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October 28, 2019

MSHA, Office of Standards, Regulations, and Variances,  
201 12th Street South, Suite 4E401  
Arlington, Virginia 22202-5452  
RE: RIN 1219-AB36

On behalf of the American Thoracic Society (ATS), we would like to express our appreciation for the opportunity to comment on MSHA Requests for Information: Respirable Silica (Quartz).

The ATS is a medical professional organization comprised of over 16,000 members dedicated to the prevention, detection, treatment, cure and research of respiratory disease, critical care illness and sleep disordered breathing. ATS members pursue this mission through research, education, clinical care and advocacy. Many of our members are thought leaders in occupational contributions to respiratory disease. Several of the authors of this response direct the Black Lung Center of Excellence and are part of the National Coalition of Black Lung and Respiratory Disease Clinics. The Coalition is comprised of nearly 60 clinic sites across 15 states and serves over 13,000 coal miners.<sup>1</sup> It is with this expertise that we offer comments in response to the following questions in the RFI:

*"3. Please provide any information on additional feasible dust-control methods that could be used by mining operations to reduce miners' exposure to respirable quartz during high-silica cutting situations, such as on development sections, shaft and slope work, and cutting overcasts."*

*"4. Please provide any other experience, data, or information that may be useful to MSHA in evaluating miners' exposures to quartz."*

**I. As MSHA noted in the RFI, there has been a resurgence of severe pneumoconiosis in U.S. underground and surface coal miners, as well as disease documented in metal and non-metal miners.**

**a. Disease in active miners**

The NIOSH Coal Workers Health Surveillance Program offers voluntary chest x-ray screening to active surface and underground coal miners to identify those miners with early signs of coal workers'

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pneumoconiosis (CWP) and offer them the opportunity to change jobs to a low-dust setting, thereby reduce risk for disease progression. Data from this program showed a steady decline CWP dating from the passage of the Coal Mine Health and Safety Act in 1970 to the mid-1990s. Since the mid-1990s, however, there has been a significant surge in the numbers of miners with radiographic evidence of pneumoconiosis. Of grave concern is that one of every five coal miners with 25 or more years of mining experience from Kentucky, West Virginia, and Virginia, has evidence of disease, compared to one in ten coal miners nationally.<sup>2</sup>

#### **b. Disease in former miners**

Outbreaks of the most severe form of the disease -- with miners' chest x-rays showing large debilitating scars known as progressive massive fibrosis (PMF) -- have been reported from clinics in Kentucky and southwestern Virginia.<sup>3,4</sup> A recently published study of national data from the federal Black Lung Benefits Program documented 4,679 cases of PMF since 1970. Despite regulations for controlling coal mine dust exposure, 2,474 cases of PMF have occurred since 1996. The proportion of claims adjudicated through the Black Lung Benefits Program with a final determination of PMF fell to a low of 0.6% of claims in 1988, but increased to 8.3% in 2014. This proportion has been rising at a significantly increased rate since 1996, increasing most dramatically in Kentucky, West Virginia, and Virginia by 16.6%, 16.8%, and 31.5% respectively.<sup>5</sup>

These numbers, while extremely disturbing, do not capture the individual struggles that miners with severe forms of the disease suffer. These miners are often young, some in their 30's and 40's. They suffer from loss of their careers, hobbies, and ability to support their families. Those of us who care for these miners in our clinics see them fighting for breath, often with the need for supplemental oxygen as they attempt to fight their disability. They suffer from early mortality in spite of our best efforts to treat them, including referral for lung transplantation.<sup>6,7</sup>

#### **c. Conclusion**

We believe that the evidence from surveillance of active working miners and from former miners is convincing that there is a resurgence of disease in US miners. We see this in chest x-ray surveillance data, black lung claims data, and in mortality data. This resurgence is most severe in the central Appalachian states of Kentucky, West Virginia, and Virginia. There is significant evidence that the disease is not just mild, but in fact the most severe disabling forms of this preventable disease are occurring in younger miners.

## **II. Evidence indicates that silica is driving resurgent severe lung disease from mine dust.**

#### **a. Radiographic evidence**

Respirable crystalline silica (RCS) is present in rock strata, above, below, and often between coal seams. Cutting coal, securing the roof and ribs, developing tunnels and shafts, and removing overburden are all activities that generate fine respirable crystalline silica (RCS) dust. The health risks caused by exposure to RCS were recently reviewed by OSHA in preparation for its new final rule.<sup>9</sup> Freshly fractured respirable silica is highly toxic and causes significantly more lung scarring than coal dust; that is why it is regulated to a level far lower



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than that of respirable coal dust.<sup>10</sup> Larger round scars on CXRs have been associated with silicosis,<sup>11-13</sup> and the proportion of coal miners with these scars has increased in central Appalachia, concomitant with the increase in severe disease in these miners.<sup>2,14</sup>

#### **b. Pathologic evidence**

Evaluation of lung tissue specimens has also demonstrated the important role silica exposure likely plays in the current resurgence of pneumoconiosis. In one study, examination of lung tissue from 13 coal miners recently diagnosed with rapidly progressive pneumoconiosis (RPP) and PMF<sup>15</sup> showed that six miners had silicosis or silica-predominant mixed-dust disease, and four other miners had disease due to both coal and silica dust. This was a sentinel finding in coal miners. Subsequently, investigators evaluated lung tissue from the NIOSH National Coal Workers' Autopsy Study to determine if the underlying cause of PMF had changed over time<sup>16</sup> They examined the tissue obtained from 376 miners born between 1885 and 1961 who had an average of 33 years of mining experience. Their findings showed a significant change in the type of PMF over time, from only 24% of miners having a silicotic type of PMF in specimens received before 1990, to more than 40% in those after 1990.

#### **c. Conclusion**

We believe that the resurgent epidemic of pneumoconiosis in central Appalachia, as well as cases of silicosis that continue to occur in metal and non-metal miners, are driven in significant part by excessive exposure to respirable crystalline silica. This is supported by the chest radiographic findings in surveys of active miners, the case series studies of lung pathology in current miners, and the change in type of PMF seen in historical cohorts of miners' lung tissues in the National Coal Workers' Autopsy program.

### **III. Recommendations**

#### **a. Engineering controls and administrative controls must be the focus of respirable silica dust controls.**

The ATS emphasizes that engineering controls must be the primary method for controlling exposures to RCS. We agree with NIOSH in its recommendations published in 2019.<sup>17</sup> We also emphasize that personal protective equipment should not be relied upon to limit individuals' exposures to RCS. Respirators interfere with breathing, especially when miners are performing heavy labor. Attaining a sufficient fit can be challenging, and a miner wearing a poorly fitting respirator may provide a false sense of security and expose the miner to excessive respirable dust. Miners utilizing respirators often find that communication with fellow miners is impeded, a potentially dangerous situation in these noisy and hazardous environments. Within the hierarchy of controls to limit a worker's exposure to RCS dust hazard, PPE is inferior to engineering and administrative controls, and should essentially be an approach of last resort to limit a worker's exposure to RCS.

We have diagnosed cases of pneumoconiosis in individuals who have worn respirators during their mining work, and we urge that respirators only be relied upon when all other methods to control dust exposure have been exhausted.



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**b. The ATS recommends more frequent dust sampling, especially during those procedures known to generate high levels of RCS, using the latest available technology.**

The ATS notes that the passage of new regulations to monitor and control respirable dust levels in our nation's coal mines was a significant step forward.<sup>18</sup> We believe, however, that there remains a significant need to measure levels of respirable crystalline silica in a way that is more representative of conditions experienced by miners. Infrequent quartz sampling, along with long turnaround times required currently to obtain quartz levels, leads to an incomplete and likely inaccurate picture of overall RCS levels. A technology that should be implemented immediately is the new NIOSH-developed in-mine silica analyzer which, paired with a personal quartz monitor, provides rapid estimates of exposure to silica. Results of monitoring could inform inspectors and operators about the need to change ventilation or place the mine on a reduced dust standard. MSHA should increase the frequency of monitoring for silica until a tamperproof personal quartz monitor becomes available.

Of great importance, special additional attention should also be paid to sampling during mine development, as activities during development often entail disrupting rock layers that may potentially expose miners to high levels of RCS. Also, of special importance is sampling those designated occupations associated with the most severe disease including roof bolters, continuous miner operators and helpers, longwall shear operators, and surface drillers, who are at greatest risk of excessive RCS dust exposures.

**c. The ATS recommends that MSHA adopt the current OSHA Permissible Exposure Limit of 50 micrograms/m<sup>3</sup> for silica levels in coal mines.**

Based on the review provided within the RFI as well as data we describe above, it is clear that silica exposure is likely a major factor in the current resurgence of pneumoconiosis. Because of this, we strongly believe that a revision to the exposure limits for quartz dust is needed, and that there should be a specific MSHA PEL for silica that is concordant with the current OSHA standard of 50 micrograms/m<sup>3</sup>. Simply put, the silica in mines is the same as the silica in non-mining settings, and so the permissible exposure in mining settings should not differ from non-mining settings. To protect miners from silicosis and other pneumoconiosis due to RCS, it follows then that MSHA should have the same PEL for RCS as OSHA. The current resurgence of pneumoconiosis in coal miners appears to be driven in large part by cases of silica-induced disease, recent actions to reduce permissible dust levels within mines have not addressed silica.

**d. MSHA should mandate enhanced surveillance for higher risk miners.**

Finally, we believe there should be enhanced surveillance for miners working in the hot spots of central Appalachia and that they should be afforded more frequent chest radiographs, every 2-3 years rather than every five years, as well as enhanced physiologic assessment including spirometry with diffusion capacity testing to detect the earliest declines in lung function and remove affected miners from exposure.

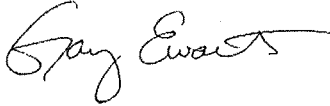
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Gary Ewart, MHS  
Chief, ATS Advocacy and Government Relations  
American Thoracic Society

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Respirable Crystalline Silica/Quartz

**Comment On:** MSHA-2016-0013-0001  
Respirable Silica (Quartz) - Request for Information

**Document:** MSHA-2016-0013-0064  
Comment from Gary Ewart, American Thoracic Society

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## Submitter Information

**Name:** Gary Ewart  
**Organization:** American Thoracic Society

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## General Comment

Attached, please find the comments of the American Thoracic Society

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## Attachments

MSHAminingletterssubmitted