Nos. 24-1889, 24-2661, 24-2663

United States Court of Appeals for the Eighth Circuit

No. 24-1889

Sorptive Minerals Institute,

Petitioner,

v.

Mine Safety and Health Administration and Lori Chavez-DeRemer,[1] Secretary of Labor, United States Department of Labor,

Respondents.

No. 24-2661

National Stone, Sand, and Gravel Association, et al.

Petitioners,

v.

Mine Safety & Health Administration, et al.,

Respondents.

No. 24-2663

Sorptive Minerals Institute and Blue Mountain Production Company

Petitioners,

v.

Mine Safety & Health Administration, et al.,

Respondents.

[1] Under Fed. R. App. P. 43(c)(2), Lori Chavez-DeRemer is automatically substituted for Vincent N. Micone, III.

On Petition for Review of a Rule
of the Mine Safety and Health Administration

MOTION FOR LEAVE TO INTERVENE TO PARTICIPATE IN FURTHER BRIEFING AND IN ORAL ARGUMENT OF THE AMERICAN THORACIC SOCIETY

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Corporate Disclosure Statement

Pursuant to Rule 26.1 of the Federal Rules of Appellate Procedure, the American Thoracic Society ("ATS"), through its undersigned counsel, certifies that it does not have a parent corporation and that no publicly held corporation owns 10% or more of its stock.

Proposed Interventor American Thoracic Society, pursuant to Federal Rules of Appellate Procedure 15(d), 27, and 34, files the following Motion for Leave to Intervene in the above-captioned matters to participate in any further briefing ordered by this Court and in oral argument. On April 14, 2025, Petitioners stated they object to this motion. Counsel for ATS has not heard whether MSHA objects to this motion.

I. Introduction

The American Thoracic Society ("ATS") is a medical professional organization of nearly 17,000 physicians, scientists, researchers, nurses, respiratory therapists, and allied health professionals. The mission of ATS is to prevent, detect, treat, and cure respiratory diseases and critical care illnesses. Simply, members of ATS are lung experts. Of significant importance to this Motion for Leave to Intervene, ATS medical professionals are focused on occupational and respiratory diseases and have specific insight into, and knowledge of, the health harms resulting from silica exposure. ATS advocates to protect the public and support ATS members in their efforts to prevent lung disease of all types. ATS members have direct experience with the adverse health consequences from exposure to silica, working in and managing clinics that exist specifically to treat coal and metal and nonmetal ("MNM") miners suffering from exposure to

respirable crystalline silica, the subject of the rulemaking challenged here by Petitioners.

The rule being challenged here, "Lowering Miners' Exposure to Respirable Crystalline Silica and Improving Respiratory Protection," 89 Fed. Reg. 28,218 (Apr. 18, 2024) ("Silica Rule"), was finalized and enacted by the Mine Safety and Health Administration ("MSHA") on April 18, 2024. The Silica Rule was a success and soon-to-be critical tool for protecting the health of coal and MNM miners once enforcement begins. However, developments over the past two weeks have jeopardized enforcement and given ATS concern about the future of the Silica Rule, part of which was set to have enforcement begin today, April 14, 2025.

On April 2, 2025, the National Stone, Sand & Gravel Association Petitioners ("National Stone Petitioners") filed a Motion for Stay Pending Judicial Review ("Stay"), along with an Emergency Motion for an Administrative Stay and Expedited Briefing, requesting a stay of deadlines for complying with MSHA's Silica Rule. Coal mine enforcement was set to begin April 14, 2025, and enforcement for metal and nonmetal mines is set to begin on April 8, 2026. C.F.R.§ 60.1(b)(1)-(2). Specifically, National Stone Petitioners note they requested the Stay because MSHA was unresponsive when approached by Petitioners asking if they planned to stay the Silica Rule or if MSHA would agree to a stay. Additionally, National Stone Petitioners pointed out that the new Presidential

Administration still has not appointed a permanent Administrator at MSHA, and significant numbers of employees of the Agency have departed, making communication and function of MSHA difficult. The Emergency Motion for an Administrative Stay was granted on April 4, 2025.

Four days later, on April 8, 2025, MSHA, through the Secretary of Labor, implemented a four-month "Temporary Enforcement Pause" of the Silica Rule for coal mine operators.[1] MSHA notes that, "[g]iven the unforeseen NIOSH restructuring, and other technical reasons, MSHA offers this four-month temporary pause to provide time for operators to secure necessary equipment and otherwise come into compliance." *See*, https://www.msha.gov/notice-stakeholders. Just six days before the coal mine enforcement was set to begin, MSHA suggests these "technical" reasons necessitate the "four-month temporary pause." The following day, MSHA filed its Response to Petitioners' Motion for Stay Pending Judicial Review, taking "no position on a stay of the Silica Rule for the period of [the Secretary of Labor's] own pause of enforcement," through August 18, 2025. Sec'y's Resp. to Pet'rs' Mot. for Stay Pending Judicial Review at 3. Additionally, MSHA notes that it "does not object to placing this litigation in abeyance pending

[1] The Notice states: "MSHA will temporarily pause enforcement of the requirements in 30 C.F.R. part 60 for coal mine operators until August 18, 2025, four months from the original compliance date of April 14, 2025."

the Secretary [of Labor]'s resumption of enforcement on August 18, 2025." Secretary's Response at 5.

On April 11, 2025, Petitioners Sorptive Minerals Institute and Blue Mountain Production Company ("SMI Petitioners"), then filed an Unopposed Motion for Four-Month Abeyance of Litigation ("Request for Abeyance"), citing MSHA's Response, and noting similar reasons to National Stone Petitioners' request for a Stay, and also noting the Request for Abeyance aligns with MSHA's four-month temporary pause of enforcement. The same day, this Court granted both the National Stone Petitioners' Stay as well as the SMI Petitioners' Request for Abeyance.

All of this leads ATS to request leave to intervene in these consolidated matters. ATS fully supports the Silica Rule and engaged throughout the rulemaking process arguing for adoption of standards that would protect miners, and based on its expertise, wants to see the Silica Rule enforced as soon as possible. Enforcement will begin improving safety protections for coal and MNM miners and help reduce burden on resources of physicians trying to treat miners with silica-dust related diseases. The stay of enforcement of the Silica Rule only serves to delay an important step protecting the health of coal and MNM miners laboring across mines in America. Reducing numbers of impacted miners will also

help ensure all miners suffering from silica-related diseases can access proper medical care.

While ATS did not initially intervene in this Petition, for various reasons detailed in this Motion, ATS now believes it is imperative to intervene in order to ensure the Silica Rule remains in place and enforcement begins as soon as possible. There is serious uncertainty given the layoffs, the lack of appointment of a lead Administrator at MSHA, and the temporary pause of enforcement itself, as well as the reasons given for it, that calls into question what MSHA's plans are for the Silica Rule and whether the agency intends to continue to support it. ATS recognizes the significant step the Silica Rule takes in the right direction for American coal and MNM miners, as well as for ATS members and other doctors across the country treating miners afflicted with silica dust related illnesses, and believes its enforcement is critical. For the reasons contained herein, ATS respectfully requests this Court grants its Motion for Leave to Intervene.

II. ATS meets all requirements to intervene in this matter.

a. ATS has standing to intervene under Article III

This court has long held, "a would-be intervenor, because he seeks to participate as a party, must have [Article III] standing…" *Mausolf v. Babbitt*, 85 F.3d 1295, 1300 (8th Cir. 1996). To establish Article III standing, a party must sufficiently plead the following elements: (1) the party has suffered an injury in

fact which is (a) concrete and particularized and (b) actual or imminent; (2) there is a causal link between the injury and the conduct complained of; (3) the injury will be redressed by a favorable decision. *Lujan v. Defs. of Wildlife*, 504 U.S. 555, 560-61 (1992).

ATS meets all of these requirements, as it has an imminent, concrete injury in fact. When a party seeks to intervene in opposition to the relief sought by a petitioner, this Court has recognized that the injury analysis should presume the petitioner's success. *See Nat'l Parks Conservation Ass'n v. EPA*, 759 F.3d 969, 973 (8th Cir. 2014). In *National Parks Conservation Association*, Northern States Power ("NSP"), a power company, sought to intervene to oppose environmental groups' efforts to compel the EPA to impose emissions control technology on the company. In its determination of NSP's Article III standing, the Court assumed the environmental groups would be granted the relief they sought.

The Court should likewise presume the Petitioners' success for the purpose of analyzing ATS's injury. If Petitioners are successful, and the Silica Rule is vacated, miners will continue to face harmful exposure to respirable crystalline silica ("silica dust"). Medical professional members of ATS treat coal and MNM miners, including in clinics specifically designed to treat diseases resulting from exposure to silica.

Clinics across the country, including those staffed and managed by members of ATS, are seeing an alarming rise in cases of pneumoconiosis and other silica-related pulmonary diseases. David J. Blackley et al., *Resurgence of Progressive Massive Fibrosis in Coal Miners – Eastern Kentucky, 2016*, 65 Morbidity & Mortality Wkly. Rep. 1385 (Dec. 16, 2016); Exhibit A, Affidavit of Drew Harris, MD at ¶3. Concerningly, cases are rising amongst young miners, suggesting that less time in mines is required to trigger the risk of serious pulmonary disease. Drew A. Harris et al., *Progressive Massive Fibrosis Identified at Federally Funded Black Lung Clinics in the US*, 331 JAMA 438, 439 (2024); Brief of Amici Curiae Am. Coll. of Chest Physicians et al. at 11. As more miners become ill at an earlier age, the patient pool of critically ill miners is growing. If the Silica Rule is vacated, absent its protective measures, it is reasonable to conclude that the patient pool of miners with severe silica-related disease will continue to grow, leading to increased patient demand and strain on already-overburdened clinics and ATS members. If the Silica Rule is overturned, ATS faces an imminent and concrete injury in fact, meeting the requirements set forth here.

Further, ATS's injury has a causal link to the relief sought by Petitioners. The Silica Rule implements critical safety and preventative measures, which will significantly lower miners' exposure to respirable crystalline silica, therefore reducing incidence of disease and strain on clinics. If this court grants Petitioners

relief and vacates the Silica Rule, clinics will experience even greater patient demand as incidences of illness rise, further straining clinics and their resources, which are already stretched thin. Ex. A, Aff. Harris at ¶10-11.

Finally, ATS's injury is would be remedied by a decision in favor of their position. If this Court preserves the Silica Rule, miners will have decreased exposure to silica dust, thus both severity and incidences of black lung and other silica-related disease will decrease. As incidences of silica-related disease decrease, so then will strain on clinics and ATS members.

As ATS members face an imminent and concrete injury in increased patient and resource demand, this injury has a direct, causal link to the relief sought by Petitioners, and further strain on clinics and ATS members would be redressed by successful defense of the Silica Rule, ATS satisfies the requirements for Article III standing.

b. ATS has associational standing necessary to intervene

Additionally, ATS has associational standing necessary to intervene in this matter. Associational standing is established when: (1) an organization's members would have standing to sue in their own right; (2) the interests the organization seeks to protect are germane to its purpose; and (3) participation of individual members is not required for requested relief. *United Food & Commer. Workers Union Local. 751 v. Brown Grp.*, 517 U.S. 544, 553 (1996). Further, this court has

determined that, to establish associational standing, an organization must identify particular members and their injuries. *Religious Sisters of Mercy v. Becerra*, 55 F.4th 583, 601, (8th Cir. 2022).

Dr. Drew Harris, a member of ATS and a physician, meets all three requirements for standing to sue as he has a concrete, imminent injury with a causal connection to the relief requested by Petitioners, and his injury is redressable by a favorable decision. First, has standing to sue in his own right, as his medical practice will be directly impacted by the ongoing rise in silica diseases. Dr. Harris is the Medical Director of the Black Lung Program at Stone Mountain Health Services in Jonesville Virginia – which serves miners in Virginia, West Virginia, and eastern Kentucky. Ex. A, Aff. Harris at ¶1. Stone Mountain Health Services is the largest black lung clinic in the nation and treats about 2,000 patients a year, including a growing number of miners with silica-related diseases. *Id.* at ¶2-3, 5. Over the past two decades, there has been a documented sharp rise in the prevalence of silica-related diseases amongst coal miners. David J. Blackley et. al, *Rise in Lung Transplantation for Coal Workers' Pneumoconiosis and Silicosis*, Am. J. Respiratory Critical Care Med. (2025).

Notably, Dr. Harris is the only pulmonologist at Stone Mountain Health Services. Ex. A, Aff. Harris at ¶9. Further, there are very few other pulmonologists in Central Appalachia with expertise or experience in black lung. Ex. A, Aff.

Harris at ¶10. If this Court grants Petitioners' requested relief and vacates the Silica Rule, Dr. Harris and Stone Mountain Health Services will experience even greater patient demand as incidences of illness rise. Increased patient demand will require more of Dr. Harris's and Stone Mountain Health Services time, resources, and attention, which are already stretched thin, impacting Dr. Harris and his colleagues' ability to properly care for patients. For instance, the recent rise in silica-related diseases has also increased the demand for lung transplants. David J. Blackley et. al, *Rise in Lung Transplantation for Coal Workers' Pneumoconiosis and Silicosis,* Am. J. Respiratory Critical Care Med. (2025); Ex. A, Aff. Harris at ¶3. The astronomical costs of these procedures stress finances for several health care programs, including the Black Lung Program, impacting Dr. Harris and his ability to treat patients and provide the time needed for that medical care. Thus, Dr. Harris has a concrete, imminent injury.

Additionally, Dr. Harris's injury is directly related to the relief sought by Petitioners. This Rule seeks to decrease exposure to silica dust, and occupational exposure to respirable crystalline silica is a key causal factor in the sharp rise of prevalence of silica-related disease. David J. Blackley et. al, *Rise in Lung Transplantation for Coal Workers' Pneumoconiosis and Silicosis*, Am. J. Respiratory Critical Care Med. (2025).

Finally, Dr. Harris's injury can be redressed by a favorable decision. If this court preserves the Silica Rule, prevention mechanisms implemented will lead to lower volumes of silica respired, which therefore will lead to lower incidences of disease and a decreased burden on Dr. Harris and his clinic. As Dr. Harris, a member of ATS, has standing to sue in his own right, ATS satisfies the first prong of associational standing.

Further, preservation of the Silica Rule is germane to ATS's purpose, and it meets the second prong of associational standing. The mission of ATS is to prevent, detect, treat, and cure respiratory diseases and critical care illnesses. In furtherance of a key pillar of ATS's mission, prevention, in February, ATS joined other amici in filing a brief in support of MSHA's position. Brief of Amici Curiae Am. Coll. of Chest Physicians et al., Feb. 19, 2025. ATS also submitted comments during the rulemaking process of the Silica Rule, noting it strongly supported MSHA's proposed rule. Exhibit B, ATS Silica Rule Comment at 8. The Silica Rule includes crucial measures for the prevention of respiratory diseases and protection of respiratory health. Thus, preserving the Silica Rule is germane to ATS's purpose, and ATS satisfies the second prong of associational standing.

Finally, the participation of an individual member of ATS is unnecessary to grant the requested relief. Where an organizational entity seeks only declaratory

relief, as ATS does here, the participation of individual members is not required. *Heartland Acad. Cmty. Church v. Waddle*, 427 F.3d 525 (8th Cir. 2005).

As ATS members would have standing in their own right, prevention of respiratory illness and protection of respiratory health is germane to the purpose of ATS, and individual member participation is unnecessary to grant requested relief, ATS satisfies the requirements of associational standing in addition to Article III standing.

c. ATS meets the requirements to intervene pursuant to Federal Rule of Appellate Procedure 15(d), and all rules applied by the Court.

Federal Rule of Appellate Procedure 15 provides the relevant rules on how parties can intervene in reviews of agency orders. While Rule 15(d) provides brief information about intervention, it does not provide a standard that must be met for that intervention. As a result, the Supreme Court has recognized that the standards provided by district courts apply to determine whether or not the proposed intervention should be granted. "Without any rules that governs appellate intervention", appellate courts must look "elsewhere for guidance" and therefore have "considered the 'policies underlying intervention' in the district courts.". *Cameron v. EMW Women's Surgical Ctr.*, 595 U.S. 267, 276-77 (2022), (citing *Automobile Workers v. Scofield*, 382 U.S. 205, 216-17 & n. 10 (citing Fed. R. Civ.

P. 24(a)(2) and (b)(2) and holding that the union was able to intervene in the agency proceeding)).

Applying those standards, ATS is permitted to intervene under Federal Rule of Civil Procedure 24—intervention of right under Rule 24(a)(2), or permissive intervention under Rule 24(b)(2).

i. ATS has a right to intervene under Fed. R. Civ. P. 24(a)(2).

ATS has the right to intervene in this proceeding and can meet the standards required by this Court. The Eighth Circuit has held that, upon timely application, it must permit anyone to intervene who (1) has a recognized interest in the subject matter of the litigation, (2) whose interest might be impaired by the disposition of the case, and (3) will not be adequately protected by the existing parties. *Curry v. Regents of Univ. of Minn.*, 167 F.3d 420, 422 (8th Cir. 1999); *see also Nat'l Parks Conservation Ass'n v. U.S. E.P.A.*, 759 F.3d 969, 975 (8th Cir. 2014).

ATS meets the first and second requirements, as ATS and many of its doctors focus on occupational and respiratory diseases, running clinics focused on care for miners impacted by silica-dust related disease and are experts leading the way on medical treatment and efforts to treat these diseases. Brief of Amici Curiae Am. Coll. of Chest Physicians et al., at 2, 11. Their expertise and time are finite resources and without this rule enforcement, their ability to treat miners suffering from silica-related disease will be impacted. The case load of doctors specializing

in these areas is already strained. Ex. A, Aff Harris at ¶9. For example, Stone Mountain Health Services, the largest federally funded black lung clinic in the nation seeing about 2,000 patients a year, only has one pulmonologist on staff. Ex. A, Aff. Harris at ¶9.

As noted *supra*, one of the greatest concerns is the rising number of young miners that clinics are seeing with these diseases. Advances in technology have increased access to thin coal seams, and as a result, miners are exposed to increased amounts of silica dust in shorter periods of time. Ex. A, Aff. Harris at ¶7; Brief of Amici Curiae Am. Coll. of Chest Physicians et al., 11. As advanced mining technologies produce higher volumes of respirable crystalline silica, and more young miners as well as miners working for shorter periods of time become ill, the patient pool of miners is growing. Protective measures like the Silica Rule are critical to ensuring a reduction in miners with silica-related disease and ensure ability to access proper medical care. Clinics and doctors are already overburdened and will not be able to continue if the current trend continues. Because ATS has expertise on the medical treatment necessary for miners' health, which is directly impacted by whether or not the Silica Rule enforcement goes into effect, and the outcome of this Petition will determine how clinics and doctors are, or are not, able to care for the increase in patients afflicted with silica dust impacts, it satisfies both of the first requirements for intervention of right.

For the third requirement, ATS has legitimate and serious concern that no party will adequately represent these interests. When Petitioners brought this rulemaking challenge, MSHA's brief defended the Silica Rule, recognizing the deep consideration and thought put into the final outcome. *See* Brief of Mine Safety and Health Administration, Jan. 29, 2025. The Silica Rule, as drafted, would have significant impact and enormous benefits for the health and safety of current and future miners. There was no indication that MSHA intended to do anything other than defend against the challenge to the Silica Rule it promulgated.

While MSHA has not explicitly noted it intends to no longer defend the Silica Rule, the recent uncertainty of implementation due to staffing cuts, as explained in MSHA's April 9, 2025, Response to Petitioners' Motion for Stay Pending Judicial Review, as well as MSHA's notice of Temporary Enforcement Pause of the Silica Rule on April 8, 2025, gives ATS great concern about the future defense of the Silica Rule. Additionally, MSHA's Response to Petitioners' Motion for Stay, did not explicitly object to Petitioners' merits of the Motion for Stay, nor present any dispute of Petitioners' argument regarding the likelihood of success on the merits of the case. Sec'y's Resp. to Pet'rs' Mot. for Stay Pending Judicial Review.

Under the recent circumstances, ATS's intervention is necessary in order to ensure protection of the Silica Rule and ensure miners' health and, importantly, the

ability of ATS members to treat any diseases that may result from increased and higher exposure to silica dust. These concerns and needs should be at the forefront of any decision-making about the Silica Rule moving forward. ATS meets all three prongs for intervention of right required by the courts under Fed. R. Civ. P. 24(a)(2).

ii. ATS's intervention is timely.

Further, a party must show also that their request for intervention is timely under both Fed. R. Civ. P. 24(a)-(b). To determine timeliness, the Eighth Circuit considers, "(1) the extent the litigation has progressed at the time of the motion to intervene; (2) the prospective intervenor's knowledge of the litigation; (3) the reason for the delay in seeking intervention; and (4) whether the delay in seeking intervention may prejudice the existing parties." *American Civil Liberties Union of Minn. v. Tarek ibn Ziyad Academy*, 643 F.3d 1088, 1094 (8th Cir. 2011); *see also Sierra Club v. Espy*, 18 F.3d 1202, 1204–05 (5th Cir. 1994). ATS's request is timely considering these four factors.

First, the extent to which litigation has progressed at the time of this motion is not dispositive, and timeliness should be assessed in relation to the filing of the Secretary's Response to Petitioners' Motion for Stay Pending Judicial Review. Timeliness "'is to be determined from all the circumstances,' and 'the point to which [a] suit has progressed is... not solely dispositive,'" *Cameron v. EMW*

Women's Surgical Ctr., P.S.C., 595 U.S. 267, 279, 142 S. Ct. 1002, 212 L. Ed. 2d 114 (2022) (citing *NAACP v. New York*, 413 U.S. 345, 365–366, 93 S.Ct. 2591, 37 L.Ed.2d 648 (1973)). Indeed, the "most important circumstance relating to timeliness" has been determined to be whether a party "sought to intervene 'as soon as it became clear' that [its] interests 'would no longer be protected' by the parties in the case," *Id.* at 279-280 (citing *United Airlines, Inc. v. McDonald*, 432 U.S. 385, 394, 97 S.Ct. 2464, 53 L.Ed.2d 423 (1977)).

In *Cameron v. EMW Women's Surgical Ctr.,* Kentucky Attorney General Daniel Cameron sought to intervene two days after learning that the Secretary for Health and Family Services would not continue to defend Kentucky HB 454 in litigation. The Court determined that "although the litigation by that time had proceeded for years, that factor [was] not dispositive. The attorney general's need to seek intervention did not arise until the secretary ceased defending the state law…" *Id.* at 280. The Court therefore determined, "…the timeliness of his motion should be assessed in relation to that point in time," *Id.* at 280.

Here, ATS seeks to intervene after MSHA implemented a Temporary Enforcement Pause on the Silica Rule on April 8, 2025. Of additional concern, MSHA did not oppose Petitioners' Motion for Stay of the Pending Judicial Review. Until that point in time, ATS was confident that MSHA would stand in strong defense of its Silica Rule and oppose Petitioners' motion. Because of these

unexpected changes and announcements, there is no indication as to how MSHA intends to proceed or whether it intends to defend against this Petition in support of the Silica Rule. In fact, in National Stone Petitioners' Motion for Stay, they state they "merely seek maintenance of the status quo." Pet'rs' Mot. for Stay Pending Judicial Review at 20. The "status quo" is unacceptable and, fatality rates and incidences of black lung are rising under this "status quo." ATS has grave concerns that MSHA did not object to this characterization or the request for Stay, because implementing protective measures, like the Silica Rule, must be a priority for the health of miners and their ability to obtain medical care. ATS therefore finds it necessary to intervene at this time in the litigation to ensure the interests of its members, their clinics, and their patients are protected.

As for the second and third prongs, though ATS had knowledge of litigation, its reasons for not intervening previously are reasonable. As previously explained, ATS initially determined supporting MSHA's position as an amicus curiae was more appropriate than intervening. However, as noted, ATS now has concerns about a shift in position by MSHA, making intervention at this juncture both necessary and reasonable.

Finally, no party will be prejudiced by ATS's request for intervention given the status of the case. The litigation is now held in abeyance until August 18, 2025, and oral arguments have yet to be scheduled, allowing ATS to participate in any

further briefing and oral arguments without any disruption of the current schedule. *See* Order, Apr. 11, 2025.

Given that ATS was recently made aware that MSHA's continuing defense of the Silica Rule is uncertain, its reasons for not seeking intervention previously are reasonable, and that no party will be prejudiced by its intervention, ATS meets all four requirements for timely permissive intervention.

i. Alternatively, ATS meets the standards for permissive intervention under Fed. R. Civ. P. 24(b)(2).

If this court finds that ATS is not entitled to intervention of right under Rule 24(a)(2), ATS respectfully requests that this Court grant permissive intervention. Where a party is not given the ability to intervene as of right, parties may request permissive intervention if they have a claim or defense that shares with the main action a common question of law or fact. Fed. R. Civ. P. 24(b)(1)(B); *S. Dakota ex rel Barnett v. U.S. Dep't of Interior,* 317 F.3d 783, 787 (8th Cir. 2003).

The main action here directly addresses ATS's concerns, and ATS seeks to defend the preservation of the Silica Rule against challenge by Petitioners. ATS's contention that the Silica Rule should not be vacated is the direct question being posed to this Court—Petitioners' request to review, and ultimately vacate, this rule is directly at issue.

Further, in exercising its discretion, the court must consider whether the intervention will unduly delay or prejudice the adjudication of the original parties'

rights, which this court has considered to be the "principal consideration in ruling on a 24(b) motion." Fed. R. Civ. P. 24(b)(3). *S. Dakota ex rel Barnett v. U.S. Dep't of Interior*, 317 F.3d 783, 787 (8th Cir. 2003). As discussed above, ATS's intervention will not unduly delay or prejudice the adjudication of the original parties' rights. This litigation is now held in abeyance until August 18, 2025, and oral arguments have yet to be scheduled, allowing ATS to participate in any further briefing and oral arguments without any disruption of the current schedule.

III. Conclusion

For the reasons stated herein, the American Thoracic Society respectfully requests that this Court grant its Motion for Leave to Intervene and allow the American Thoracic Society to participate in any further briefing ordered by this Court and in oral arguments.

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Certificate of Compliance

The undersigned certifies that the foregoing brief complies with Fed. R. App. P. 27(a) and the type-volume limitation of Fed. R. App. P. 27(d)(2)(A) because it contains 4,611 words.

The undersigned further certifies that this brief complies with the typeface requirements of Fed. R. App. P. 32(a)(5) and the type-style requirements of Fed. R. App. P. 32(a)(6) because this motion has been prepared in a proportionally spaced typeface using Microsoft Word Version 2501 in Times New Roman 14-point font.

The undersigned further certifies that this filing has been scanned for viruses and is virus-free, pursuant to 8th Cir. R. 28A(h)(2).

Dated: April 14, 2025

/s/ *Miranda Leppla*
Miranda Leppla
Counsel for American Thoracic Society

Certificate of Service

The undersigned hereby certifies that on April 14, 2025, an electronic copy of the foregoing brief was filed with the Clerk of the Court for the United States Court of Appeals for the Eighth Circuit by using the CM/ECF system. Participants in the case who are registered CM/ECF users will be served by the CM/ECF system.

/s/ *Miranda Leppla*
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Exhibit A

AFFIDAVIT OF DREW HARRIS, MD

I, Drew Harris, declare as follows:

1. I am an Associate Professor of Medicine and an Assistant Dean at the University of Virginia School of Medicine. I am a rural-health focused pulmonologist with expertise in occupational lung diseases, such as black lung. In addition to my role at the University of Virginia, I am the Medical Director of the Black Lung Program at Stone Mountain Health Services in Southwestern Virginia. I also see patients at the Black Lung Clinic at Boone Memorial Hospital in southern West Virginia. The statements in this affidavit are based on my personal knowledge, professional experience, and expertise.
2. I often see and treat coal miners from across Appalachia.
3. In recent years, there has been an alarming resurgence of black lung disease in coal mines throughout the country, with cases concentrated particularly in Central Appalachia. Numerous studies, and my own personal experience, show persistently alarming numbers of patients developing rapidly progressive and severe disease, including progressive massive fibrosis ("PMF") driven by high exposures to respirable silica. Recent studies show that contemporary miners with PMF (when compared with historical controls) have a significant increase in both the percentage and concentration of silica particles in PMF lesions. In my clinics, I care for many young patients (e.g. < 50 years old) who developed PMF after relatively short mining tenures. I have recently published a description of over 1,100 coal miners who have been diagnosed with PMF in the last 6 years in the Journal of the American Medical Association. Seventy miners in this published series were less than 50 years old. I have also co-authored a publication on the alarming increase in lung transplants needed for coal miners and other workers who have developed silica related lung disease in the American Journal of Respiratory and Critical Care Medicine.
4. Black lung is incurable, but entirely preventable.
5. Though coal production is declining, cases of severe black lung are at the highest level in decades.

6. Incidences of black lung and other silica-related diseases are directly correlated with exposure to respirable crystalline silica ("silica dust") in coal and MNM mines.

7. Recent advances in mining, requiring miners to access deep, thin coal seams, have increased the amount of silica dust produced and inhaled.

8. MSHA's Silica Rule provides necessary baseline protections for coal and MNM miners. If enforced, miners will have decreased exposure to silica dust, and risk of black lung and other silica-related respiratory illnesses will decrease.

9. Stone Mountain Health Services is the largest federally funded black lung clinic in the nation, and currently sees a high volume of patients, about 2,000 a year. I am the only pulmonologist who works at this clinic. I have concerns that, without enforcement of the Silica Rule, we will see an increase in both patient demand and severity of cases. More severe cases require more time, finances, resources and attention, all of which are finite.

10. Greater patient demand from increased prevalence of black lung and other silica-related diseases will further constrain the Black Lung Program's already strained resources. There are very few other pulmonologists who work in Central Appalachia with expertise or experience in black lung. Stone Mountain is a Federally Qualified Health Center (FQHC) that provides a sliding scale payment structure for patients who couldn't otherwise pay for their healthcare. Stone Mountain is the only FQHC that offers a black lung clinic with a sliding scale payment option in Virginia.

11. The longer the Silica Rule's enforcement date is delayed, absent the Rule's protective measures, incidences of black lung disease will persist and likely continue to rise. If incidences of black lung disease increase, so then will the mortality rates of miners, as black lung is incurable.

12. Should the Court grant the Petitioners' request and vacate the Silica Rule, miners across the country will continue to be exposed to dangerous volumes of respirable crystalline silica and disease rates and mortality, following recent trends, will continue to rise.

I affirm under penalty of perjury that the foregoing is true and correct.

Executed on April 14, 2025

Drew Harris, MD

State of Virginia
County of Albemarle

The foregoing instrument was acknowledged before me on this 14 day of April, 2025.

Signature of Notary Public

My commission expires: 7/31/26

PATRICIA CANDY JOHNS
NOTARY PUBLIC
COMMONWEALTH OF VIRGINIA
MY COMMISSION EXPIRES JULY 31, 2026
COMMISSION # 7341989

September 11, 2023

Christopher J. Williamson
Mine Safety and Health Administration
201 12th St S
Suite 401
Arlington, VA 22202-5450

Re: MSHA Silica PEL (RIN 1219–AB36)

Mr. Williamson:

On behalf of the undersigned medical and public health organizations, we appreciate the opportunity to comment on the Mine Safety and Health Administration's (MSHA's) proposed rule: Lowering Miners' Exposure: Respirable Crystalline Silica and Improving Respiratory Protection (RIN 1219-AB36).

The American Thoracic Society (ATS) is a medical professional organization of over 15,000 physicians, researchers, nurses, respiratory therapists, and allied health professionals dedicated to the prevention, detection, treatment and cure of respiratory disease, critical care illness and sleep disordered breathing. In short, we are lung experts. As lung experts, ATS plays a lead role in the prevention, detection, research, and treatment of patients with occupational lung disease caused by exposure to silica dust. Our annual conference and journal feature case reports of occupational silicosis disease and current research on the prevention and treatment of patients with silicosis and silica-associated diseases.

The American Lung Association is the leading organization working to save lives by improving lung health and preventing lung disease through education, advocacy and research. As a key part of our mission and an integral part of preventing lung disease, the American Lung Association champions clean air for all, including in the workplace. The Lung Association is also focused on improving the quality of life for those with lung disease, including silicosis.

The American College of Chest Physicians (CHEST) is a leading professional association in innovative and life-saving chest medicine. We support the advancement of improved health outcomes for patients with lung disease through education, advocacy, research, and philanthropy. CHEST is the professional home for more than 21,000 pulmonary, critical care, and sleep medicine professionals dedicated to the delivery of quality, evidence-based care for

Exhibit B

patients. Our mission is to champion the prevention, diagnosis, and treatment of chest diseases with a focus on ensuring and improving access for all patients, particularly underserved patients of highest need.

Silica Exposure Continues to Be a Significant Occupational Hazard for Metal and Non-Metal (MNM) Miners

As well documented in the MSHA proposed rule background, silica exposure can result in silica-associated lung disease in MNM mining operations and continues to be a significant hazard for US miners. Silica-related lung diseases, which include silicosis/pneumoconiosis, chronic airway obstruction/chronic pulmonary disease, lung cancer and other diseases, are incurable progressive lung diseases that result in significant disability and premature death. While cases of pneumoconiosis in miners had been on the decline, we have seen an upswing in cases since the 1990s, including the most severe forms of disease and in miners at a younger age. The increase in this devastating disease is in large part due to increasing silica exposures in mining processes.[1, 2] Despite knowledge of the risk of disease caused by exposure to silica dust and availability of engineering interventions to control exposures to silica dust in mining operations, US miners continue to develop silica-related lung diseases from occupational exposures. The approach to reduce this risk as noted by MSHA is to reduce exposures in the workplace and monitor for exposure-related health effects.

Support the Proposed More Protective Permissible Exposure Limit of 50 ug/m3

The undersigned organizations support the more protective permissible exposure limit (PEL) of 50 ug/m3 and encourage MSHA to move forward swiftly to finalize this standard. We note, the proposed PEL of 50 ug/m3 brings the MSHA standard in line with the protection offered to nearly all industries covered by OSHA. The proposed PEL of 50 ug/m3 is supported by available science and can be readily achieved with currently available engineering interventions to ensure occupational mining exposures do not exceed the proposed MSHA PEL.

Support the Proposed More Protective Action Level of 25 ug/m3

The undersigned organizations also support the proposed more protective action level of 25 ug/m3. Setting a more protective action level of 25 ug/m3 will ensure heightened monitoring and interventions when silica dust exposure levels exceed the action level threshold.

Extend Silica PEL Implementation to All Phases of MNM Mining, Including Slope Mining and Exploratory Mining

In review of the proposed rule text and in conversations with concerned parties, it remains unclear if the implementation scope of the proposed rule covers slope mining or exploratory mining. While we appreciate the verbal clarification of the scope of the rule by MSHA staff, we strongly urge the final rule to clearly and explicitly state that the silica rule covers all aspects of

mine operations (typical and non-typical mining operations). A clear statement will provide assurances to miners and occupational health advocates who are closely following this important policy.

Vulnerabilities of the Dust Sampling and Reporting System

Dr. Drew Harris – medical director of the black lung program at the Stone Mountain Clinic in Jonesville VA – recently wrote an opinion piece about the MSHA proposed silica rule in the NY Times. The Stone Mountain Clinic serves miners with black lung and other occupational respiratory issues in Virginia, Tennessee and West Virginia. In that opinion piece, Dr. Harris noted that his patients have, quote "shared stories with me of supervisors who directed workers to place dust monitors in closed lunch pails or to wrap them in coffee filters that allow air to enter the dust samplers but keep dust out."[3]

Our collective members who treat miners with occupational lung disease have shared similar stories of their patients describing how mine operators intentionally take and report dust collection samples in a way to explicitly mask actual exposure levels, including, placing monitors directly in front of air vents, collecting dust samples on non-typical days – like when dust producing machinery is not in operation - and conducting dust monitoring sample for outdoor mine operations on days with heavy rain. Each of these actions is intended to evade accurate reporting of silica dust exposure experienced by miners.

While we cannot independently verify these claims of dust sampling manipulation nor do we know how widespread these practices are, they do demonstrate how vulnerable the system of dust sampling and reporting is to manipulation by mine operators motivated or incentivized to provide accurate detail of conditions.

As the agency finalizes the rule, we urge MSHA to consider regulations to prevent such dust monitoring manipulation, including providing explicit guidelines on acceptable dust collection sampling techniques, requiring dust sampling being conducted by an independent entity, and the utilization of randomized and unannounced dust sampling collection visits.

Dust Collection Sample Reporting

As we understand the proposed rule, MSHA is requiring mine operators to take dust collection samples, retain record of the dust collection sample results for a certain period of time, and make the results of dust collection samples available during periodic MSHA mine inspections. We believe such a reporting system is too passive and fails to take advantage of aggregating sampling data for research and analysis. We urge MSHA in the final rule to require timely reporting of dust sample results to a central source – presumably MSHA or possibly the National Institute for Occupational Safety & Health (NIOSH).

We anticipate several benefits from central reporting. Public health and occupational health experts can use the centrally reported data to better understand exposure patterns, correlate exposure patterns with disease and better understand how exposures might alter the disease process for occupational disease.

There is engineering control value to central reporting. Central reporting of silica dust exposure will also allow miner operators, unions, and makers of dust engineering controls to evaluate dust emissions at various mine operations. It could help determine the most effective engineering control systems for dust suppression, discover variations in dust exposure at different sites using the same dust suppression systems (and perhaps identify reasons for variation), detect outliers that warrant further investigation, and discourage fraudulent reporting of dust sample results.

Exposure Measurement

As pointed out in the proposed rule, miners often work shifts longer than 8-hours. The longer shift work means miners have longer exposure periods for silica dust and other exposures – increasing the cumulative burden of exposure and reducing the rest time the miners' lungs have to recuperate and "clear" the lungs of daily exposures. We support MSHA's proposal to require full shift monitoring to accurately capture the total cumulative miner exposure to silica dust.

Medical Monitoring

We support MSHA's proposal to require medical monitoring for MNM miners; however, population-level health surveillance with oversight by a centralized agency is lacking from the current proposed rule.

We believe that MNM miners are entitled to the same degree of NIOSH oversight for medical screening, examination and program oversight as coal miners.

We strongly recommend that MSHA create a parallel system to the Coal Worker's Health Surveillance Program (CWHSP) for MNM miners' health surveillance. We believe that NIOSH, which has effectively implemented the CWHSP for over 5 decades, should be the organization that oversees a similar program for metal and non-metal miners. The CWHSP provides respiratory health surveillance through NIOSH-approved facilities and NIOSH-operated mobile units. The program offers health screenings for coal miners and allows researchers to identify trends in disease across the nation. Without this program, we would not be aware of the epidemic of progressive massive fibrosis in Appalachian coal miners.[4] A parallel system for metal and non-metal miners, run by NIOSH is imperative.

The current proposed rule does not specify any certification for the screening/examining physicians for MNM miners other than being a specialist in pulmonary or occupational medicine. We believe a parallel verification / certification by NIOSH (similar to that which exists for coal workers) will help ensure the *impartiality* of examining physicians (similar to the certification by the NIOSH CWHSP). If NIOSH oversight of examining physicians in MNM workers is not possible, then the MNM workers should be allowed to select the specialist of their choosing for health surveillance exams. This is critical given recent publications highlighting the existing of bias in physicians examining miners.[5]

As part of the medical monitoring for MNM workers, we urge MSHA consider central reporting of abnormal chest imaging results and impaired pulmonary function test results. Central reporting of abnormal findings will support population-based oversight and analysis of miner health and may earlier detect important health signals in miners at an earlier date. We note that mine operators are already required to report mine workers accidents and injuries to MSHA. Expanding the current reporting system to include abnormal medical findings in chest x-rays, pulmonary function tests, and other diagnostic tests related to occupational lung disease would be a natural extension of the current injury reporting system.

We propose that medical monitoring / surveillance of both MNM and coal workers should be a mandatory component of disease detection and prevention. Without mandatory participation, it is likely that MNM participation will be similar to The Coal Worker Health Surveillance Program in which 65% of workers do not participate.[6] By making participation in surveillance programs mandatory, MSHA can strengthen protections and prevention efforts for all miners. MSHA could allow miners to "opt out" of these exams if they so choose (rather than having miners "opt in, as is currently the case within the Coal Worker Health Surveillance Program).

We further propose that medical monitoring should occur at an every 3-year interval. The current epidemic of progressive massive fibrosis (PMF) in Appalachian coal has informed our recommendation – coal miners are now developing PMF in as little as 7 or 8 years of mining.[7] Waiting every 5 years to survey the health of current miners is not sufficient to prevent morbidity and mortality.

We propose that medical monitoring of MNM workers include conventional chest radiographs with interpreting physicians utilizing the International Labor Organization (ILO) classification system. This will facilitate a standardized approach needed for diagnosis and population health surveillance. However, recent publications have highlighted that low-dose chest CT scans are more sensitive than conventional chest radiographs for detection of pneumoconiosis.[8] Because of this improved sensitivity of CT scans, we recommend that MSHA require coal operators to provide low-dose chest CT scans to miners if CT scan is recommended by the provider evaluating the miner during their health surveillance exam. Although utilization of CT scans may improve individual disease detection, it may also limit population level disease surveillance.

This is because in the US, there is a lack of standardization for how to interpret CT scans for the diagnosis of pneumoconiosis. (The International Classification of High-resolution Computed Tomography (HRCT) for Occupational and Environmental Respiratory Diseases [ICOERD] system is not widely utilized in the US and there are few B-readers trained in this system).

Medical Monitoring Capacity

It has been suggested that there is currently insufficient capacity of B-readers and other health care providers need to comply with medical monitoring requirements in the proposed rule. We note that with the continued expansion of telemedicine and digital formats of medical images, there is an expanding capacity of medical experts who could play a role in meeting the medical monitoring requirements of the proposed rule.

Use of Personal Protective Equipment (PPE) as Temporary Measure to Reduce Silica Dust Exposure

We strongly support MSHA's finding that engineering controls are the best and preferred method of controlling miner exposure to silica dusts. The recent NIOSH publication "Best Practices for Dust Control in Coal Mining"[9] clearly depicts how PPE (including respirators) are the least effective means of protection from respirable dust for coal workers, and we agree that this hierarchy of controls illustrated in the following figure should apply to all miners including MNM miners:

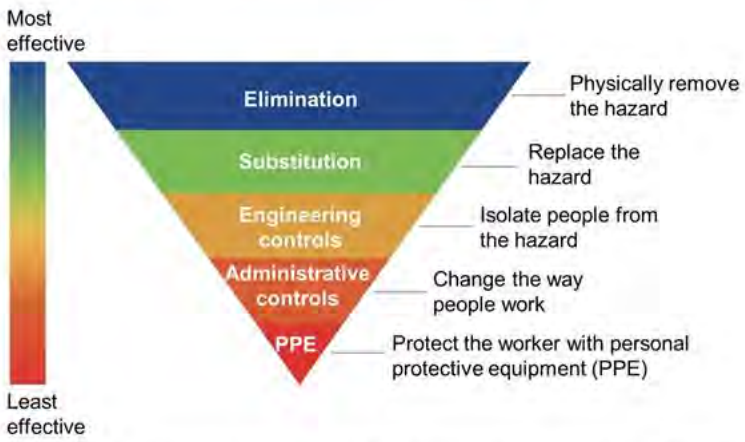

Figure I.1. Hierarchy of controls approach for reducing workplace hazards [NIOSH 2015].

However, we have serious concerns with the current MSHA rule's reliance on "temporary and non-routine" use of PPE (masks and respirators).

First, we recognize that when used correctly, personal protective equipment can be highly effective in reducing exposures. Correct use requires proper selection of the device, proper

mask fit, frequent maintenance, and individual training as well as workers' ability to use it correctly in all settings.

Despite the potential effectiveness of respirators for reducing silica dust exposure, we are concerned that many mine operators and miners may lack the resources needed to ensure proper use of PPE and may therefore use the equipment inappropriately – thus creating a false sense of exposure protection from silica dust.

The NIOSH publication on "Best Practices for Dust Control in Coal Mines" states that effective PPE requires miners to:

> #1 "Diligently wear a respirator", and
> #2 Limit time in an occupation to avoid reducing the afforded protection.

We have serious concerns that the current proposal does not take into consideration either of these two NIOSH recommendations.

> #1 Diligent use of respirators is impractical for miners who often work in extreme conditions, including hot temperatures in confined spaces. Certain tasks (e.g. roof bolting) or mine locations (e.g. underground mines that are thousands of feet below the surface) expose miners to temperature extremes that make continuous use of respirators for multiple hours impractical. Miners commonly acknowledge to their healthcare teams that they are unable to wear respirators for long periods of time due to difficulty breathing while wearing them (due to increased respiratory load) and conducting manual labor (e.g. hauling 50 pound bags of rock dust, or hanging 100+ pounds of miner-cable). Given the increased respiratory load that respirators confer, miners frequently report having to remove respirators frequently while at work to reduce their respiratory load. Furthermore, wearing respirators makes verbal communication very challenging, which has the unintended consequence of increased safety risks due to reduced ability to communicate between miners.
>
> #2 The current rule does not specify time limitations for potential reliance on respirators during unsafe dust exposures, and instead states that reliance on respirators is "temporary." This leaves open the possibility that miners could be recommended to rely on respirators for weeks or months while awaiting effective long-term solutions (e.g. engineering and administrative controls). We strongly recommend that NIOSH specifies what the definition of "temporary" is with regard to a time limitation.

Furthermore, we think it is important for MSHA to recognize that at the time a coal operator is notified that a silica dust sample exceeds the PEL, it is highly likely that coal miners have already

been exposed to unsafe silica levels (exceeding the PEL) during their current shift and likely for numerous preceding shifts (given the time delay it takes from the dust sampling to the lab reporting). Given this delay, it is critical that at the time a PEL is exceeded, efforts are made to immediately avoid future exposures.

We propose that reliance on respirators be limited to miners who are working in mines on the same day/shift that a silica dust level has been identified as exceeding the PEL. We further propose that miners should be immediately required to wear a respirator to safely shut down operations for their current shift. We propose that no miner be allowed to return to work in unsafe dust conditions until corrective actions have been put in place and silica levels are confirmed to be less than the silica PEL.

In other words, we propose that "temporary" reliance of a respirator be limited to miners actively working at the time it is noted that silica exceeds a PEL – and only for the duration of time it takes to safely shut down operations.

Medical Relocation

We support the proposal to use medical relocation of miners who show signs of lung disease. As described in the proposed rule, miners should not be punished for requesting medical relocation and should retain current pay and prospects for future pay increases. We note chest x-rays are available to miners, at no cost, under the black lung program – but that many miners do not take advantage of the black lung screening benefit. According to physician members who treat miners with lung disease, many miners do not seek chest x-rays for fear it will show an abnormal finding and subject the miner to either dismal or diminished job prospects with the mine operator.

As MSHA moves forward with the final rule, it needs to carefully consider how to ensure miners have safeguards in place to exercise part 90 status throughout the medical relocation process. Furthermore, we recommend that part 90 status be expanded to MNM and not only coal miners.

Funding for monitoring and enforcement

We recognize this is not within the scope of the proposed rule,however, it is clear that effective implementation, monitoring, and enforcement of the proposed silica dust rule will require additional resources at MSHA. We urge MSHA, the Administration and appropriators in Congress to provide the agency the resources needed to provide effective workplace protection from silica-related disease to all miners.

On behalf of the undersigned organizations, we appreciate the opportunity to submit comments. Our organizations strongly support MSHA's proposed rule to reduce miner exposure to silica dust – a known cause of serious respiratory disease and other conditions.

Sincerely,

American Thoracic Society
American Lung Association
American College of Chest Physicians

References

1. Cohen RA, Rose CS, Go LHT et al. Pathology and mineralology demonstrate respirable crystalline silica is a major cause of severe pneumoconiosis in US coal miners. Annals ATS 2022: https://pubmed.ncbi.nlm.nih.gov/35353671/
2. Cohen RA, Petsonk EL, Rose C et al. Lung pathology in US coal workers with rapidly progressive pneumoconsiois implicates silica and silicates. AJRCM 2016: https://pubmed.ncbi.nlm.nih.gov/26513613/
3. Harris DA. Deep Inside Mountains, Work is getting much more dangerous. NYT 2023: https://www.nytimes.com/2023/08/02/opinion/health/coal-mining-black-lung-silica.html
4. Blackley DJ, Halldin CN, Laney AS. Resurgence of a debilitating and entirely preventable respirataory disease among working coal miners. AJRCM 2014: https://pubmed.ncbi.nlm.nih.gov/25221884/
5. Friedman, LS, De S, Almberg KS, Coehen RA. Association between financial conflicts of interest and ILO classifications for black lung disease. Annals of ATS, 2021: https://www.atsjournals.org/doi/full/10.1513/AnnalsATS.202010-1350OC
6. https://www.federalregister.gov/documents/2018/11/13/2018-24700/barriers-to-participation-in-the-niosh-coal-workers-health-surveillance-program
7. Harris DA, Willis J, Tomann M. A new era of pneumoconiosis: decades in the mines may not be required. The Lancet 2020: https://www.thelancet.com/pdfs/journals/lancet/PIIS0140-6736(20)30731-5.pdf
8. Li JG, Chen XH, Ge H, et al. Clinical significance of low dose CT performed for 3 consecutive years in diagnosis of lung nodules in coal mine workers with 20 working years. 2017: https://pubmed.ncbi.nlm.nih.gov/29294521/
9. NIOSH/CDC, Best Practices for Dust Control in Coal Mining, 2nd edition, 2021: https://www.cdc.gov/niosh/docs/2021-119/default.html