, MSHA revised the PEL to 100 µg/m³.

The 2026 rule further reduces the PEL to 50 µg/m³ for a full-shift exposure, consistent with workplace safety experts' recommendations and with U.S. Occupational Safety and Health Administration (OSHA) standards for other skilled workers. It also establishes a 25 µg/m³ "action level" at which mine operators must work to reduce silica dust. The final rule provides for enforcement of the standards through rigorous monitoring of workplace conditions and of mine workers' health.



How can mine operators comply?

Monitor exposure frequently and rigorously

For miners exposed to silica, initial sampling involves two tests to measure full-shift exposure over an eight-hour average, even if shifts are longer. Follow-up sampling is needed if exposure is between the action level and the PEL. Sampling can stop after two consecutive tests show exposure below the Action Level, with the second test conducted at least seven days after the first.



Operators must collect data on silica dust levels at least every six months and whenever a change in conditions may create or increase silica dust concentration. They must repeat sampling whenever a result exceeds the allowed level. The new rule specifies materials and methods for collecting and analyzing samples, as well as for communicating the results.

When a sampling result exceeds the PEL, the operator must take immediate action to lower the concentration of silica dust. Until a subsequent test result falls below the PEL, the operator must provide workers with respiratory protection that conforms to MSHA standards (which the new rule updates). If a miner cannot wear respiratory protection, the operator must provide them with an alternative assignment.

When multiple miners carry out identical tasks during the same shift and within the same work area, mine operators have the option to sample at least two of these miners. According to this regulation, mine operators must select the miners who are anticipated to have the highest exposure to respirable crystalline silica for sampling.

The rule also requires nonmetal mine operators to provide periodic, no-cost health examinations, including chest X-rays, to their workforce. Like an existing MSHA program for coal miners, this medical surveillance program aims to improve mine workers' access to quality health care and enable early detection of silica-related illnesses.

Achieve compliance primarily through engineering controls

The rule requires that operators must comply with the PEL primarily through **engineering controls**, which eliminate or reduce potential hazards from a work environment, rather than through **administrative controls**, or precautions workers take to protect themselves from known hazards. A mine operator that achieves compliance with detours around dusty

process areas, cleaning and decontamination protocols, or rotating of workers during a shift does so primarily through administrative controls. Operators may continue to use administrative controls as a supplement (except for rotating workers, which the new rule prohibits), but they must use engineering controls as their primary avenue for compliance.

Engineering controls for silica exposure may include:

- Ventilation
- Dust suppression
- Air filtration systems
- Changes to work processes and equipment

Some mining operations will need to invest heavily in infrastructure, but others can likely achieve compliance with simpler measures. Every operation will need to find the most effective strategy for its particular environment and workforce.

How should mine operators prepare?

With fiscal and operational planning, mining operations can achieve compliance by MSHA's deadline and equip themselves to maintain it. Two critical early steps are assessing current levels of silica dust exposure and evaluating current controls in place to mitigate risk.

With expertise in environmental health and safety, industrial hygiene, regulatory compliance, and industry best practices, H&A's Mining team can evaluate your organization's readiness for MSHA's final silica rule and recommend next steps. Please contact the authors below with any questions.

More information

MSHA Fact Sheet on Silica Final Rule

MSHA's fact sheet and slide deck on the silica rule summarize what's changing.

Silica Final Rule Overview

Slide deck summarizing highlights of the rule and featuring definitions, timelines, and flowcharts.

Compliance Assistance for Mine Operators

Features guidance on exposure monitoring, respiratory protection, and medical surveillance.



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