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MSHA's Final Rule for Respirable Crystalline Silica: What is Required and How Long Do Operators Have to Comply?

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On April 16, 2024, the Mine Safety & Health Administration ("MSHA") released its final rule for [Respirable Crystalline Silica](#) ("RCS") for preliminary viewing, and it was published in the Federal Register on April 18, 2024. While an update to MSHA's silica regulations has been in the works for most of the 21st century, getting from  this proposed rule to the final form moved very quickly from a rulemaking perspective. With the rule, MSHA seeks to protect mine workers from occupational exposure to RCS, including quartz, cristobalite, and/or tridymite.

The rule imposes stringent new requirements on operators, including a reduced Permissible Exposure Limit of 50 µg/m³, mandatory sampling, regular written evaluations of operations (even when there are no changes to the process, equipment, or mined mineral), the adoption of respiratory protection programs, and medical surveillance programs for Metal/Nonmetal mines.

The rule will become effective on June 17, 2024. MSHA had originally proposed that mine operators begin compliance 120 days after the rule's effective date, but to balance miners' safety and health with mine operators' preparations in implementing the new requirements, MSHA has set the following new deadlines by which mine operators must comply:

- Coal mine operators: April 14, 2025
- Metal/Nonmetal operators: April 8, 2026

The extended compliance period will allow operators to learn the new regulation's subparts, evaluate its application to their mine(s), develop the necessary programs, and acquire sampling materials or coordinate with third parties to conduct sampling. The roughly two-year compliance period for MNM matches the General Industry compliance grace period from when OSHA finalized its updated silica regulation in 2016. MSHA granted more time to MNM mine operators citing that MNM mines do not have the same robust existing sampling requirements as have been in place in the Coal industry for years, and additional time would be needed or the MNM operations to develop and implement compliant programs, while also giving sampling and medical surveillance infrastructure time to expand for the new demands. .

Here are some key takeaways from the proposed rule:


Permissible Exposure Limit (PEL) and Action Level (AL)

MSHA maintained the Permissible Exposure Limit (“PEL”) and Action Level (“AL”) that it released in the proposed rule. This was widely anticipated, and the levels match the PEL and AL from OSHA’s 2016 Respirable Crystalline Silica rule.

- The final rule unsurprisingly retained the proposed PEL for all miners at 50 µg/m³ – calculated as a Time-Weighted Average over an 8-hour shift. This is approximately a 50% reduction from the existing MNM PEL of ~100 µg/m³.
- MSHA also imposes an AL of 25 µg/m³ as an 8-hour Time-Weighted Average, which triggers quarterly sampling until two consecutive samples are collected – more than 7 days apart – under the AL.

Sampling

MSHA revised several aspects of its sampling requirements from the proposed to the final rule. For starters, MSHA deleted the terms “Baseline” or “Periodic” sampling, now just referring to “Sampling” in §60.12. MSHA also dropped the option for operators to rely on “Historic” or “Objective” data points to verify a first sample that came back under the AL. Now, all operators will need to collect two consecutive samples below the AL for each position -or representative sample – in which miners are reasonably expected to be exposed to RCS to comply with the rule at the start.

A hugely consequential change in the final rule, MSHA included a provision in §60.12(b) that “[t]he mine operator shall immediately report all operator samples over the PEL to the MSHA District Manager or to any other MSHA office designated by the District Manager.” MSHA claims in the preamble that this is for the multiple purposes of monitoring corrective actions, offering compliance assistance, and – on a case-by-case basis – issuing enforcement citations. However, elsewhere in the preamble and in the context of temporary use of respiratory protection, MSHA states: “MNM operators will be cited for the overexposure.” This provision, which was nowhere to be found in the proposed rule, essentially requires operators to submit any exceedances of the PEL to MSHA, so the agency may issue a citation without collecting any samples or data of its own, or even being on-site. 

By the compliance date, mine operators must begin sampling exposure levels for each miner “who is or may reasonably be expected to be exposed to respirable crystalline silica.”

MSHA anticipates that at least all miners involved in processing or extraction are reasonably expected to be exposed to RCS, but this also includes miners not included in processing or extraction, if they are exposed. Mine operators’ responsibilities concerning these initial samples include:

- If the sampling is below the AL: Take at least one more sample within 3 months.
 - MSHA removed the option to rely on a sample from the prior 12 months (collected by MSHA or the operator). MSHA also removed the option to rely upon “objective data” to confirm an initial sample below the AL. Operators must collect a second sample.
 - Operators may conduct representative sampling, but that definition is limited to “miners performing the

same tasks on the same shift and in the same work area.” Accordingly, even if an operator has miners in the same job position, completing the same tasks, in the same area, but on multiple shifts, the operator will need to collect a representative sample from a miner on each shift.

If the most recent sample is at/above the AL but below the PEL:

- Operators must collect a sample every 3 months until 2 consecutive samples show exposures below the AL, similar to OSHA requirements.
- The second of the two consecutive samples must be taken after receiving the results of the previous sample but not sooner than 7 days after the previous sample was taken.
- To meet this 2-consecutive-samples condition, the first sample cannot be an MSHA sample followed by the operator’s sample, though the reverse would be acceptable (because MSHA’s sampling would be for a targeted group of miners, whereas the operator-conducted sample would be for a larger group.)

If the most recent sample is above the PEL:

- Immediately report the over-exposure to MSHA.
- Take corrective action (see below for more detail).
- Sample until exposures are at or below the AL.

Mine operators must sample for RCS using respirable particle size-selective samples in conformity with consensus standard ISO 7708:1995 and must use personal breathing-zone air samples for MNM miners and occupational environmental samples for coal miners.

Periodic Evaluation

Mine operators must also periodically evaluate their processes and equipment for exposure to silica. Written evaluations must be completed:


- Every six months after commencing sampling (as described above); or
- When there is a change in production, processes, installation, and maintenance of engineering controls, installation and maintenance of equipment, administrative controls, or geological conditions, to evaluate whether any changes may reasonably be expected to cause new or increased exposures.
- Operators must create a record of the evaluation, including a description of the evaluated change, its impact on RCS exposure, and the date of the evaluation.
- If the evaluation indicates a change that has the potential to increase miner exposure above the AL, miners should conduct post-evaluation and then engage in the follow-up sampling protocols outlined above.

Corrective Action

This rule focuses heavily on corrective actions, namely the development and implementation of engineering controls. MSHA maintained this focus from the proposal to the final rule. Corrective actions are mandatory and must be initiated immediately following a sample result above the PEL. Operators will need to document their corrective actions and once implemented, collect additional samples to determine the effectiveness of the actions taken. If the results continue to show exceedances of the PEL, additional corrective measures must be

taken by the operator until samples begin coming back below the PEL.

MSHA's proposed rule is meant to drive engineering controls and states that "mine operators must install, use, and maintain feasible engineering and administrative controls to keep miners' exposure to respirable crystalline silica below the proposed PEL."

Engineering controls suppress, dilute, divert, or capture the dust. This might include ventilation systems, dust suppression devices, enclosed cabs with filtered breathing air, and changes in materials handling or equipment used. 

MSHA expressly prohibits compliance through the administrative control of rotating miners among different tasks or locations to keep exposures below the PEL. MSHA deems rotation ineffective because it fails to address the root cause of the hazard, requires the mine operator's continuous attention, and increases risks to more miners.

In addition, respirators are not acceptable means of compliance or corrective action. Rather, respiratory protection may only be used as a temporary measure or under non-routine, limited conditions for MNM operators. MSHA cites occasional entry into hazardous atmospheres for maintenance or investigation as a situation where respirators could be necessary.

When respirators are used, the operator must have in place a respiratory protection program that meets ASTM F3387-19, which has been incorporated by reference into this rule. But this is a necessity just to comply with the regulation because in the event of a sample result above the PEL, miners working in the area must be in respiratory protection by the next shift. It will not be possible to have miners in respirators by the next shift under a compliant respiratory protection program without having it in place well in advance.

If any sampling shows an exposure in excess of the PEL, mine operators must:

- Make available NIOSH-approved respirators for the affected miner(s) before the start of the next work shift. These must be Series 100 or more protective, N95s will not comply.
- Ensure affected miner(s) correctly wear the respirators for the full shift or during the period of overexposure, until exposures are at or below the PEL (MSHA is clear that respirator use is only an interim protective measure until engineering controls are in place.)
- Immediately take corrective action – other than respirator usage – to bring the exposure at or below the PEL.
- Immediately notify its MSHA District Manager or the District Manager's designee of the overexposure.

Medical Surveillance/Examination – Specifically for MNM mines

MSHA maintained its provision from the proposed rule that MNM operators develop and begin administering a medical surveillance program for miners. MSHA already requires the coal industry to have medical surveillance programs in place to comply with existing regulations regarding respirable coal dust.

For existing employed miners, or newly hired experienced miners, participation in the programs will be voluntary but must be offered. For miners who are new to the industry and have never worked in a mine before, participation in an initial medical examination and three-year follow-up are mandatory. After which, further

participation is voluntary for each miner. However, mine operators may mandate their miners' participation in medical surveillance programs.

All medical examinations required by the rule must be provided at no cost to the miner and be conducted by a physician or other licensed healthcare professional (PLHCP) or specialist. The pulmonary function test may also be administered by a pulmonary function technologist credentialed by the National Board for Respiratory Care.

All MNM miners who are new to the mining industry must undergo a mandatory, initial medical examination within 60 days of their employment. A follow-up examination must then occur within three years. Within two years of the three-year follow-up, another follow-up examination must occur if the chest three-year X-ray shows evidence of pneumoconiosis, or the spirometry examination indicates evidence of decreased lung function.

Existing miners must be given access to a voluntary examination during an initial 12-month period. Thereafter, miners must have access to a medical examination at least every 5 years (although participation remains voluntary under the MSHA regulations but may be required by the operator).

Within 30 days of the examination, the mine operator is responsible for:

- Ensuring the care provider provides examination results to the miner and upon their request, to their physician or other designee.
- Ensuring the care provider submits results of the chest X-ray classifications to NIOSH (once NIOSH has implemented a reporting system).
- Obtaining from the care provider a written medical opinion that includes the examination date, confirmation that all examination requirements were met, and any recommended limitations on the miner's use of respirators.

Recordkeeping

Mine operators must maintain the following records for the requisite period:

- Evaluation, sampling, and corrective action records: at least 5 years (this increased from 2 years in the proposed rule).
- Written determination records, written medical opinion records: duration of miner's employment, plus 6 months.

Mine operators must grant the Secretary, miners, and authorized miner representatives prompt access to the foregoing records.

Contractors, Portable and Seasonal Operations

MSHA states in the final rule preamble that it will apply to contractors, portable mines, and seasonal operations. Contractors will need to evaluate whether their employees are reasonably expected to be exposed to RCS during work at mines and if so, ensure compliance with the regulation. MSHA expects contractors who work separately from production at multiple locations, such as drilling and blasting, to comply. The agency notes that some

contractors, such as those who perform haulage services for mines, will fall under the compliance program of the production operator. It will be important that production operators and contractors communicate openly regarding compliance with this regulation at the outset of planning work.

Portable and seasonal operations, likewise, are required to comply with the new rule. For portable operations, especially those working in areas for short periods, MSHA indicates that the completion of the periodic evaluations will be a critical element of compliance, in addition to sampling.

For seasonal operations, MSHA will allow sampling and evaluation periods to be placed on hold when the plant shuts down, but with the expectation that as soon as operations begin again, the operator will begin collecting samples or complete its evaluations immediately.

Conclusion

This rule will be burdensome to get off the ground for many operations, especially those in MNM who do not already have established air monitoring programs. It will likely require many operators to reconfigure processes or install new dust control systems to reduce exposure sources.

While there will undoubtedly be legal challenges to this rule, expect MSHA to vigorously defend its final form. Mine operators should therefore work diligently to meet the 2025/2026 compliance deadlines. Those dates may seem like a long way off, but operators should begin reviewing their operations for areas that may be producing exposures in exceedance of the PEL and AL.

Conn Maciel Carey's [MSHA Practice Group](#) will continue to monitor developments with this rule and its rollout and be prepared to assist operators with their work towards compliance, including a forthcoming webinar to review the rule thoroughly.

If you have immediate questions, please contact [Nick Scala](#) (nscala@connmaciel.com).